

LIVESTOCK NEWS

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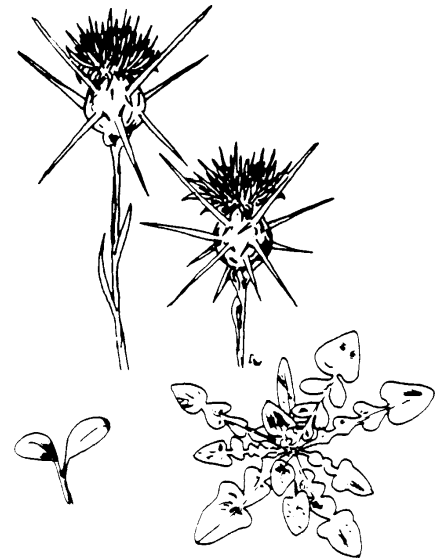
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YELLOW STARThISTLE DEMONSTRATION PLOTS IN AMADOR COUNTY

Yellow Starthistle (*Centaurea solstitialis*), was first introduced into California from Eurasia in the mid 19th century as a contaminant of alfalfa seed. Today it is the most widespread noxious weed throughout the state. Currently, yellow starthistle blankets over 22 million acres, or 22% of California's landscape.

The physiology of the plant makes it one of the biggest competitors when it comes to rangelands, roadsides, parks, and agricultural areas. Its long germination period can range from mid-winter through early summer. During early development it focuses the majority of its growth into its root structure. This feature makes the plant suitable for California's dry Mediterranean summers.

Thanks to years of research, scientists are finally getting a handle on the methods involved in controlling this invasive weed. Using these methods, Amador County has begun the battle to fight yellow starthistle. A few months ago a group of local officials, concerned citizens and private authorities united together to form The Amador County Noxious Weed Group. Meeting on a monthly basis, the group discusses the effects of noxious weeds



Yellow Starthistle (*Centaurea solstitialis*)

and the control methods involved in eradicating them.

Currently the group is working on establishing demonstration plots using different control methods so the public can see the effects over time. The first plot is located on Busi's ranch off Hoffman Street in Jackson. This site will demonstrate the effects of grazing and mowing at proper time intervals.

Grazing has shown to be the most effective at time of bolting. The ideal situation is to heavily graze the pasture for 4-6 weeks, once the plants have started to bolt. During the rosette stage,

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PESTICIDES FOR FLY CONTROL

BY DR JOHN MASS, UCCE VETERINARIAN

As sure as Spring is here, Summer will not be far behind and with that will come the flies. Horn flies decrease production and face flies carry the bacteria that causes Pinkeye. Now is the time to start planning the yearly battle against these pests. Horn flies causes cattle to have decreased weight gains and overall production in the herd is decreased. The horn flies cause these losses by biting through the skin of the cattle and sucking fluids from underneath the skin. Face flies irritate the cattles' eyes by using rasp-like mouth parts to stimulate tear production. The face flies feed off of these excess tears. More importantly, the face flies carry the causative agent of Pinkeye, *Moraxella bovis*. This bacteria (*M. bovis*) causes tremendous damage to the eye and also very large economic losses. So, one of the primary goals of face fly control is the prevention of Pinkeye.

Both face flies and horn flies develop resistance to insecticides over time. For maximum prevention, it is advisable to switch the class of drug you use each year or two. If you used an organophosphate eartag last year, use a pyrethroid eartag this year.

Additionally, if you plan to use a pyrethroid eartag this year, use an organophosphate spray this year. Alternating the classes of drugs in this manner will increase the success of your preventive program. It will zap those flies harder, remember this is war! It is also recommended that application of eartags be delayed until the fly population is relatively high so that the possibility of them developing resistance is lowered. Sprays, back rubbers, face rubbers, and dust bags can be helpful in reducing the fly populations early in the season, before eartag application. Then, as the fly populations increase, apply the fresh eartags to achieve maximum benefit. Always follow the manufacturer's label directions for eartag application. If they call for two eartags—use two eartags! If they recommend eartags for calves or if eartags for calves are needed to prevent Pinkeye in the calves—use the tags in the calves.

Remember, in the Fall, always remove the eartags. If the eartags are left in, the flies that overwinter—particularly the face flies that overwinter—will develop resistance to the drug you used and it will no longer be effective.

Face flies and horn flies lay their eggs in cow manure and the larvae only develop in cow manure. Therefore, some of the compounds that are fed or given in bolus form that kill the larvae in the manure pat can be very effective. Examples of this include the slow release bolus with diflubenzuron (Vilgilante®). This compound is an insect growth regulator (IGR) which is safe and cross-resistance does not develop. Another IGR that is used in "feed through" products is methoprene. Other products are available that can kill the fly larvae when used as a "feed through".

Some of the important items to keep in mind for fly control and pesticide use are:

1. Plan ahead for insecticide and eartag purchases: fly season always comes, even if delayed by cool weather or rain.
2. Consult with your veterinarian regarding the active ingredient(s) in these products and the history of effectiveness in your cattle.
3. Always follow the label instructions, warnings, and precautions: these products can potentially be toxic to you, your children, pets, and others working with them around the chute.
4. Follow label withdrawal times and keep records of treatment dates, products, and lot numbers.

See *Pesticides*, page 3

PESTICIDES CONT.

Type of Treatment	Product Name	Active Ingredient	Chemical Class	Manufacturer
Eartag	Atroban Extra	Permethrin	Pyrethroid	Schering-Plough
Eartag	BovaGard	Diazinon	Organophosphate	T-TEX
Eartag	Cutter Blue	Fenthion	Organophosphate	Bayer
Eartag	Cutter Gold	Cyfluthrin	Pyrethroid	Bayer
Eartag	Diaphos Rx	Diazinon+Chlorpyrifos	Organophosphate	Y-TEX
Eartag	Ectrin	Fenvalerate	Pyrethroid	Fermenta
Eartag	GardStar Plus	Permethrin	Pyrethroid	Y-TEX
Eartag	MaxCon	Cypermethrin+ Chlorpyrifos	Pyrethroid+ Organophosphate	Y-TEX
Eartag	New Z Diazinon	Diazinon	Organophosphate	Farnam
Eartag	OPTimizer	Diazinon	Organophosphate	Y-TEX
Eartag	Patriot	Diazinon	Organophosphate	Fermenta
Eartag	PYthon	Zeta-Cypermethrin	Pyrethroid	Y-TEX
Eartag	Super Deckem	Fenvalerate	Pyrethroid	Destron-Fearing
Eartag	Terminator	Diazinon	Organophosphate	Anchor
Eartag	Warrior	Diazinon+Chlorpyrifos	Organophosphate	Y-TEX
Eartag	X-Terminator	Diazinon	Organophosphate	Y-TEX
Eartag	ZetaGard	Zeta-Cypermethrin	Pyrethroid	Y-TEX

Type of Treatment	Drug	Brand Name
Sprays	Dichlorvos	Vapona
Sprays	Permethrin	Ectiban, Permethrin, Atroban, Permethrin, Insectrin
Sprays	Tetrachlorvinphos	Rabon
Pour on Applications	Tetrachlorvinphos+ dichlorvos	Ravap
Back Rubbers and Face Rubbers	Permethrin	DeLice, Expar, Hard Hitter
Back Rubbers and Face Rubbers	Permethrin	Ectiban, Insectrin
Dust Bags	Tetrachlorvinphos+ dichlorvos	Ravap
Feed-Through Insecticides	Tetrachlorvinphos	Rabon dust
Feed-Through Insecticides	Tetrachlorvinphos	Rabon oral larvicide
Slow Release Bolus with IGR (Insect Growth Regulator)	Methoprene	IGR mineral, Starbar
Slow Release Bolus with IGR (Insect Growth Regulator)	Diflubenzuron	Vigilante

FREQUENTLY ASKED QUESTIONS

BEEF CATTLE

Q: Do producers need a veterinarian's prescription to add selenium to cattle supplements such as salt-mineral mixes or blocks?

A: No. Recent changes in FDA regulations and Federal laws allow supplemental selenium to be added to beef cattle supplements as well as other livestock and poultry supplements. There is a maximum allowable amount of selenium that can be supplemented. The maximum supplemental selenium is 0.3 parts per million (ppm) of the total diet or 120 ppm in salt mineral mixtures. By all means of supplementation a total maximum allowable amount is 3 milligrams (mg) per animal per day. Veterinarians may not write a prescription for amounts of selenium above these levels.

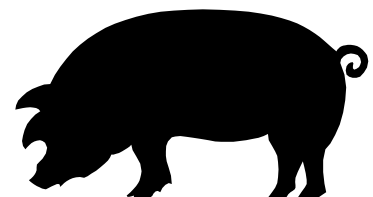
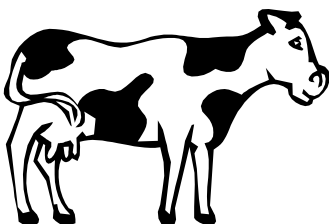
Q: How can I find out if my cattle are copper deficient?

A: Your veterinarian can analyze serum or liver samples to determine the copper status of your cattle. If the cattle are very deficient in copper the serum samples will be low; however, if a marginal deficiency exists or if the cattle have been supplemented with copper recently a liver sample will be necessary. Many veterinarians in California have been trained in liver biopsy techniques during the last 2 years and can assist producers if liver biopsies are necessary for a diagnosis. If the cattle are copper deficient and supplementation is started, it is recommended that liver samples be analyzed on at least a yearly basis to be sure that the appropriate amount of copper is being supplemented. Copper has the smallest margin of safety of the essential trace elements and the greatest risk of toxicity if over supplemented. Copper toxicity results in significant death losses in cattle and other livestock species.

SWINE

Q: Has the strain of porcine reproductive and respiratory syndrome (PRRS) virus that causes increased sow abortions and deaths been reported in California?

A: Yes. At least one herd in California has reported signs and serology consistent with the strain. The best protection against infection is good biosecurity. Review your problems with your local veterinarian and pay special attention to the quarantine of new herd additions, access by outside people and equipment, and traffic flow on your premises.



TENDERIZING MEAT WITH VITAMIN D

BY WES ISHMAEL, OKLAHOMA STATE UNIVERSITY

Until now, the beef industry's quest for more consistent palatability has been a little like chasing a renegade cow down a steep draw with a busted cinch. Problems have been a whole lot easier to identify than practical options for surviving the storm.

The industry race for product quality could be getting smoother, though, thanks to vitamin D and its impact on tenderness, the linchpin in the palatability equation. In a nutshell, researchers are finding that feeding vitamin D to cattle just a few days ahead of harvest can increase carcass tenderness.

In a recent study at Oklahoma State University, only 20 percent of the cattle fed vitamin D produced ribeyes considered to be tough (10.0 pounds shear force with seven days aging) compared to 50 percent of the cattle that weren't fed vitamin D. Put another way, on average, vitamin D supplementation reduced shear force values 30 percent.

If you feed 5.0 to 7.5 million units of vitamin D per day, 5 to 10 days prior to slaughter, it will elevate the calcium level in the animal," says Brad Morgan, an OSU assistant professor in the animal science department who has been working on the vitamin D concept for the past five years.

WHY IT WORKS

It seems that calcium levels are critical to carcass tenderness because calcium activates calpain, the naturally occurring enzyme responsible for breaking down muscle fiber during the aging process. While naturally occurring levels of calcium in an animal activate one kind of calpain, increased levels of calcium are required to activate another type of the enzyme. If both types of calpain are at work, tenderness is enhanced.

To be technically correct, researchers are feeding vitamin D3. According to Jayden Montgomery, research assistant at Texas Tech University, vitamin D3 is the product of naturally occurring

compounds in the skin of animals and humans which are synthesized into vitamins D3 by the sun's ultraviolet rays.

A TENDER TOUCH

Calcium-Activated Tenderness or CAT has received a fair bit of press in recent years. The CAT process consists of injecting cuts of beef with a solution of food-grade calcium chloride and water, then vacuum-packaging the product.

"Calcium chloride will make all tough beef more tender, but it won't make all tough beef tender," says Mark Miller, professor of meat science and muscle biology at Texas Tech University. While the CAT process is effective and inexpensive, many meat packers have been reluctant to adopt it because they say consumers are slow to accept such a beef product, even though they readily buy pork and poultry processed in the same manner.

PUTTING THE PENCIL TO IT

"With vitamin D, we're talking about something you can feed for maybe 10 days, it's cheap and it looks like it could have a significant impact," says Bo Reagan, executive director of science and technology for the National Cattlemen's Beef Association.

Indeed. The cost seems reasonable enough. Morgan says you can feed 7.5 million international units of vitamin D3 for about 20 cents a day. So a little more than a dollar per head for the amount of time it takes to generate significant results, plus a little extra for added management.

At OSU, researchers have conducted four trials thus far, feeding from 2.5 to 7.5 million international units of vitamin D for 5 to 10 days ahead of slaughter. Along with decreasing the percentage of tough steaks in each trial, it shifts the entire population, taking the tough ones out of the system.

Vitamin D cont.

Other researchers have found similar results. Once more, Montgomery says that Iowa State research indicated serum calcium levels in cattle fed days after supplementation stopped. That suggests cattle can be fed vitamin D without having to be hurried off to the packing plant once vitamin D is removed from the ration. There should still be a marketing window while retaining the tenderness benefit.

As well, Montgomery points out meat from cattle in the same study contained 1.5 times as much calcium as cattle that weren't fed vitamin D. He believes this calcium fortification could be another consumer selling point, along with the tenderness.

CAPTURING THE VALUE

So far, it doesn't look like it will be a hard sell. Certainly, there is no question consumers want more tenderness. According to the 1995 National Beef Quality Audit, problems stemming from tough beef that year cost the domestic beef industry more than \$250 million. The National Beef Tenderness Conference in 1994 indicated one out of every four steaks was less than desirable in tenderness/palatability.

With that in mind, Morgan says, "We've talked to a lot of people in the business, and they're saying \$5 to \$8 per carcass (extra value) wouldn't be out of whack." In fact, that might be a lowball estimate if current NCBA research is any indication. Reagan says in some recent focus groups of moderate and heavy beef/meat users, consumers indicated they would be willing to pay 10 to 15 percent more for a product that was guaranteed to be tender and flavorful.

Still, someone in the production chain has to be willing to invest the extra dollars first. Even at a buck per head, the cash register adds up fast, and stalemates between the industry and its buyers can develop even quicker. As an example, while the jury is still out, the industry has been slow to adopt the practice of feeding vitamin E, an inexpensive way to guarantee buyers added shelf life. The rea-

son is that a fair number of consumers don't see the value in it.

Specifically, Morgan says extending shelf life offers tremendous value to retailers, who take about 45 percent of the industry's beef on a value basis. But it offers little value to food service, which accounts for another 45 percent. So, about half of the paying customers have no reason to ante up. In the case of vitamin D, though, everyone wants more tenderness.

Morgan also believes providing a consistently tender product could open the doors to a whole new consumer population. "We have a lot of people who may not eat beef from a diet health standpoint. They might eat a leaner beef product, but right now about 40 percent of the Standard grade carcasses are inferior from a palatability standpoint, primarily due to tenderness... "If feeding vitamin D works, it should be accepted by all levels of the industry," says Morgan.

Indeed. Even if vitamin D fulfills its promise on the carcass side of the equation, it will obviously have to prove itself as a practical management tool on the production side.

FINE-TUNING

Morgan points out, "We've had some snags feeding vitamin D, like anything else you do at the university and take to the field." Specifically, some of the cattle in their trials went off feed by the seventh day of vitamin D supplementation by as much as 20 percent. Obviously, such a wallop to gain and cost of gain would make feeding it impractical, and must be addressed before the industry will accept the practice.

Morgan is convinced it's not a taste or palatability issue, and that the problem can be resolved through adjusting total volume of supplementation. With that said, Morgan is already getting lots of interest from major players in the industry wondering when they can start feeding it. He says the main interest

See Vitamin D, page 7

is from feeders and packers who want to be able to guarantee a tender product, especially branded

Vitamin D cont.

products. In fact, a couple want to buy exclusive rights to a specific process which Morgan and fellow OSU researchers are trying to patent.

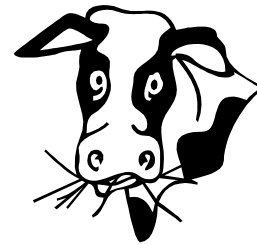
All things considered, while he wouldn't be surprised to see some folks dive in right away, Miller says, "I think we're about three years away from being able to answer all of the questions. We're still in the infancy of data generation."

NOT A CURE-ALL

That's not saying he doesn't believe in the potential. But, like the others mentioned in this article, he understands there are no one-size-fits-all potions

to solve carcass palatability and consistency challenges. "It could take a lot of cattle across the line (for tenderness), but it's not a magic bullet," says Miller.

Morgan sums it up this way, "You still can't make a silk purse out of a sow's ear." We still need grain feeding. You're still going to have some tough product, but this (vitamin D) is one of the things we can try that has lots of good to it."



Demo Plots cont.

the plants are constantly photosynthesizing and sending its sugars into the root system (sink). These stored carbohydrates will then be used later for producing the flowering stalk and flower heads. By the time summer arrives and the plant is ready to flower, it sends up a stalk, referred to as "bolting". This stage in development reverses the "source" and "sink" forcing the plant to use its stored resources.

This is the time to graze. By now many of the annuals have senesced making yellow starthistle the only plant remaining green. Research has shown that livestock will selectively choose yellow starthistle at this stage due to its high levels of protein and high palatability.

Grazing at this stage removes the flowering stalk, thus eliminating the chance for flowering. Depending on the plant and the amount of stored carbohydrates it has, it may try to bolt a second and third time. By continuously grazing during this time period, you eventually use up all the plants resources, thus eliminating any seeds from being pro-

Mowing works in a similar way, except for the time of execution. Mowing should be done when the first yellow flower is seen. The methodology behind the two processes are the same; you want too use up all of the plants stored resources. Mowing has been found to be the most effective at ground level. This can be done by hand pulling, hoeing, or weed eating. For a large scale rancher this would be impractical, so mowing at a height of 2 to 4 inches has been shown to be effective.

These methods may sound easy, and to a certain extent they are. However they are not fool proof. There will always be a few plants here and there that survive and produce seed. Thus, you must use an integrated approach and continue this management strategy over a course of 3 to 5+ years.

If you have any question regarding yellow starthistle or the demonstration plots please feel free to call us anytime.

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UPCOMING EVENTS: MARK YOUR CALENDAR

June 15, 1999: Oak Woodland Workshop
County Government Center
Placerville, CA 6:30 – 9:30 pm
For Registration info call: (530) 621-5552


July 29 – Aug 1: Amador County Fair
Amador County Fairgrounds
Plymouth, CA
For more information call: (209) 245-6921

June 16-20, 1999: El Dorado County Fair
El Dorado County Fairgrounds
100 Placerville Drive
Placerville, CA
For more information call: (530) 621-5860

Oct. – Nov. 1999: Rangeland Water Quality Shortcourse
Details forth coming.

June 22, 1999: Yellow Starthistle Control
Calaveras County Fairgrounds
Frogeteria Building
Angels Camp, CA
1:30pm to 4:00pm
For more information call: (209) 754-6477


Donna Hirschfelt
UCCE County Director
Amador County


Ken Churches
UCCE County Director
Calaveras County

June 30, 1999: Forest Landowner Seminar
San Andreas Library
891 Mountain Ranch Road
San Andreas, CA
9:30 am
For more information call: (209) 754-6477


Bill Frost
UCCE County Director
El Dorado County

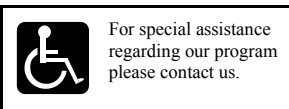
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