University of California Cooperative Extension

Land & Livestock News

Serving Colusa, Glenn and Tehama Counties

P.O. Box 697, Orland, CA 95963 (530) 865-1107 FAX (530) 865-1109

Volume III, No. 1 February 22, 2002

In This Issue:

Marc R. Horney, Ph.D.
UCCE Livestock/Natural Resources Advisor
P.O. Box 697 / 821 E. south Street
Orland, Ca 95963
Ph. (530) 865-1154 / Fax (530) 865-1109
(800) 698-4544 TDD

Yellow Starthistle Cost-Share Program Funded

The California Department of Food and Agriculture has funded a Weed Management Yellow Star Thistle cost-share program for 2002/2003 to help landowners in the western foothills of Glenn County.

Landowners will, in time, need to fill out the necessary paperwork at the Glenn County Agriculture Commissioner's Office, 720 N. Colusa Street, Willows, obtain an operator I.D. number and report any use of the chemical.

The chemical Transline® will be purchased in one gallon containers, and when the amount of grower interest in the project has been tabulated, the chemical will be allocated equally.

At the present time, there will be a limited amount of chemical available. Additional funding sources are being sought, and there may be more chemical available in the future.

Prior to the application of the chemical, maps of the treatment site will have to be drawn up and submitted to the Agriculture department, which will conduct the monitoring.

The Weed Management funding will pick up the cost of the chemical only, while the landowner will pick up the cost of the application and possibly any re-seeding of the area.

For more information about the program or the necessary paperwork, please call the Glenn County Agriculture Commissioner's office at 934-6501, or 865-1133.

Virtual Fence Technology Is Here

By Joan Waldoch, Editor, Colorado Farmer-Stockman

Controlling your cattle from the kitchen table isn't such a far-fetched idea. With the help of Global Positioning System (GPS) satellite signals and electronic cow collars, a New Mexico researcher is testing "virtual fence" technology that remotely controls livestock movement on the range.

It's not that Dean Anderson, a USDA Agricultural Research Service animal scientist in Las Cruces, N.M., is totally against conventional fences. They are often necessary to keep animals contained. The problem is, fences are static and rigid, Anderson says. "Rangeland is a resource that is very dynamic."
With virtual fences, a manager can guide the animals to new areas of better forage within the pasture.

"You have the potential to manage more soundly than with rigid boundaries", he says.

Anderson and his colleagues are testing the animal guidance system on the Jornada Experimental Range in southern New Mexico.

Sound Cues
The cowboy, Anderson notes, can move the animals without getting on horseback. The first step is to look on the computer to see where the cows are in real time and where they are to be moved.

"We capture the (satellite) signal that tells us the physical 'address' of the animal," Anderson says. 'That gets fed into a computer in which there is a geographical informational system (GIS) and that gives us the area the animals are to be included in, or excluded from."

The cows are outfitted with collars that allow the managers to locate and control them. As the cow nears the virtual fence line, the system prompts the moving animal to change direction by emitting electronic sound clues.

The animal will hear the sound cues on either its right or left side. Anderson explains that the software mathematically determines which side to cue, based on the animal's angle of approach and which direction the manager wants her to move.

"Each of us has our personal space, our fight or flight zone," he says. If someone penetrates our space, the initial response in most animals is to move in the opposite direction." To get the animal to move right, Anderson gives the cues to the left side.

The sound starts faintly as a modulated tone and is "ramped up" if the animal fails to change direction, Anderson says. If necessary, a mild electrical shock is applied to reinforce the sound but not inflict harm. After a few times, most cows respond pretty quickly, so it's often not necessary to increase the volume or apply the shock.

Innate Animal Behavior
Anderson, who advocates the low-stress animal handling practices of Colorado State University Animal Scientist Temple Grandin and practitioners Bud Williams and Burt Smith, says the virtual fence technology capitalizes on innate animal behavior. For some humans, that approach may require a change in thinking.

"Man likes control", Anderson says. "He may want the cattle in at 10 so he can brand and then go on to do other things later."

With enough horses, hollering and cattle prods, it can be done, he says. But it's not a win-win situation.

"Why not get those animals to come in with a benign clue, when they're grazing or watering, instead?" he says. "That may mean you brand at 2 instead of at 10, but you're on the cattle's schedule, not yours."

The system is still developing and equipment is not commercially available. One collar now would cost between $4,000 and $7,000, but Anderson believes the cost will drop as advances are made and commercialization begins. He says the technology will likely be miniaturized so the electronic device fits in a cow's ear. In comparison, he adds, conventional fencing isn't cheap. It can cost up to $14,000 per mile for materials and installation.

Hand-On Management
Anderson says the virtual fence system is most practical for very large pastures - 100,000 plus acres, not 100 acres. He adds that the technology is not appropriate in every situation.

"Whenever human or animal health and safety are concerned, don't even think about virtual fencing," he cautions. While this system could enable a rancher to program his cows in Montana while sitting in new York, Anderson does not recommend it as a replacement for hands-on management.

"A manager needs to be looking at the plants in the pasture and watching the livestock," he says.

Internet For Agriculture Workshop

The University of California Cooperative Extension will once again sponsor a hands-on (keyboard) workshop for the rancher or farmer who is new to the Internet, or who would like to explore the basics of website creation. The workshop will be held on Tuesday, March 26, 2002, from 6:00 p.m. to 9:00 p.m. in Room 208 at Red Bluff High School, 1260 Union Street in Red Bluff.

Topics to be covered include:
- Internet Questions and Answers
- Using Search Engines to Find Information
- Using e-mail Listserv Groups and Bulletin Boards
- Where to Look for USDA Publications, Commodity, Market and Weather Reports.

For just the $5.00 cost of the workshop, participants will be able to "surf" the internet and find information geared to agriculture.

To register, please call the Tehama County Resource Conservation District at (530) 527-4231 Ext 101, or drop by their office at 2 Sutter Street, Suite D, in Red Bluff.

Seating is limited, so please register early.

Watershed Speakers Available

Four active watershed conservancies, along with the Tehama County Resource Conservation District (TCRCD), are busy doing projects in Tehama County watersheds. These projects range from educational workshops to streambank stabilization projects and installation of fuel breaks for fire management.

Speakers are available to speak to your group about Tehama County watersheds, or about watershed groups in general.

For more information, contact the TCRCD at (530) 527-3013 Ext 101 to arrange a speaking date.

Stewardship Day - May 4, 2002

Stewardship Day has become an annual event at the Burrows Ranch in western Tehama County, with a rotating list of speakers and topics, all focused on innovative techniques for ranchers and land managers.

This year, the Burrows Ranch, neighboring Big Bluff Ranch, Shasta College and the Tehama County Resource Conservation District, invite the community to take a drive and join them for a day at the two ranches west of Red Bluff.

The day will provide an opportunity for hands-on experiences in the management of water, soil, plants and livestock..

Stewardship Day will be held on May 4, 2002 from 9:00 a.m. to 3:00 p.m. For more information, call the Tehama County RCD at 527-3013 Ext. 101.

UPCOMING EVENTS

March 1-2, 2002

PSSAC Annual Meeting: Hazardous Waste Remediation/Nutrient Management

Location: McClellan Park, Sacramento, CA

Sponsor: Professional Soil Scientists Assn. Of California (PSSAC)

*Contact: Prog: Roger Poff (530)273-1709 **Mailto9:rpoff@nccn.net;** Reg: Mary Reed 707-447-2135 **mailto:pssac@northcoast.com***

Region: California

Audience: Professionals, academics, general interest

Cost: $95 ($115 after 2/22/02)

Notes: Includes 2 lunches, Friday evening banquet, Saturday field tour by bus, and tour of McClellan Aviation Museum

March 5-6, 2002

Silvicultural Options for Sustainable Management of Pacific NW Forests: Integrating Research Results into Mgmt. Practice

Location: Corvallis, OR

Sponsor: Oregon State University, Cooperative Forest Ecosystem Research, The Cascade Center for Ecosystem Studies, The Sustainable Forest Partnership

Contact: Conference Assistant (541) 737-2329 mailto:outreach@for.orst.edu

Region: West

Audience: Forests, silviculturists, natural resource managers and planners, wildlife biologists and woodland owners

Cost: $250

Notes: http://outreach.cof.orst.edu.edu/silvopt

March 8-9, 2002

Habitat Enhancement and Management for Waterfowl Areas

Location: Davis, CA

Sponsor: UC Davis Extension

Contact: 800-752-0881 www.universityextension.ucdavis.edu

Region: California

Audience: Landowners, hunting club managers, resource consultants, and wetland resource planners

Cost: $350

Notes: Section 013NTR203

March 14, 2002

Making Effective Use Of Mitigated Negative Declarations

Location: Sacramento, Ca

Sponsor: UC Davis Extension

Contact: 800-752-0881 www.universityextension.ucdavis.edu

Region: California

Audience: Professionals, academics, general interest

Cost: $85-$95

Notes: http://ucjeps.berkeley.edu/jepwkshp.html

March 19, 2002

ArcView in Forestry

Location: Beaverton, OR

Sponsor: Atterbury Consultants

Contact: 503-646-5393, 503-644-1683 jaschenbach@atterbury.com

Region: National

Audience: Professionals, academics, general

Cost: $175

Notes: http://www.atterbury.com

March 20, 2002 to March 21, 2002

ForestView

Location: Beaverton, OR

Sponsor: Atterbury Consultants

Contact: 503-646-5393, 503-644-1683 jaschenbach@atterbury.com

Region: National

Audience: Professionals, academics, general

Cost: $350

March 26, 2002

Internet for Agriculture

Location: Red Bluff, CA

Sponsor: Tehama County Resource Conservation District

Contact: TCRCD, 530-527-4231 Ext. 101

Region: Northern California

Audience: Farmers, ranchers, general

Cost: $5

October 8, 2002 to October 11, 2002

Sierra Nevada Science Symposium

Location: N. Lake Tahoe, CA

Sponsor: UC Wildland Res. Ctr., US Forest Svc., Nat'l Park Svc., UC Berkeley Nat History Museums & Ctr. For Forestry, UC Davis Info Ctr. For the Environment

Contact: Program: Peter A. Stine, 916-498-5378, pstine@fs.fed.us; Other: John Rippee 510-642-0095, rippee@nature.berkeley.edu

Region: California

Audience: Professionals, academics, general interest.

April 9, 2002

Digital Geological mapping: Revolution or Regression? George Brinhall, UCB Dept. of Earth & Planetary Science

Location: Stanford university

Sponsor: Peninsula Geological Society

Contact: Mike Diggles (650) 329-5404 mailto:mdiggles@mojave.wr.usgs.gov

Region: California

Audience: Professionals, academics, general interest

Cost: $26 for dinner, students $5

Notes: PGS Web page: http://www.diggles.com/pgs/

Projects and Plants Tour

The Tehama County Resource Conservation District is hosting a tour of projects they have funded for landowners on the west side of Tehama County. The tour will take place on Friday, May 31, 2002 from 9:00 a.m. to 2:00 p.m. and vans will be used to transport participants to the tour site. Tour guides and speakers will include University of California Cooperative Extension Advisor Marc Horney, TCRCD staff and landowners on whose properties the projects are located.

Stops on the tour will include sites where TCRD has funded a wide variety of projects for landowners in the Reeds and Red Bank Creek watersheds. There are stream bank stabilization projects, projects where pastures are being converted to perennial grasses, and a project to develop off-stream watering for livestock with a well, solar pump, storage tanks and water troughs. The projects are in varying stages of completion, so tour participants can see different parts of the process.

The common theme of all the projects is that they use a variety of plant materials to make them work. TCRCD is compiling a booklet of these plants and more, to help county landowners learn about these "beneficial" plants.

The plants in the booklet will cover riparian plants, wildlife or bird-friendly plants, and plants that will improve grazing conditions for livestock owners. Booklets will be available in the summer of 2002.

For more information, or to receive a flyer, call TCRCD at 527-3013 Ext. 101.

Livestock Carcass Disposal: More Than You Ever Wanted to Know

Over the course of this last year, I have received a number of calls regarding approved methods of livestock carcass disposal. Rendering is becoming more expensive and, increasingly, completely unavailable for some.

The California Department of Food and Agriculture's Meat and Poultry Inspection Service (http://www.cdfa.gov/ahfss/mpi/index/htm) is responsible for commercial livestock carcass disposal (rendering) in the state as defined in section 18650-18677 of the California food and Agriculture Code (http://caselaw.lp.findlaw.com/cacodes/fac/18650-18677.html). The Meat and Poultry Inspection Service views rendering or transfer to a rendering collection as the only legal means of disposal for livestock carcasses leaving the owner's property. Primarily, this is because it is the easiest way to control carcasses and, therefore, protect public and environmental health.

The California Department of Food and Agriculture does not itself regulate carcass disposal for animals that have *not* died from contagious diseases when the carcasses are disposed of on-site (on owner's property)**. That generally falls to local government - usually the county department of environmental health, although any agency tasked with public health or air (in case of incineration) or water pollution could get involved. The reality is that rural county departments are often too busy dealing with other genuinely pressing problems to invest the time that would be required to devise policies specifically for this particular issue. This pretty well leaves owners of livestock that have made unplanned departures with no clear options and an ambiguous threat of prosecution if a neighbor is alarmed by the ad-hoc solution.

Because many people are losing access to rendering services, we need to develop some responsible alternatives. The difficulty in devising those alternatives lies in finding a path through the tangle of regulations that the numerous health and environmental agencies have been tasked with implementing.

At the present time, it appears that responsibility for determining approved procedures for carcass disposal, other than by rendering in the State of California, tends to travel downhill to county departments of public health. Most of these are too busy dealing with other genuine problems to invest staff time that would be required to devise policies specifically for this particular issue.

The CDFA staff that I spoke with recently indicated that they would like to take action on this problem. They have requested any information that can be provided on the following questions:

- Why is rendering becoming difficult to use? Is the service not being provided or is it too expensive?
- What species of livestock are losing access to rendering services?
- What is the approximate volume of animals in the area that could potentially be affected?

This information will be used to help build a case that an immediate need is present so that staff and resources can be committed to developing some solutions as soon as possible.

To that end, I invite anyone who has had a recent experience being unsuccessful in obtaining rendering services to contact me and provide some of this information. I am specifically interested:

- County where rendering services were requested
- Species and age (juvenile/mature) of animal carcasses
- Estimate of how many time per year rendering services were utilized (or would have been utilized)
- Why rendering services were unavailable to you (outside service are, too small a load, expensive, etc.)

You can submit "Rendering Survey" comments by phone to the Glenn County Cooperative Extension Office (530) 865-1107; by e-mail to me at mrhorney@ucdavis.edu or by mail to P.O. Box 697, Orland, CA 95963.

**In the special case of animals suspected of succumbing to contagious disease, CDFA *does* regulate on-site carcass disposal. This is how the California Food and Agriculture Code reads:

- 9141. Any person that has the care or control of any animal that dies from any contagious disease shall immediately cremate or bury the animal.
- 9142. An animal which has died from any contagious disease shall not be transported, except to the nearest crematory. The transportation of the animal to the crematory shall be pursuant to such regulations as the director may adopt.
- 9143. An animal which has died from any contagious disease shall not be used for the food of any human being, domestic animal, or fowl.

In 1996, Dr. John Kirk (UC Extension Veterinarian) surveyed the on-farm carcass-disposal ordinances reported by Agriculture Commissioners in 32 of the 58 counties in California. Twenty of those counties had no ordinances regulating carcass disposal. Ordinances in the remaining 12 counties primarily addressed who was responsible, proper burial depth and water source protection. Misinformation and codes referencing outdated and ineffective practices were found in a number of ordinances. Below is a summary of his findings:

Summary of Suggested Rules or Guidelines For On-Farm Burial of Dairy Cows

This is a summary of suggested rules or guidelines for on-farm burial of dairy cows taken from those California counties which replied to the request to provide their current rules or guidelines. While at may be intrusive for those counties without rules or those counties whose rules are under revision, it is merely a summary and carries no authoritative weight.

Objectives
On-farm disposal of dead dairy cows in such a manner as not to become a nuisance on-site or to neighbors, to prevent spread of disease to other cattle and to protect the public health and safety.

Who is Responsible
Owner is responsible for burial in a timely and sanitary manner.

Timing After Death
Buried within a reasonable time period, i.e. 24-48 hours after death. Buried prior to creation of adverse public health or nuisance.

How Buried
Each animal should be buried in a separate pit, unless mass burial is found necessary in an emergency situation to protect public health or the health of other livestock or wildlife. State or Federal veterinarian should probably be responsible for declaring an emergency.

How Deep
Deep enough to cover the top of the carcass with 4-6 feet of compacted soil, earth or and in an area not likely to be disturbed in the near future.

Where
Far enough from standing or flowing or ground water to prevent contamination of these waters and in an area not likely to be disturbed in the near future.
Suggested set-backs:

- Property lines . . . . . 25 feet
- Streams, creeks, ponds, lakes(high water mark)100 feet
- Water wells, springs . . . . . 100 feet
- Ground water (min. distance pit-water) . . . . . 5 feet
- Major cuts or embankments . . . . . 25 feet
- Dwelling units . . . . . 100 feet
- Other structures . . . . . 25 feet
- Roads, highways . . . . . 0.25 miles
- Parks . . . . . 0.25 miles

Location of Burial Site
On a minimum of 5-10 acres to allow for proper setback and other restrictions.

Guidelines for Carcass Disposal - Manitoba, Canada

The information in the following section was taken from the Manitoba, Canada Department of Agriculture and Food website at http://www.gov.mb.ca/agriculture/livestock/pork, swine/bah07s00.html.

Rendering
Delivery to a rendering company is probably the best solution for disposal. If a processor is not nearby, however, the time and expense for traveling may make delivery impractical for small numbers of carcasses.

Rendering companies may have certain restrictions regarding the condition of the carcasses they process. In general, the carcasses should be brought in as quickly as possible in the summer time. Animals that die during the winter can be frozen and delivered to the renderer at periodic convenient intervals. Rendering companies will generally not accept carcasses that do not remain intact when handled. Depending upon the end product of the rendering process, there may be other restrictions on carcass quality and condition. Rendering companies that produce meat and bone meal and inedible tallow will usually accept animals regardless of the cause of death; other companies that produce an edible material may not. Refer to the telephone yellow pages directory under "Rendering Companies" for companies providing this service.

Burial
Burial is a suitable practice for summer. Dead animals can be placed in a trench which is then backfilled each time a carcass is added. Depending upon soil conditions, however, decomposition can be very slow, with a carcass remaining intact for five years or more.
Caution is therefore required for burial of dead animals. The burial site should be at least 328 feet from a watercourse, sinkhole, spring or any source of water used for domestic purposes. Areas with a high groundwater level or shallow aquifers must be avoided. Carcasses must be covered with a minimum of 3 feet of soil.

Composting
Operations utilizing composting of mortalities must be designed and managed in such a way that they do not cause pollution. Composting sites should be located at least 328 feet from a watercourse, sinkhole, springs or any source of water for domestic purposes.

Location of a composter should take the farm residence and any neighboring residences into account. While offensive odors are not usually generated in the composting process, the handling of dead livestock and compost on a daily basis may not be aesthetically pleasing. When locating a composter, moving the required ingredients to the composter, and removing finished compost from the composter. The composter site should be well-drained and provide all-weather capability for access roads and work areas.

Incineration
Incineration is an acceptable method of disposal if performed properly. For the dead animals to be burnt without creating an odor problem, the temperature of the incinerator must be sufficiently high. Incineration requires a large amount of energy to completely cremate a carcass.

Best Management Practices for Livestock Carcass Disposal, State of Minnesota

http://www.extension.umn.edu.administrative/disasterresponse/bmp96.html

- Carcass must be disposed of as soon as reasonably possible, i.e. within 48-72 hours.
- Burying a carcass requires that the carcass be 5 feet above the high water level and covered with 3 feet of dirt. Sandy or gravelly areas or areas within 10 feet of bedrock should be avoided.
- Incineration must be in an incinerator that is approved by the State Pollution Control Agency.
- Hauling over the road. Carcasses or discarded animal

parts must be in vehicles or containers that are leak proof and covered. The vehicles also need to be inspected and have a permit, unless the vehicle belongs to the owner of the animal before it died.

Composting must use the protocol set forth in Board rules. These are explained on the page about composting.

- Fur farms need a permit and inspected vehicle to haul carcasses or discarded animal parts over the road.
- Each carcass sued as pet food must pass an inspection by a veterinarian and must be processed under clean and sanitary conditions.
- Carcasses left at an off-site pickup point must be in an animal-proof enclosed area that is at least 200 yards from a neighbor's buildings. Carcasses must be picked up within 72 hours, except if the enclosed area is refrigerated to less than 45ºF, the carcasses must be picked up within 7 days.

Burial

Burial requires great care in site selection because as carcasses decompose, they release materials that can pollute ground water, particularly if large volumes are buried. This practice is most suitable for small amounts of material (e.g. less than 2000 lb./burial/pit/acre).

Advantages
- Inexpensive (if you own the necessary equipment).
- Biosecurity (no trucks coming from other farms to pick up carcasses).

Disadvantages
- Difficult in winter.
- Can cause groundwater pollution.
- Cannot bury where water table is within 10' of surface.

Recommendations
- Should not be used by large facilities or with catastrophic losses because of the volume of carcasses may lead to groundwater pollution.
- Examine other alternatives for dead livestock disposal.

DO:
- Cover with three feet of dirt and stay five feet above the water table.
- Cover each day's deposits with a layer of dirt.
- Identify sites for worker safety.

DON'T:
- Place in or near lakes, ponds, rivers, streams, wetland, ditches or wells.
- Use as a dump for other farm garbage.
- Bury in areas with a high seasonal water table.
- Bury in sandy beaches.
- Bury in areas subject to surface water flooding.

Incineration

Incineration is an effective but costly method, working well as a cold wether alternative.

Advantages
- Can use year-round.
- Biosecurity (no trucks coming from other farms to pick up carcasses.)

Disadvantages
- Incinerator cost.
- Fuel cost - expensive.
- Odor.
- Very expensive for larger size carcasses.

Recommendations
- Place your incinerator out of sight or enclosed with a decorative screen.
- Consider the wind direction and time of the day, so as to least effect your neighbors.

DO:
- Purchase an approved incinerator (one that conforms to state and local air pollution control agency guidelines).
- Purchase unit large enough to handle expected volumes of mortality.
- Properly maintain unit.
- Incinerate mortality daily.

DON'T:
- Accumulate carcasses for days before incinerating.
- Incinerate when down-wind neighbor is having a barbecue, etc.
- Forget to pay your gas bill.

Public Relations

Most problems from incineration come from the odor of burning hair or feather that interferes with a neighbor's

outdoor activities.

Rendering

Rendering offers the grower the chance to create a recyclable feed product if it is submitted to the renderer with proper handling.

Advantages

- Recyclable resource.
- Can use year-round.
- Cost.
- Not available in all areas.
- Not available for all species.

Disadvantages

- Lack of biosecurity with pickup of carcasses.

Recommendations

- Get on an annual contract with the renderer rather than a "per call" charge.
- If large enough farm, get on a scheduled weekly or twice weekly pick-up route.
- Use "off-site" pickup points for biosecurity purposes.
- Consider refrigerated "off-site" pickup points.

DO:

- Know what substances the animals were exposed to, to avoid residue problems in the rendered product.
- Follow Board of Animal Rules for "off-site pickup point".
- Must be animal-proof enclosure at least 200 yards from neighbor's buildings.
- Carcasses may not be left for more than 72 hours unless refrigerated - then 7 days.
- Be aware of potential disease spread from a rendering truck.
- Vehicles or containers must be leak-proof and covered to haul carcasses over the road. (Contracted vehicles also need a permit from the Board of Animal Health.).

DON'T:

- Delay calling for carcass pickup.
- Leave carcasses where other animals can drag them off.
- Leave carcasses in public view.

Public Relations

What upsets neighbors the most are carcasses left where other animals can drag them into their yards or where the carcasses can be seen from the road. "Off-site" pickup points are required to be animal-proof enclosures.

Composting

Composting is the process of placing carcasses in layers with a carbon source and manure to allow the natural heating process to break down the carcass and reduce its mass. As of January, 1996, composting is allowed (IN THE STATE OF MINNESOTA - NOT CA) for swine, sheep, goats, and poultry.

Advantages

- Biosecurity.
- Year-round use.
- Inexpensive.
- Environmentally sound.
- Value - added product to sell or use.
- Best and recommended method to handle catastrophic losses.
- Heat of composting process kills pathogens and insect larvae.

Disadvantages

- May be more labor-intensive.
- Requires impervious pad, rot resistant walls and cover to repel rain.
- Takes some practice to develop the "art".
- Requires carbon source (straw, sawdust, cornstalks, etc.).

Recommendations

- Composting is an "art" that must be practiced because of the variety in materials, weather conditions and number of carcasses. It is best to have the same person doing the composting to consistently read the pile.

DO:

- Follow protocol as specified in Board of Animal Health rules.
- Process mortality daily.
- Keep carcasses covered and at least 6" from sides.
- Take and record temperature daily (must reach 130ºF).
- Start with a base of carbon source material.
- Put carcasses, litter and carbon source in layers.
- Mix pile at least 1 time when the temperature starts to decline; this will generate a new heat cycle after each mixing.

DON'T:

- Use frozen carcasses for composting.
- Store carcasses before processing.

Public Relations

Build composter out of sight and away from neighbors. While a compost pile that is working right will have no smell and no insects, it may bother neighbors to see carcasses going into it on a daily basis. Convince your neighbors to use the finished compost for their gardens (before you tell them what is in it.).

Purple Starthistle Eradication Effort

The Colusa and Glenn County Agriculture Departments are seeking help from residents and landowners who can help them locate purple starthistle colonies in the area for eradication. Purple starthistle is a relative of yellow starthistle that is more robust, has larger thorns and prefers better soils.

While yellow starthistle is an annual plant, purple starthistle generally behaves as a biennial or short-lived perennial. The following article explains in more detail the ecology and management of the plant. The Colusa and Glenn County Agriculture Departments can provide assistance to landowners in controlling this noxious weed. For information from them, call John Richter (Colusa County) at 458-0580 or Ernie Simpson (Glenn County) at 934-6501.

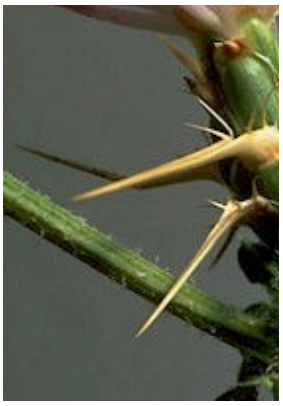
Integrated Vegetation Management Technical Bulletin: Purple Starthistle

Source:
Integrated Pest Management Professional Association
E-Mail: ipmpa@efn.org
URL: http://www.efn.org/~ipmpa
Phone: (541) 345-2272

Description
Purple starthistle,*Centaurea calcitrapa,* is primarily a biennial plant (rarely an annual) that is highly branched and can grow approximately 1 to 2 feet tall in productive soils. Stems and leaves have fine, cobwebby hairs that fall off with time, giving older leaves a smooth appearance. Leaves are long and divided into narrowly linear segments, tapering at the tip. Purple starthistle's scientific name comes from the word "caltrop", an ancient weapon with four spine-like projections that was used against mounted warriors. As its name suggests, the purple flowers are protected by sharp, straw-colored spines about one inch long. Purple starthistle can be distinguished from its close relative, the yellow starthistle, mainly by flower color. Occasionally, flowers of both plants may be pale. In this case, or when the flower has not yet bloomed, the yellow starthistle can be distinguished by the wing-like leaf margins on the stem (Robbins, Bellue, and Ball 1951).

Damage
Purple starthistle is unpalatable to livestock because of its poor taste and its spine-covered flowers and seedheads. Unmanaged purple starthistle populations threaten the quality of grazing lands, dominate the most productive lands, reduce forage production, and crowd out native plant habitat. Animals avoid purple starthistle infestations, causing a loss in grazing potential and a reduction in the cattle-carrying capacity of rangeland. In parklands, purple starthistle reduces recreational use (Beck 1993; Amme 1997; Abbors 1997).

Distribution
Purple starthistle is native to the Mediterranean region, southern Europe, and northern Africa. It was accidentally introduced to North America



early this century, and has since become a widespread problem throughout California, particularly in Solano, Napa, Sonoma, and Marin Counties. Spotty distributions range from Humboldt County in the north to San Diego County in the south. Purple starthistle is present in Idaho, New Mexico, Arizona, Washington and Oregon, where it is established, but not yet a serious problem. Look for purple starthistle in waste sites, moist, grazed areas, uncultivated fields, and along traffic corridors such as roadsides and cattle trails (Amme 1982, 1985).

Life Cycle
Purple starthistle is a biennial plant, spending roughly one year as a prostate rosette stage before bolting and flowering. Purple starthistle can also have an annual cycle, but this form is rare. Purple starthistle is adapted to dry conditions and grows long into the summer months. It usually produces flowers from June to August after annual grasses have seeded (flowering times will vary according to climate). In moist years, purple starthistle flowers later in the summer, and in dry years it flowers earlier. Seeds develop soon after bees visit the flowers. Because purple starthistle seeds have a reduced "pappus", a structure that facilitates seed dispersal, most seeds fall near the parent plant, creating a reservoir of seeds (seed bank) in the soil that can remain viable fro many years. Since seedheads break off easily, animals, vehicles, or moving water can disperse them. Seedheads are particularly well suited for sticking to rubber

tires, where they may be carried great distances by vehicles and harvest machinery (Amme 1997; Abbors 1997).

Special Challenges to Management
Purple starthistle seeds can remain dormant in the soil for many years; thus, constant observation and management is necessary to control present and future outbreaks. Long-lasting seeds allow purple starthistle to re-invade an area where they have been absent for 2 to 3 years, particularly after heavy rains following a drought year. Viable seeds can be lodged in deep cracks in the soil. During heavy rains, the buoyant seeds float to the upper layers of the soil and germinate. In addition, control measures are complicated by the lark sparrow, which selectively nests in purple starthistle infestations. Purple starthistle cannot be controlled solely by insects or pathogens; therefore, successful management requires an integrated approach that includes continual monitoring, physical removal, and herbicide spot treatments.

Biological Controls
Currently, there is no biological control program for purple starthistle. Two insects that have been introduced to control other *Centaura spp.*were observed feeding on purple starthistle; however, they do not specifically control purple starthistle. Although *Larinus minutus,* currently used to control diffuse knapweed, and *Bangasterus orientalis,* a predator of yellow starthistle, will feed on purple starthistle in the absence of their primary host, their effect on purple starthistle density is unknown (Jordan 1995; Sobhian 1993).

Pathogens
Puccinia jaceae is an airborne rust fungus that is used as a bio-control agent for yellow starthistle and some knapweeds. The fungus also attacks purple starthistle leaves, reducing leaf longevity. Despite attack, purple starthistle naturally has a short leaf life span and can withstand rust infection with little change in root biomass. Purple starthistle plants still survive and the fungus' effect on purple starthistle is largely unknown (Shishkoff and Bruckhart 1993).

Grazing
Although goats and sheep have been used to control yellow starthistle and other weeds, purple starthistle is more palatable and there are no documented studies of purple starthistle grazing. Grazing is unlikely to be an effective control for purple starthistle; however, if goats and sheep can be coaxed to eat purple starthistle, grazers may be helpful in moderate infestations (Abbors 1997; Amme 1997).

Physical Controls

Manual Removal
When beginning a manual removal project, flag the treated areas so they can be identified for follow-up in subsequent seasons. It is easiest to work in relatively small areas of infestation. When faced with dense and/or extensive stands of purple starthistle, it is useful to divide them into grids (with flags, stakes, etc.) so that workers can thoroughly weed smaller areas before moving onto the next grid. The grid system also facilitates dividing work activities between those pulling and those removing debris. Manual removal is more effective on individual purple starthistle plants such as outliers and new invasions. Because manual removal is labor intensive, it is applied mostly to small populations of less than 100; however, with greater efforts, labor and resources, larger populations can be successfully removed by hand.

Manual removal should be applied selectively to avoid excess soil disturbance, which may lead to a favorable environment for weeds to become established. Exposing and mixing soil layers can also bring buried seeds to the soil surface and stimulate seed germination. Rosettes can be found mixing in with bolting plants during the following season of treatment and both can be removed at the same time.

The tough roots of purple starthistle can be severed by a tool called a "pulaski", a long-handled hoe commonly used by firefighters. The pulaski is the only tool that can penetrate compacted soil and slice through the base of the plant. To kill purple starthistle and prevent re-sprouting, chop the root deep enough so that the root crown is cut out and you no longer see any purple color in the stem, at least 3 inches below the base of the plant (Amme 1985; Amme 1997; Abbors 1997).

Purple starthistle can't be removed during a stage of a plant's life cycle. It is more effective to concentrate efforts on older, larger, and more conspicuous plants rather than rosettes that are difficult to find. Remove plants before seeds are formed to prevent the spread of new seeds. Continual monitoring will catch rosettes when they bolt. If plants are removed late in the season, after bees visit flowers, it is important to dispose of the plants quickly or to put them in plastic bags to prevent the spread of viable seeds (Amme 1985; Abbors 1997).

Mechanical Removal
Mowing is largely ineffective against purple starthistle. If infested areas must be mowed, such as recreational areas, lawns, and field, the best time to mow is from mid to late summer when purple starthistle has low re-sprouting ability. Avoid mowing infested areas in early spring, particularly before Memorial Day in May for park goers. This will cause

re-sprouting populations to explode and eliminate grassland competition (Amme 1997).

Integrated Pest Management Example

Successful purple starthistle management involves treating current weed problems and employing preventive measures against future weed invasions. The East Bay Municipal Utility District (EBMUD) has eliminated many heavy purple starthistle infestations near San Francisco. The program involves a long-term commitment to continual monitoring, treatment according to thistle levels, and preventive measures against seed invasion. Conspicuous plants are treated before they set seed in order to exhaust the seed bank. Continual monitoring identifies young plants when they bolt. Purple starthistle may not be totally eradicated, but populations can be kept at very low manageable levels.

Steve Abbors, Manager of Watershed and Recreation at EBMUD, outlined a successful long-term management procedure using an integrated approach to control purple starthistle:

- Identify problem areas
- Map problem areas and update maps yearly
- Use an integration of treatment methods
  - Spot treatment on dense populations using herbicide with a non-toxic biodegradable dye (Blazon) as a marker.
  - Physical removal of outlier plants and new invasions with a pulaski before flowers open.
- Prevent weed growth and future seed dispersal into treatment area
  - Buy certified weed-free hay.
  - Thoroughly clean vehicles with high pressure water before moving to new non-infested areas.
  - Bag dead plants to prevent seeds from escaping into treatment area.
- Monitor regularly and apply treatment when necessary. Assess and re-map the area regularly. After 5 to 7 years of consistent treatment and depleting the seedbank, purple starthistle populations dramatically crashed.

Chemical Controls

In IVM programs, herbicides are considered transition tools that enable the manager to suppress weeds and replace them with desirable, competitive vegetation. Thus, it is important to select the least-toxic, low-residual herbicide that is effective against the target weed, and to apply them in a judicious manner.

Proper Timing

Applying herbicide to plants when purple starthistle is most susceptible (preferably before are produced) is crucial to the effectiveness of the treatment. Herbicides are best applied when plant food reserves are at their lowest, just after the plant bolts but before flowers set seed. Treat purple starthistle before bees visit flowers to prevent seed production. In California, purple starthistle bolts around late May (times will vary depending on climate). Apply herbicides directly to the tops of individual plants. Use just enough herbicide to cover the tops of the plant, but not so much that it drips onto the vegetation below. The vegetation is important in re-colonizing the site after purple starthistle is controlled. If surrounding plants are killed, purple starthistle can re-colonize the bare patches. Add a non-toxic, biodegradable dye to the herbicide to facilitate even coverage and identification of treated plants (Amme 1997; Abbors 1997).

Because purple starthistle flowers after annual grasses have seeded, a non-selective herbicide can be used with minimal impact on annual grasslands. For larger populations, use a selective herbicide.
To minimize negative impacts on humans, wildlife, and the environment, apply herbicide with a wick applicator or backpack sprayer. In riparian areas, remove purple starthistle manually, since moist soils will facilitate pulling.

The Nature Conservancy "Good Neighbor" Management Planning Tool

On January 3, 2002, The Nature Conservancy held the first of a series of public meetings intended to help the organization develop management plans for its conservation sites on the Sacramento River. The Nature Conservancy would like to explore options for conservation site management that would protect other landowners in the area from adverse impacts resulting from restoration projects. Farmers and landowners in the area are invited to come to these meetings with questions and suggestions for the process.

TNC has established a website for the management Planning Tool process (www.sacrivermt.org) where they are posting notes from the meetings and copes of the management plan documents as they develop.

For more information, contact Dawit Zeleke at The Nature Conservancy's Sacramento River Project office in Chico at 897-6373 or dzeleke@tnc.org.

Farm Bill & Conservation News

The U.S. Department of Agriculture is accepting applications from producers who wish to apply conservation practices to their land for the Environmental Quality Incentives Program (EQIP). This year, four locally identified geographical priority areas (GPA) received cost-sharing funding in Butte and Glenn Counties.

- **Integrated Orchard Management GPA** - for producers interested in reducing or eliminating the use of organophosphates (OP's) by using integrated pest management techniques. These techniques include mating disruption, releasing beneficial insects, and planting cover crops.

- **The Colusa Basin Drainage District** - for those who would like to address flooding and water quality concerns in Glenn, Colusa and Yolo Counties.

- **Upper Sacramento Dairy GPA** - for those who would like to address dairy waste and nutrient management. This GPA covers Glenn, Butte and Tehama Counties.
- **Butte Fuel Management GPA** - for landowners interested in field reduction and decreasing wildlife hazard. This GPA is for Butte County only.

This program is available for any ranch improvement, with 50% of the funding allocated for rangeland improvements.

Projects could include fencing, spring development, solar pumps, brush removal, road improvement, or anything which enhances rangeland, reduces erosion, or improves water and forage quality.

The ranking and selection of applications will be based on resource conservation benefits the producer offers versus the cost of the proposed project. Producers who qualify for the program will receive 50% to 75% of the cost of approved conservation practices. Terms of the EQIP agreement allow each producer to receive up to $50,000 for a 5 to 10 year contract.

The deadline to sign up is March 15, 2002. If you are unable to meet the deadline, you are encourage to contact your local FSA or NRCS office to work up a plan for next year. Sources indicate that the new farm bill could provide twice as much funding for next year, so by having a plan in place, ranchers and farmers will have their projects ready to be ranked for funding.

If you are interested in learning more about the program, please contact any of the Farm Services Agencies or NRCS offices listed below:

- USDA Service Center - Glenn County
  132 N. Enright Ave.
  Willows, CA 95988
  (530) 934-4601 Ext. 2 or 3

- USDA Service Center - Butte County
  150 Chuck Yeager Way, Suite D
  Oroville, CA 95965
  (530) 533-4401 Ext. 2

- USDA Service Center - Colusa County
  100 Sunrise Blvd. - Suite B
  Colusa, CA 95932
  (530) 458-2931 Ext. 102

Important Dates to Remember

- Sheep Day: Saturday, March 2, 2002 at CSU, Chico Farm
- Tehama County Cattlemen's Association Spring Field Day: Saturday, March 23, 2002
- Glenn-Colusa Wool Growers Association Spring BBQ: Sunday, April 7, 2002

California Livestock Market Review Available Online

The California Agricultural Statistics Service publishes a monthly summary of livestock markets in California and other western state. That publication can be accessed online at http://www.nass.usda.gov/ca/rev/lvstk/indexlv.htm. If you would prefer to have summary reports e-mailed or faxed to you instead, contact the Glenn County Cooperative Extension Office and ask to be put on the livestock market list. The same is true for the Livestock Monitor which summarizes national livestock markets.

Mendocino National Forest Roads Analysis Process

On February 5, 2002, the Mendocino National Forest staff held a meeting in Willows to discuss a Forest-Level Roads Analysis Process (RAP) currently being undertaken. The Forest Service staff are working through a process of determining which major forest road segments can be decommissioned or reclassified top lower maintenance levels in the case that budget shortfalls require cutbacks in road maintenance. Under consideration at the Forest-scale are

key dirt or paved roads used as major transportation routes for standard passenger cars. Roads that are expensive to maintain, have significant negative impacts on forest resource, and/or duplicate other less costly access routes, will be listed for possible future reclassification or decommissioning. Mendocino National Forest staff members are soliciting input from forest users about considerations that should be included in the analysis, and ideas for reducing maintenance costs and impacts of roads on the environment.

For more information on the process, you can consult the web page being maintained at www.r5.fs.us/mendocino/mnf_mgmt.htm or contact Mike Van Dame at:

Mendocino National Forest
825 North Humboldt Avenue
Willows, CA 95988
(530) 934-1141
mvandame@fs.fed.us

PLEASE NOTE!

The Land and Livestock Newsletter is now available on the University of California Glenn County Cooperative Extension website at:

http://ceglenn@ucdavis.edu

Check It Out!