

Colorado LTAP

July 2004

Serving local transportation agencies throughout Colorado

SPECIAL EDITION

Planting Grass in Roadway Ditches



Roadside grasses can reduce erosion and weeds while increasing wildlife cover.

By Kevin Scott, Phillips County

Ofentimes roadside vegetation maintenance includes frequent mowing, blading, and herbicide application, which are time-consuming and expensive. Some methods of erosion control can encourage invasion and domination by noxious, undesirable, and highly invasive weeds. This can lead to unsightly ditches, and much erosion and siltation. Also, the general public is increasingly concerned with the roadside use of herbicides and their possible health implications. Once established, perennial grasses planted along roadway ditches can not only reduce erosion and fire hazard, but also provide forage and wildlife cover, and preclude the establishment of seedlings of most agricultural weeds.

Phillips County road crews have employed the method of planting grass in roadway ditches for the past 10 years. Various perennial grasses have different

environmental optima and tolerances and varying growth habits. The types of grass planted by the County are *Smooth Brome*, *Switch Grass*, or *Crested Wheat*.

Smooth Brome



A leafy perennial, this grass grows 1.5 to 3 feet tall. It starts growing in early spring, flowers May to July, and may regrow and reflower in the fall if moisture is sufficient. There are two types of smooth brome grass. The southern type is common to the U.S. and Great Plains area, while the northern type grows in Canada. Smooth brome is best adapted to fertile, loamy, deep soils including stony loams where there is at least 16 inches of rainfall annually; in low rainfall areas, some irrigation may be required. Excellent forage, smooth brome is a good grass for feeding cattle because it has a lot of protein. A provisional model for managers who

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Routing Slip

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Program Manager's Corner

Welcome Summer!

We hope everyone is having a productive and SAFE construction period. The staff at Colorado LTAP is working hard to schedule upcoming Fall and Spring classes.

As a reminder, please complete and return the annual needs assessment survey that was sent out in June. Your responses are used to develop upcoming training courses, materials and events. It is our intent to develop a program that best benefits your agencies tasks.

Many of you have just one class left to complete the Road Scholar and Supervisory Skills programs. Lindsay is the training coordinator and will be happy to answer any questions you may have regarding the courses you've taken. She can print course listings by student or agency and can inform you of what you might need to graduate. We are anxious for many more graduates this Fall.

We look forward to seeing you back at training in August!



Quotes of the Day

Better a thousand times careful than once dead.
~Proverb

We now have unshakable conviction that accident causes are manmade and that a manmade problem can be solved by men and women.
~W.H. Cameron

Road Sense is the offspring of courtesy and the parent of safety.
~Australian Traffic Rule

The first solution to a process safety problem should always be to get rid of the hazard, not control it.
~Dennis Hendershot



<http://ltap.colorado.edu>

Visit Colorado LTAP online today for online training, class registration, free lending library, and more.

Watch Out for Wildlife Wildlife Crossings Toolkit

Many Highways on or near National Forest System lands wind their way through excellent wildlife habitat. Florida's highways slice through rare black bear habitat. Alaska struggles with moose-vehicle collisions. Grizzly bears in the northern Rockies are killed on highways or avoid crossing them to reach other parts of their recovery zones. U.S. Department of Agriculture (USDA) Forest Service wildlife biologists and transportation planners wrestle with how to plan wildlife-friendly highways or reduce impacts from those already on the landscape.

San Dimas Technology and Development Center has partnered with Utah State University, the Western Transportation Institute, and the U.S. Department of Transportation Federal Highway Administration to create a toolkit that provides assistance. The Wildlife Crossings Toolkit is an online source of excellent information on wildlife/highway interactions. The toolkit contains two major sections.

Case Histories

The first is a fully searchable database of case histories from around the world of projects that have considered wildlife in the planning or retrofitting of solutions to highway-caused impacts to wildlife. Most of the case histories show how engineers and biologists have worked together across disciplines to solve some almost intractable problems. Other histories show how projects have worked better: each account has a section on how the planners would have proceeded



differently. Most case histories contain plans, drawings, and images from the projects for engineers to use as a starting point for their own work.

Resources

The second major part of the toolkit is comprised of articles and links to resources that will help engineers and biologists quickly find information on highway impacts to wildlife and successful solutions to reduce those impacts. Relevant articles by the world's experts explain concepts in clear, concise terms understandable to both disciplines.

The toolkit is designed to encourage engineers and biologists to work together for innovative solutions. An extensive illustrated glossary and standardized terminology help foster this effort.

The Wildlife Crossings Toolkit was the major source material for the FY03 training session *Innovative Solutions to Wildlife/Highway Interactions*.

Check out www.wildlifecrossings.info

For more information, contact:
Transportation Management Program Leader
San Dimas Technology & Development Center
444 East Bonita Ave, San Dimas, CA 91773

Critter Crossings is an excellent primer on crossing structures and some of the success stories around the world. It can be seen at FHWA's website or can be obtained from FHWA as a glossy brochure. The Wildlife Crossings Toolkit Database provides more information for most of the examples listed in the Critter Crossings brochure. Critter Connections is a website under development by the USDA Forest Service that complements Critter Crossings by looking at the other side of wildlife crossing structures, i.e., the importance of connectivity and some of the basic principles to consider.

<http://www.fhwa.dot.gov/environment/wildlifecrossings>

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FHWA Roadside Vegetation Resources

Roadside Vegetation Management Program, website at www.fhwa.dot.gov/roadsides

Greener Roadsides, a quarterly newsletter for roadsides decision-makers.

Roadside Use of Native Plants Handbook online at www.fhwa.dot.gov/environment/handbook.htm

Vegetation Control for Safety, this handbook offers safe ways to mow, cut brush, and control vegetation to increase traffic safety. Available online at <http://www.fhwa.dot.gov/tfhrc/safety/pubs/90003/intro.htm>

Did You Know?

Roadside rights-of-way account for more than 10 million acres of land in the United States.

Planting Roadside Grasses

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choose to control smooth brome through the use of prescribed burns is provided at:

<http://www.npwrc.usgs.gov/resource/2000/sbrome/sbrome.htm>.

Switch Grass

This silver-blue perennial grass grows 3-5 feet tall, turning yellow in the fall. Switchgrass is easily identified by its wide, large seedhead. It is best grown in full sun and fertile dry or wet soils, however, the more moisture, the taller it will grow. One of the last grasses to start growing in the spring, it blooms in late July or early August and can be cut for winter hay. Widely used for wildlife habitat improvement, switchgrass is used as nesting areas for pheasants, quail and rabbits. Pheasants Forever Inc., a non-profit conservation organization dedicated to the protection and enhancement of pheasant and other wildlife, prefer that switch grass is planted for pheasant cover. Switchgrass seeds also provide food for many birds and animals; it is readily consumed by livestock.

Crested Wheat

Crested wheatgrass grows 1-3 feet with leaves 6 to 10 inches long which are abundant at both the base and along the stems. It is deep-rooted and well adapted to the Northern Plains and higher elevations of the Rocky Mountains. Crested wheatgrass has been found to germinate and grow quicker than many native grasses, but

may not grow well in areas with excessively alkaline or heavy clay soils. It flourishes in areas with little water and is therefore valuable for revegetation because of its drought resistance and winter hardiness. All varieties of wheatgrass have been found to be very resistant to fire, drought, cold temperatures, and heavy grazing. Once established, it is very low maintenance requiring little mowing. It is effectively used in suppressing weeds, especially cheatgrass.

Each of these deep rooted grasses is excellent for soil erosion control and can be used for rehabilitation of rangeland/wildlife habitat, roadside seeding, and watershed stabilization.

Perennial Grasses as Roadside Cover Crops to Reduce Agricultural Weeds, by R.L. Bugg, addresses additional situational applications of other perennial grasses and is available online at:

<http://www.sarep.ucdavis.edu/newsltr/components/v2n1/sa-11.htm>.

Planting roadside grasses works well with a ditch with a nice slope as shown in Figure 1. However, it works best after a road has been elevated as shown in Figure 2. Most of the time the County plants just the sides of the ditches, but occasionally the bottoms are planted as well. The best time to plant is in cool months between October and April; during the late fall when temperatures are cool enough to prevent seed germination and soils are dry enough for successful seed planting.

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Figure 1: Nice slope



Figure 2: Elevated roadway



Incorporating Grasses into Clear Zones

By Bonnie L. Harper- Lore, FHWA

The clear zone is "the roadside border area, starting at the edge of the traveled way, that is available for corrective action by errant vehicles" (1991 AASHTO Guide for Transportation Landscape and Environmental Design). The designed width of the accident recovery area is determined by the speed limit. No objects, including trees of more than 4" diameter, are allowed within this zone.

As a logical result, the clear zone (not the entire right- of- way) of a roadside is generally maintained as grassland that can be mowed to prevent encroachment by potentially hazardous trees and shrubs. It has become common practice to keep these zones of roadsides mowed continually. The consequences include: high maintenance costs, mower/vehicle accidents, monocultures of grassy vegetation, and a "front lawn" expectation from the traveling public. In the urban environment, that expectation relates well to adjacent designed and manicured landscapes.

In the rural environment, beyond the city limits, that expectation does not relate to the adjacent landscape. I submit that, since clear zones are not scientifically proven, common sense would tell us that planting large trees and shrubs near the traveled way is asking for trouble. However, rural recovery areas can be safe as well as interesting, diverse and require less maintenance attention if they are planted in native grasses and forbs. Incidental consequences include: regionally recognizable vegetation, a seasonally dynamic landscape, habitat for small mammals, songbirds and insects, deep-rooted erosion control, water quality improvement, and preservation of our natural heritage. If highway users understand this unmowed grassland and its environmental ramifications, they are likely to be supportive. That has been the experience of States like Iowa, Wisconsin, Illinois, Minnesota, Utah, Oregon and Florida. Using native wildflowers and grasses in clear zones makes common sense!

All States have some native grassland community (some called prairie or meadow) within their State. Those grasslands include both native grasses and wildflowers (forbs). Using what is native to your State makes ecological sense. But natural regions change within a State due to climate and geology. The State of Texas has 26 natural regions. You understand why one grass seed mix might not be successful in all 26 regions. The likelihood of finding one grass seed mix for landscaping, erosion control, mitigation, or revegetation purposes is low. This native grassland can be achieved without planting in many regions. By allowing existing seed in the roadside seed bank and adjacent seed sources to grow, a native landscape can be encouraged. However, segments of roadside must be analyzed before using a hands- off approach to vegetation management.

Many roadsides and adjacent lands have been highly disturbed and have no native seed in the soil. To allow these areas to grow up will only result in stands of nonnative invasive species, many of which are on noxious weed lists. Care must be taken in this approach.

On the other hand, if native grass and forb seed does exist and would flourish without mowing, you have discovered the cheapest way to revegetate your roadside with native plants. The only caution is to watch for noxious weed invasion during the early stages, and to control those weeds quickly or they will persist and compromise the natural vegetation.

Bonnie L. Harper- Lore will be teaching Colorado LTAP's *Roadside Vegetation Maintenance* course, August 30 in Grand Junction, and August 31 in Castle Rock.

Clear Zones Defined

A *clear zone* is defined by the MUTCD as the total roadside border area, starting at the edge of the traveled way, that is available for an errant driver to stop or regain control of a vehicle.

The *traveled way* is the portion of the roadway not including shoulders.

The *width* of the clear zone is dependent upon speed, roadway geometry and traffic volumes, and is measured from the edge of the traveled way to the nearest obstruction or the beginning of a non-traversable slope. Therefore, shoulders *are* part of the roadside clear zone.

For safety purposes, utilities, mailboxes, signs, trees, bridge supports, and other hazardous objects should not be located within the clear zone.

Did You Know?

Noxious weeds comprise 8-47% of the total plants in most states. Of the 1,300 native species of plants in Colorado, 10% have been displaced by nonnative weeds.

Gaining Public Support for Roadside Use of Native Plants: Ways to Increase Public Awareness

Bill Johnson, NC DOT

1. Start in a focused manner. Pick a special event or program to focus on.
2. Whatever you do, be successful. Look at every detail of the plantings you are undertaking. Remember, color is king and large solid splashes will make you successful.
3. Pinpoint who are the likely support groups for your roadside enhancement program. Involve as many of these groups as possible from start.
4. Crank up your department's public relations machine. Develop news releases during blooming periods, identify flowers and where they are in your area, develop a roadside plant handbook. Enlist public support in every way possible.
5. Develop slide presentations and videos that can be used at speaking engagements for local garden and civic groups; get to the grassroots level to garner support for your program.
6. Develop a packet of info in your central office; be prepared for a flood of calls regarding your great work!

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County crews first started by broadcasting the seed, but now have a grass drill to use, which results in a more even stand. Seeds should be planted about 9-15 pounds per acre. Considering both sides of the road, this results in approximately 2.4 acres per mile. It takes about 3 years to get a good stand established. After it is established, mowing should wait until July to allow the grass to reseed itself. All herbicides should be avoided for the first 3 years, and flags should be placed to inform landowners not to spray the ditches. An example of these flags is shown in *Figure 3*.

Planting grass in roadway ditches is a successful method for maintaining ditches, and is a natural and effective alternative to herbicides, thereby gaining the approval of many community groups and farmers.



Figure 3: Do not spray warnings

Related materials in the LTAP library:

Videos

Reading Beyond the Traveled Way

Books

Roadside Use of Native Plants

The Nature of Roadsides and the Tools to Work with It

Best Practices Handbook on Roadside Vegetation Management

Establishment, Protection, & Reestablishment of Urban Vegetation

Common Roadside Invasives: Roadside Field Guide to Showy Herbaceous Weeds

Municipalities Liable for Obstructed Road Sign

A Wisconsin Appeals Court decision found a county, a town and a property owner negligent in an auto crash where a driver ran a stop sign that was obstructed by an overgrown tree. The court ruled that they were guilty of maintaining a public nuisance saying that the condition had existed long enough and should have been removed. The court defines a public nuisance as "anything that encroaches on the safe use of a public space."

The court rejected the county's three defense arguments: 1) although the county had erected the sign, they were not responsible because the road was maintained by the town, 2) the tree was on private property and the county had no right to trim it, and 3) the county did not know there was a problem.

How can local agencies keep signs and roadsides safe and prevent liability claims? Insurance companies recommend developing a way for workers who are out on the roads every day to document safety hazards and to correct the conditions.

Records also should be kept of the corrective actions taken. In addition,

they need a system for notifying others who might be responsible--the private owner or another unit of government.

Reprinted with permission from the Summer 2003 issue of LTAP Matters.



This "Mail Truck Stops in Roadway" sign might not seem too critical in and of itself, but this sign is located on the approach to a hillcrest where speeds are around 50 mph, and if there was a stationary vehicle just on the other side of this hill, the sign *would* be critical. This sign is barely readable from five feet in front.

Vegetation Control for Safety

During the growing season, grass, weeds, and brush often limit a driver's view of approaching vehicles. Likewise, lush vegetation can act as a screen that hides pedestrians and bikers from drivers and vice versa. Be alert for places where vegetation needs to be cut back.

Goals for Vegetation Control

The main goals for vegetation control include:

- > Keeping signs and vehicles visible to drivers as well as pedestrians and bike riders in cross walks, at street lights, at uncontrolled intersections, and on bike paths.
- > Helping pedestrians and bike riders see oncoming traffic more easily.
- > Improving winter road maintenance in snow and ice arenas.

Light of Sight Clearance

Drivers approaching an intersection need a clear line of sight along crossroads early enough to see any conflicting vehicles, pedestrians, and bicyclists to avoid a collision. Drivers also need an unobstructed line of sight to any roadside signs or hazards far enough in the distance to allow them to react safely to each situation.

Keeping Signs and Traffic Control Devices Visible

Suggested maintenance steps:

1. Look for signs and other traffic control devices blocked by brush, trees, grass, or weeds when on routine maintenance patrol. Often a small branch from an overhanging tree or some bush near the sign is all that needs to be cut back. If vegetation along the ditch or shoulder blocks a driver's view of a sign, then cut enough to allow a driver sufficient time to see the sign and respond to its message.

If your agency has a policy on how far from a sign vegetation has to be cleared for a safe view, then follow that policy. If you do not have such a policy, the following chart is a suggested guideline to allow a driver 3-5 seconds

to read and respond to the sign.

Critical signs include: STOP, YIELD, DO NOT ENTER, ONE WAY, WRONG WAY, and other regulatory signs. Non-critical signs are destination guide signs, parking regulations, advance warning signs, and similar warning or information signs.

Speed Limit (MPH)	Noncritical Signs (ft)	Critical Signs (ft)
30	150	250
40	200	350
50	250	450
60	300	600

2. Pull maintenance vehicle off the traveled lane and place temporary traffic control.
3. Cut or trim trees, brush, weeds, or grass to clear a driver's line of sight to the sign or traffic control device. Always wear protective leather gloves, safety glasses or goggles, safety vests, hard hats, and leather boots (not sneakers or soft shoes).
4. Paint the stubs of brush or small trees with a weed killer solution to keep vegetation from growing back.
5. Collect limbs and large brush to haul away for disposal or run them through a chipper if available.
6. Look for moving traffic when removing the temporary traffic control and leaving the site. Drivers may not realize you are through working and probably will not expect you to pull onto the traffic lane.
7. Watch especially for overhead power lines and electrified farm fences when cutting brush. Never touch a wire farm fence when an electrical storm is in the vicinity of your work.

Suggested Equipment

Leather gloves to protect your hands from cuts and nicks.

Hard hat to protect your head from a falling limb or flying debris during cutting and clearing.

Safety glasses or goggles to protect your eyes from flying chips or particles during cutting and clearing.

Safety vest to reduce accidental injury by vehicles and hunters.

Chain saw, fuel, bar oil to cut small trees and large brush.

Gasoline powered "weed eater" to cut grass and small weeds away from sign support and similar areas.

Brush knife or machete to cut small brush.

Loppers (long-handled side cutters) to cut small low-hanging branches and large woody weeds.

Tree trimming saw with small branch lopper (on telescoping pole handle) to cut higher branches from overhanging trees that are blocking the view of sign or traffic control device.

Tall step ladder to help cut branches near the tree trunk to limit regrowth.

Axe to chop down small saplings.

Examples of Weeds Goats Like

Canada Thistle
 Cheat Grass
 Common Candy
 Common Mullein
 Dalmation Toad Flax
 Dandelions
 Downy Brome
 Indian Tobacco
 Knapweeds
 Larkspur
 Leafy Spurge
 Loco Weed
 Musk Thistle
 Oxide Daisy
 Plumeless Thistle
 Poison Hemlock
 Purple Loostripe
 Scotch Thistle
 Snapweed
 Sweet Clover
 Yellow Star Thistle
 Yucca

An Innovative Way to Control Roadside Weeds

One of the biggest problems road managers face is the aggressive spread of non-native weeds, which are often harder to manage than the native species they're crowding out. Road maintenance workers who have struggled to control unwanted roadside vegetation are abandoning traditional mowing and herbicide applications in favor of newer, more efficient and environmentally friendly methods. Invasive weed species can also be a problem because they displace valuable forage plants that livestock and wildlife depend on.

Traditionally, herbicides such as Tordon (picloram and 2,4-D) are used to rid land of noxious weeds. Pesticides not only destroy the target weed, but can also reduce a number of beneficial plant species as well. And aside from health and other problems, this process can be costly.

One innovative and economical method of weed control now used in several states is the "hiring" of goats and sheep to graze on pesky weeds. As natural mountain dwellers, goats not only work well in pasture but also on steep terrain that might otherwise pose a problem for workers wielding power equipment. The Wyoming DOT estimates that controlling weeds with sheep can cost anywhere from \$166-\$341 less per acre than traditional methods.²

For some noxious weeds, chemical sprays are ineffective. One example is oxide daisy, which has no leaf surface for the chemical to be absorbed. But, goats love it.

Lani Lamming of *Ewe4ic Ecological Services, Inc.* in Alpine, Wyoming specializes in using cashmere goats to



Lani Lamming shows her cashmere goats grazing scotch thistle at the University of Colorado at Boulder.

graze and naturally remove noxious weeds. Ms. Lamming's company provides a non-toxic and effective alternative to using herbicides to eradicate invasive weeds.

Ms. Lamming walks her goats or herds them within electrified fences.

"The goal of the land is to build the soil so it can produce the kinds of plants that we want to grow there. What we need to be looking at is the water cycle, mineral cycle, energy flow and succession. Weeds are symptomatic of a problem. The problem is sometimes poor soil having no organic matter that cannot support good growth. We want to make the grass the best competitor and stress the weed at every turn. Goats help with this problem because everything they eat is then recycled as fertilizer and laid back down on the grasses. As the goats graze, they trample in the fertilizer."

-Lani Lamming, on how the goats restore a healthy ecosystem.¹

(Water also serves as a natural fence as goats do not like water.) Roaming through the pasture, the goats use their very narrow triangular mouth to strip twigs, leaves, and flower heads from the fibrous stems of weeds. The goats first snap off all the flower heads; then they pick, nibble and chew the leaves off one at a time, very quickly, leaving a bare stock. The shape of the mouth and how they chew along with enzymes in their digestive system takes care of everything including weed seeds, leaves, and toxins. Goats will eat all poisonous plants, even those extremely harmful to humans and wildlife.

For instance, leafy spurge, although avoided by most animals and harmful to humans, may be considered the goat's favorite food, and they would even climb trees to get to it!

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Controlling Noxious Weeds with Goats

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Once the goats graze the weed, it cannot go to seed because it has no flower and it cannot photosynthesize to build a root system because it has no leaves.

Since the goats don't like to eat grasses, they remain untouched. Fertilizing and tilling as they go, goats improve the cycling of plant nutrients sequestered in brush and weeds, enabling the reestablishment of desirable grassy species. Throw a pack of seed on their back and the goats could even help revegetate the area by broadcasting seed as they forage.

The timing must also be right. Timing when to graze a weed is very important to making the biggest impact. If you hope to cultivate wildflowers, but law requires the control of noxious weeds, it is suggested to graze to stress the weeds when the wildflowers are not yet in bloom. For example, the best time to graze weeds such as diffuse knapweed would be the beginning of June. The perfect time for Canada thistle would be right when it is in full bud before it flowers. Expending a lot of energy to regrow, if deep rooted perennials are grazed three times a season, three years in a row, the plant has spent all it has and will die. Weed

Once the goats graze the weed, it cannot go to seed because it has no flower. It cannot photosynthesize to build a root system because it has no leaves.

control depends on the repeated defoliation of plants during the growing season rather than a single defoliation.

Using a video camera with a GPS unit attached, Ms. Lamming also collects data while herding goats. She can then create a noxious weed layer that can go into any government database for their weed inventory.

Ms. Lamming has federal contracts with the U.S. Fish and Wildlife Service, Bureau of Reclamation, Bureau of Land Management, and the U.S. Forest Service, along with some state, county, and city contracts in several

states. For more information on hiring goats for weed control, contact Lani Lamming, Ecological Services at P.O. box 3253, Alpine, WY 83128, 307-654-7866 or email ewe4icbenz@aol.com, on the web at: www.goatapelli.com.

References:

Successfully Controlling Noxious Weeds with Goats, Lani Lamming, Pesticides and You, Vol. 21, No. 4, 2001.

Innovative Methods Adopted to Control Roadside Weeds, Matt Smith, CSU TTAP Transportation Trailblazer, Summer 2003.

Creating an Integrated Weed Management Plan: A Handbook for Managers of Lands with Natural Values

This handbook is intended to provide the tools and information necessary for public and private landowners to manage noxious weeds successfully in natural areas, wildlands, and rangelands. The handbook presents a series of steps for the preparation of an integrated weed management plan: management priorities, selection of management actions, development of an integrated plan, and monitoring plan development and implementation. The book also includes illustrated profiles with line

drawings of each of Colorado's state-listed noxious weed species, as well as supplementary information on a variety of weed control methods and resources.

Developed through the Colorado Natural Areas Program, the 349 page handbook is available from the Colorado State Parks administrative office at 1313 Sherman St., Room 618, Denver, CO 80203, 303-866-3437. The handbook can also be accessed at http://parks.state.co.us/cnap/IWM_handbook/IWM_index.htm.

Resources for Controlling Weeds

Ecological Services, alternative weed management, www.goatapelli.com

Beyond Pesticides, a National Coalition Against the Misuse of Pesticides, www.beyondpesticides.org

Colorado Weed Management Association, www.cwma.org

Noxious Weed Management Program, Colorado Department of Agriculture, www.ag.state.co.us/DPI/weeds/Weed.html

N. Fork Weed Coop, www.northforkweedcoop.org

Colorado Nature Conservancy, <http://nature.org/wherewework/northamerica/states/colorado/>

CSU Weed Identification and Control, www.coopext.colostate.edu/TRA/weedhp.html

Colorado Noxious Weed List, www.ag.state.co.us/DPI/weeds/statutes/weedrules.pdf

Colorado Natural Areas Program, <http://parks.state.co.us/cnap/>

Perennial Control By Jude Sirota

Target: deplete nutrient reserves in root system, prevent seed production.

1) Allow plants to expend as much energy from root system as possible; do not treat when first emerging in spring but allow to grow to bud/bloom stage.

2) Herbicide treatment at bud/bloom stage or in the fall. In fall, plants draw nutrients into roots for winter storage. Herbicides are drawn down to roots more efficiently at this time. Spraying in the fall will kill the following year's shoots, which are being formed on the roots.

3) Mowing usually is not recommended because plants will flower anyway; seed production may be reduced. Studies show mowing perennials and spraying regrowth is not as effective as spraying without mowing.

4) Tillage may or may not be effective. Most perennial roots can sprout from pieces only 1/2"-1" long. Clean machinery thoroughly before leaving weed patch.

5) Hand pulling is generally not recommended unless you know the plants are seedlings and not established plants. Hand pulling can be effective on small patches but is labor intensive because it must be done repeatedly.

Best Management Practices for the Noxious Weeds of Mesa County

General Rules:

1) **KNOW YOUR WEEDS!**
Identification is the first step in forming a weed management plan.

2) Early detection is always the best defense against noxious weeds.

3) Understand the biology of the weed to identify the best mgmt. practices.

4) Know which growth stage in which to implement proper control measures.

5) Use weed free seed, hay, forage, and mulch.

6) Reseed site with competitive species.

7) When tilling, till only in the weed patch so roots and seeds do not spread. Always clean equipment and machinery after working in a weed patch.

8) Many biological control agents are available for control of large weed patches. This is a long-term process and not recommended for small patches. Biological control never provides 100% control and must be incorporated with other methods for successful management.

9) Weed management is a long term

process and hence a long term commitment to the land. Weed seeds last 5-50 years in the soil and pieces of root as small as 1/2" can start a new plant and a new infestation.

10) Drought causes plants to shut down their growth process. Spraying weeds during dry periods is not recommended because effectiveness diminishes greatly.

11) Not all herbicides work equally on all weeds nor can every herbicide be used in every situation. Read the label, and consult weed manuals and experts for the most effective chemical to use.

12) Developing a weed management plan depends on how much time, money, and land a person has. If you want to do non-chemical control, you will need more time and energy than money. If you want fast action, herbicides may be most efficient. Annual weeds may be as effectively controlled with tillage or hoeing as with spraying if done properly and at the right time.

By Jude Sirota, Mesa Cty. Horticulture Pest & Weed Inspector, CSU Extension Program

Vegetation Control for Safety

continued from page 7...

Traffic Control Considerations During Maintenance

Make sure that your temporary traffic control layout complies with the current edition of the Manual on Uniform Traffic Control Devices (MUTCD) and is appropriate for your work situation.

Three common situations associated with vegetation work are:

1. a shoulder closure on two-lane, two-way roadway,
2. vehicles and equipment completely off the road and the shoulder,
3. a lane closure where equipment and/or people will be in a travelled lane.

The vegetation control information in this article was taken from the following publication: *Vegetation Control For Safety: A Guide for Street and Highway Maintenance Personnel*, U.S.

Department of Transportation and the Federal Highway Administration, 1990. Publication number FHWA-RT-90-003.

The complete guide in .pdf format can be found on FHWA's website at <http://www.fhwa.dot.gov/tfhrc/safety/pubs/90003/intro.htm>.

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Did You Know?

Non-native species in the U.S. cost \$123 billion in economic losses. And \$35.5 billion of this is directly related to invasive weeds. -from Larimer County Weed Control District

Upcoming Events

Conferences

9th Eastern Winter Road Maintenance Symposium
September 8-9, 2004
Knoxville, TN
Register online at:
<http://www.tdot.state.tn.us/snowexpo>

West Slope APWA Snow & Ice Conference
September 9-10, 2004
Gunnison, CO
Contact Marlene Crosby at 970-641-0044 for registration information.

9th National Conference on Transportation Planning for Small and Medium-Sized Communities
September 22-24, 2004
Colorado Springs
For more info contact LSC Transportation email ATStoddard@LSCCS.com, or online at <http://webboard.trb.org/~A1D05>

APWA Western Snow & Ice Conference and National Rodeo
September 28-30, 2004
Denver International Airport
On the web at:
<http://www.westernsnowandice.com>

Road System Traffic Safety Review Showcase
September 28-29, 2004
Mendocino County, Ukiah, CA
2 can go for FREE! Contact the LTAP office for more details.

2004 Roadway Work Zone Safety Conference
November 3-6, 2004
Baltimore, MD
Info and registration available at
<http://www.artba.org>.

Training

Fall 2004
NOTE: Dates and locations are subject to change. Please contact the Colorado LTAP office for an updated schedule.

Road Scholar Core Classes

Drainage
October 6, 2004 - Northglenn
October 14, 2004 - Pueblo
October 26, 2004 - Rifle
November 3, 2004 - Durango

Roadway Safety & WZTC
November 1, 2004 - Glenwood Springs
November 3, 2004 - Ft. Collins
November 4, 2004 - Limon
November 5, 2004 - Walsenburg

Road Scholar Elective Classes

Roadside Vegetation Maintenance
August 30, 2004 - Grand Junction
August 31, 2004 - Castle Rock

Heavy Equipment Training
Grand Junction
September 13, 2004- Class session for all
September 14-15 - Group 1, in-field
September 16-17 - Group 2, in-field

Basics of a Gravel Road
October 4, 2004 - Ft. Morgan
October 12, 2004 - Colorado Springs
October 25, 2004 - Glenwood Springs
November 1, 2004 - Durango

Safety Risk Management
November 15, 2004 - Northglenn
November 16, 2004 - Pueblo
November 18, 2004 - Grand Junction

Equipment Maintenance/Inspection
November 22, 2004 - Montrose
November 23, 2004 - Silverthorne
December 2, 2004 - Pueblo
December 3, 2004 - Ft. Morgan

Advanced Computer Skills (Word/Excel)
Grand Junction, September 9, 1/2-day
Lakewood, December 8 or 15, full-day

Supervisory Skills and Development Program

Developing the Leader Within
September 1, 2004 -
Glenwood Springs

Whole New World
September 20, 2004 -
Lakewood

So You're a Supervisor Now
September 23, 2004 -
Grand Junction

Successful Employees Make Successful Supervisors
November 9, 2004 -
Castle Rock

Who's Coming through the Door Today
December 7, 2004 -
Glenwood Springs

APWA Click, Listen, Learn

Audio-web broadcasts
\$150 per site
Register online at
www.apwa.net/Education/CLL

Creative Financing:
Linking Budget Know
How with Strategic
Planning
August 12, 2004

Right-of-Way
Cooperation for
Consistency a
Simplicity
August 18, 2004

What's New in the Library?

CDs

CD DEWZAP *Driver Education Work Zone Awareness Program*
A presentation developed for driver's education programs to make new driver's aware of dangers in highway work zones.

CD RTR *Rubber Temporary Ramps*
An alternative to HMA or cold-patch temporary ramps at milled butt joints, bridges, and end-of-day joints.

Publications

40 NOR *The Nature of Roadsides and the Tools to Work With It*
Discusses ways to manage roadside vegetation by covering; invasives, IRVM tools, How to work with native plants, 10 Best management practices, 10 Research reviews, and more.

70 KIS *Keeping it Simple: Easy Ways to Help Wildlife Along Roads*
Highlights more than 100 successful low- or no-cost activities that benefit fish or wildlife or their habitat.

Videos

V17 LOTO *Lock-Out/Tag-Out*
Helps employees meet OSHA requirements and covers: OSHA's Reg/Energy Control Plan; Lock-out/Tag-out situations, devices & procedures; electrical, pneumatic and hydraulic systems.

V50 WPE *What to do About Work Place Emergencies*
This video focuses on establishing an Emergency Action Plan and written policies and procedures. It covers: earthquakes, fires, tornadoes, hurricanes, bomb threats, chemical spills, biological threats, violence, and blood pathogens; chemicals, MSDS, Fire- PASS and types of extinguishers; emergency drills, etc.

All videos, publications
and CDs are available
for checkout for a
two week period,
free of charge.

To request materials,
contact the Colorado
LTAP office or visit the
library online at
<http://ltap.colorado.edu>

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