Boulder County Small Acreage Management

Summer 2008

http://www.extension.colostate.edu/boulder/AG/smallacreage.shtml - 303-678-6238

In this edition:

From the SAM Coordinator

We have made additions to the small acreage website recently so be sure to periodically check out the site. We are developing additional and revising existing resources for small acreage owners. The new additions include "Questions to ask a Contractor" prior to choosing and hiring one, a revised list for herbicide availability and a revised "Weed Growth Chart". As we develop new resources, we will continue to improve and add to the site so be sure to check it out for new additions.

Sharon Bokan

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Past BOCO SAM Newsletters Online

View via the SAM link above.

SAM Email Listserv

boco_small_acreage@colostate.edu listserv, you may request subscription on the SAM website (linked in header above). This quarterly e-newsletter and other timely info will be distributed via this email listserv.

Subscribers may use the listserv also as a SAM info gathering mechanism. For example, you may inquire about who is available in the area supply hay, to perform swathing/baling, etc.

The listserv is not a marketplace, however. Because it is hosted on the CSU server, NO COMMERCIAL EMAILS ARE ALLOWED. DO NOT ATTEMPT TO SELL ANYTHING VIA THE LISTSERV – THANKS. Use the newsletter ad section for these purposes.

Currently, there are 176 subscribers to the listserv (up from 171 last quarter).

CART Manual Available

The Country Acres Resource Team (composed of Extension, NRCS, etc. colleagues in Northern Colorado) have released their "A Manual for Success" for purchase.

New Vaccination Guidelines

New guidelines for vaccines for horses has been issued by the Infectious Disease Committee if the American Association of Equine Practitioners (AAEP). The complete document and an easy reference chart are available on the

AAEP website at www.aaep.org/vaccination_guidelines.

Wildfire

By Meg Sitarik, SAM Volunteer

Wildfire, most people think forest fire when they hear this word. In Boulder County this is a reasonable assumption since the bulk of the county is in the foothills; however grassland fires are far more dangerous. State and federal agencies report that by early May 2008 more than 26,000 acres have already burned in Colorado. This is almost the same amount that burned during all of 2007. This article will provide information and resources necessary to mitigate fire on farms located on the plains east of the foothills. The principles of mitigation are the same for forest fires.

Early on fire was used by Native Americans to clear land, expose enemies and hunt game. Fire suppression, started in the early 1900's. As the west became more "settled" fire frequencies were disrupted by settlers who saw fire as a threat to personal property, farmland, livestock, wildlife and human life. Settlers feared fire, with good reason because most buildings were built from wood, which became super dry due to the hot windy climate, and began suppressing natural and human caused fires. In the 2000's we have learned that suppression of small fires leads to bigger more dangerous fires. In 1910 "The Big Blowup" fire burned more than 3 million acres in the Northern Rockies of Idaho and Montana. Seventy-eight fire fighters lost their lives and the cost to the USDA Forest Service was more that $20 million dollars (adjusted for inflation). This led to decisions to suppress all fires.

By suppressing low to moderate intensity fires that occur naturally every 10-20 years we have hurt the ecosystem. Think of fire as nature's lawn mower making the area healthy and strong by reducing fuel build-up, preparing the land for new growth, helping certain plants and trees germinate, naturally thinning over crowded forests, and creating diversity needed by wildlife. It also prevents the establishment of invasive species like Cheat Grass. These invasive species changed seasonal growing patterns and the arrangement of fuels. Western United States rangelands have become much more vulnerable to severe catastrophic wildfires. For more information on the historical wildfire statistics and current wildfires go to csfs.colostate.edu/wildfire.

If you look at old pictures of areas around Boulder County you will see that there are far fewer trees than there are now, especially in the foothills. Dead trees, shrubs and grasses are fuel, as the amount increases so does the potential for catastrophic fires. Compare the effects of suppression versus nature.

Past	
Live Trees	less than 50 trees per acre
Dead & Down	2-3 tons per acre

Present Day	
Live Trees	200-300 trees per acre
Dead & Down	10-15 tons per acre

Lightening is the cause of the majority of wildfires. Lightening season is April through September with the majority occurring in July and August. Other sources are a hot exhaust system in contact with dried vegetation, sparks from a brush hog blade striking a rock, ditch burning on a hot, dry, windy day, careless smokers and irresponsible humans.

Government lands are currently being managed to increase forest health and vigor while mitigating for wild land fire. Mitigation differs from suppression, to mitigate is to make the effect from the fire milder or less severe. Fire mitigation of your property, either grassland or forest, is the process of creating a defensible space on your property. This is an area around your home, barns, out buildings and haystacks where vegetation and fuels are treated, reduced

or cleared to slow the spread of wildfire toward the structures. Defensible space has been proven to be a key factor in determining whether a building will survive. While this is not a 100% guarantee it gives you the best chance to prevent fire damage.

There is a misconception that mitigation is the process of clear-cutting the area around the home. This has led to resistance from the public. While bare ground is effective in reducing wildfire threat, it is unnecessary and unacceptable mainly due to soil erosion and appearance. Mitigated homes can have attractive well-vegetated landscapes that also serve as effective defensible space.

The rural homeowner must be aware that grasses are dry during much of the year and will ignite and burn quickly. A farm is at risk if it surrounded by or adjacent to abundant dry fuels. It's important to know what can be done to reduce the risk of wildfires. An article called The Forgotten Wildland Fire from the International Chiefs Association states, "grass fires can be more destructive, deadly and they often move too fast for even prepared fire companies to control." Grass fires move fast and can change from a fire with 3 foot flames to one with 15 foot flames quickly with a wind speed increase of only 4 miles per hour add to that a change in wind direction which is a frequent occurrence and suddenly a very lethal situation faces the fire fighters. Never underestimate the danger of a grassland fire.

Statistically these are the most costly fires. The long-term effects of a wildfire are numerous. The financial losses include, the cost of fire fighting efforts, evacuation, property loss, restoration and rehabilitation. On the plains farmers will experience loss of grazing lands and crops leading to disastrous financial loss. Non-financial losses are more devastating, risk of life, and loss of human life, loss of wild and domestic animal life, soil erosion and a decrease in air and water quality

Fire department response times may be longer in rural areas. Many of the rural fire stations are staffed by volunteers, full time fire fighters are usually not present at the fire station meaning that fire fighters need to reach the fire station from home or work and then drive to the fire thus increasing the response time.

Access

Roads to the property must be clearly marked and the address must be clearly visible. Often fire fighters from surrounding counties arrive to assist and are not familiar with the area. Addresses need to be posted at the entrance to the drive in letters at least 4" tall printed on a sign with a contrasting color, for example black letters on a white or yellow background. Signs should also be fire resistant.

Narrow roads, dead ends and weak bridges can hamper fire truck access. Bridges should be built to carry at least 40,000 pounds, which is the average weight of a fire truck; the average pickup truck weighs about 4,000 pounds. The road to the property should be two lanes each a minimum of 10 feet. This allows a fire truck and car to pass. Curves also need to be large enough to accommodate these mammoth vehicles. Dead-end roads and long driveways need to have an area where the trucks can turn around without problem. If the fire department can't get in and out safely they will not attempt to enter the property this is especially true in the foothills.

Water

If you do not have access to adequate community water system emergency water storage of 2,500 gallons is recommended. Cisterns, lakes, ponds and stock tanks are all options for storage. If a pump is needed to access the water a gasoline-powered generator is best because it can operate during a power failure. The location needs to be clearly marked. Contact your local fire department for specific outlet, valve design and thread requirements.

Defensible Space

Creating defensible space may seem over whelming at first. However if it is broken up in to steps it is much easier to manage. Start with the easiest and least expensive actions. Begin closest to the structure and move outward. The 2 main factors that influence structure survival are roofing material and the quality of the defensible space. Roofing material needs to be fire-

resistant. Vegetation fuels need to be broken up. Horizontal fuel (across the ground) and vertical fuels (from the ground to the crown or top of the tree/shrub) need to be separated to decrease spreading of the fire. Ladder fuels, fuels that will spread a ground fire to a tree, for example tall grasses that touch the branches under a pine, must be trimmed out. Additional distance between fuels is needed on slopes.

Defensible space is divided into 3 zones.
Zone 1 is the area closest to the structure, a 15-foot perimeter measured from the outer edge of the eaves and any porch or deck connected to the structure.
Zone 2 should extend 75 – 125 feet from the edge of zone 1. The distance depends on the slope of the property. See www.ext.colostate.edu/PUBS/NATRES/06302 page 2 figures 2 for a table to figure necessary distance.
Zone 3 is an area of traditional management and is measured from the edge of zone 2 to the property boundary.

Recommended Actions in Each Zone
Zone 1: A 3-5 foot perimeter around the structure should not have any vegetation in it. This can be a border of gravel, decorative rock or a sidewalk. Extend the gravel underneath any deck connected to the structure and never use the underneath space for storage of anything including firewood. If the structure has non-combustible siding there are exceptions. These are found at the above web link. From 5 foot to 15 feet is an area of limited vegetation to prevent flames from reaching the structure. Mowing is a must in this area.

Figure 1 Vegetation free zones can be pleasing to the eye...

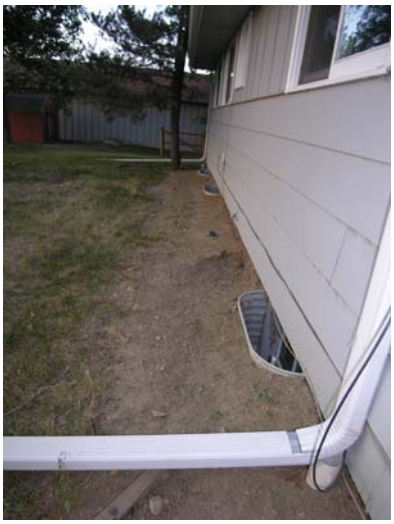

Figure 2 ...or not. (my backyard) as long as it is 3-5 feet wide.

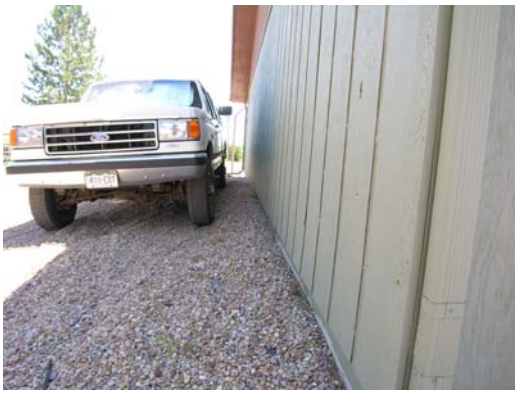

Figure 3 The gravel zone has been extended to provide a safe place to park a vehicle.

Zone 2: This is an approximately 100-foot area of fuel reduction. This area is designed to reduce

the intensity of the approaching fire. Trees need to be thinned to 15 feet between crowns, which are measured from the longest horizontal branch of one tree to the longest horizontal branch of another tree, and 10 feet crown to crown on the outer edge near zone 3. This distance increases with slopes (see above web link). Remove all ladder fuel from under remaining trees and prune each tree from the bottom to a level of 6-10 feet. Small clumps of 2-3 trees may be left in this zone but it is necessary to leave more room between the clump and other trees. All grasses need to be kept mowed. This zone forms an aesthetic buffer and transition space between zone 1 and 3. Firewood should be stacked in this zone and must be at least 30 feet away from structure. If the structure is on a slope stack the wood on the up hillside.

Propane tanks should be located at least 30 feet from any structure, preferably on the same level at the structure. If a down hill tank explodes it will send fire up towards the structure. The tank also should not be located above the structure. LP gas is heavier than air and will flow down hill into the home. Always keep a 10-foot vegetation free perimeter around propane tanks. Do not screen with shrubs or vegetation.

Zone 3: This zone is of no particular size. Beginning at the edge of zone 2 and ending at the edge of the property. The areas specific requirements are dictated by your objectives for the area, such as crop production, livestock pasture, recreation or natural area.

Fire mitigation principles are the same for forest and flat land areas. Defensible space dimensions are subjective and may change depending on site and vegetation characteristics. A 70-foot defensible space is recommended for flat sites. Zone 1 will still be 15 feet the remaining 60 feet can be divided into zones 2 and 3 depending on the type of vegetation.

For complete instructions on these zones go to the links listed in the resource section.

List of rules specifically for the flat land farm.

- Dry grasses and weeds should be mowed to a maximum height of 6 inches within 30 feet of all structures.
- Maintain a 10-foot vegetation free area around grills, burn barrels, propane tanks and welding projects.
- Never store flammable material such as chemicals, fuel, lumber, slash etc in an open exposed area where it will be vulnerable to heat or flames.
- Skirting around mobile homes can prevent burning debris from blowing under and spreading fire.
- Keep trash and vegetation cleared from around barns, out buildings and haystacks.
- Haystacks should not be shoulder-to-shoulder, leave room in between to prevent fire spreading from one to another.
- Keep grasses and weeds mowed to 3 inches in areas used to park vehicles and equipment. This will reduce the risk of a hot exhaust system igniting the dry vegetation.
- Delay outdoor burning until the area starts to green up and weather permits.
- Never burn on hot, dry or windy days. For a detailed fire weather forecast go to www.crh.noaa.gov/den/fir3znft
- When burning always use a metal barrel or something similar placed on a vegetation free area. Cover the top with wire mesh to prevent embers from floating away. Never leave any fire unattended.

Ditch and Field Burning

Ditch burning is important, it assures that the irrigation water will run efficiently and incidental loss will be minimal. I have to admit that I love ditch burning, the intoxicating mixture of quiet fascination with the beauty of fire and that terrifying panic lurking just under the surface fearing it might “take off”. Spring is always a wild time on the plains with seemingly never ending ditch fires that have “gotten away”. A few years ago I burned an area between my

fence and the road. I thought I had completely extinguished the fire, I didn't realize that even though I had soaked the wood fence posts the fire was smoldering inside 13 of the posts. In the morning all that was left were the u-shaped nails hanging from the wire fencing that was sagging mournfully. I was lucky that it was springtime and the nearby pastures had started to green, the outcome could have been very different. I received a lot of good-natured ribbing about it, but it taught me a valuable lesson about fire safety.

Safety Rules for Ditch/Field Burning: according to the Living With Fire, A Guide for the Homeowner. Colorado State Forest Service, USDA-Forest Service, Bureau of Land Management, National Park Service, Bureau of Indian Affairs, and the US Fish and Wildlife Service.

- **Contact the sheriff's department an hour before you burn at 303-441-4444.**
- Check the weather report. (see above web site for fire weather forecast)
- Try to burn first thing in the morning when there is less chance of wind.
- Have a reliable water source and shovel with you.
- Never burn if the weather is questionable.
- If the area has a heavy dead vegetation load have someone help you.
- Carry a phone.
- Never allow the ditch to finish burning by itself.
- Depending on the area have an escape plan.
- You cannot out run a grassland fire.
- Remember that the safest place to be is in the area that has already burned.

When Wildfire Approaches

For specific information on evacuation of a farm with livestock and other animals see the Boulder County Small Acre Management Newsletter, fall 2007 issue. www.coopext.colostate.edu/boulder/AG/agr. Click on Small Acreage at the top of the screen.

If you decide to stay, which is not recommended, follow this list of actions.

- Evacuate all family members not essential to protecting structures. Evacuate pets.
- Contact someone, friend or relative, to rely your plans.
- Make sure everyone in the family is aware of a prearranged meeting place.

- Tune in to local radio or TV channel and listen for instructions. Put new batteries in the portable radio.
- Charge your cell phone and locate charger cord that can be used in a vehicle.
- Place vehicles in garage facing out. Roll up the windows.
- Place valuable papers and mementos in vehicle, or send these with anyone who is leaving before the fire arrives.
- Close garage door, leave it unlocked. Be aware that if the power goes out you will need to disconnect the door open before you can open the door.
- Put combustible patio furniture in the house or garage.
- Shut off propane at the tank or natural gas at the meter.
- Wear only cotton or wool clothing. Wear long pants, long sleeved shirt or jacket and boots. Carry heavy leather gloves, a handkerchief to cover face, water to drink and goggles. Man made material such as polyester and nylon will melt to your skin and should not be worn.
- Close all exterior vents.
- Prop a ladder against the house so fire fighters have easy access to the roof.
- Make sure that all garden hoses are hooked up and spray nozzles are attached to each and set on spray.
- Soak rags, towels, or small rugs with water to use in beating out embers or small fires.

- Inside fill bathtubs, sinks and other containers with water. Outside do the same with trashcans, buckets and stock tanks. *Remember that the water heater and toilet tank are other sources of water.
- Close all exterior doors and windows. Close all interior doors.
- Open the fire place damper, but place the screen over the hearth to prevent sparks and embers from entering the house.
- Leave a light on in each room.
- Remove lightweight and non-fire resistant curtains and other combustible material from around windows.

- Attach pre-cut plywood panels to the exterior of windows and glass doors.
- Turn off all pilot lights.
- Move overstuffed furniture (couches, easy chairs etc.) to the center of the room.
- Keep shake or shingle roofs moist by spraying water, but do not wastewater. Consider placing a lawn sprinkler on the roof if water pressure is adequate. Do not turn on until burning embers start falling.
- Continually check the roof and attic for embers, smoke, or fire.
- If a fire should occur within the house contact the fire department immediately.
- **Most importantly, STAY CALM.**

In summary, wildfires are dangerous. Being proactive by doing fire mitigation on your property is the best way to ensure a positive outcome. There are multiple resources available to assist with an assessment of your property for fire safety and mitigation. *For a $75 fee Colorado State Forest Service will help you develop a fire mitigation plan. The Boulder District is located at 5625 Ute Highway, Longmont, CO 80503, 303-823-5774. For a complete list of services available go to: csfs.colostate.edu/localforester .
Some fire departments will do a fire safety assessment of your home. It's never too soon to start this project.

Information Resources:

csfs.colostate.edu/wildfire.
www.rockymountainwildlandfire.info
www.ext.colostate.edu/PUBS/NATRES

Fact sheets:
Creating Wildfire-Defensible Zones, #6.302
Fire-Resistant Landscaping, # 6.303
Forest Home Fire Safety, #6.304
Fire-Wise Plant Materials, #6.305
csfs.colostate.edu/library/pdfs/RUFire/plains-FW.
csfs.colostate.edu/localforester
www.iafc.org
The Forgotten Wildland Fire
www.coloradofirecamp.com

How to Read a Pesticide Label

By Kim Wolinski, SAM Volunteer

You know the humor around the infamous (now in several languages and print so small your 3.50 reading glasses are no help at all) Instruction Manuals, like "How can I have this swing set all put together and there's still parts?" My dad taught me to fix and repair things and self-reliance by using all the four learning skill areas that are necessary, though he didn't know he was doing that: 1) Tell me; 2) Show me; 3) Watch me do it with support, and 4) READ AND FOLLOW THE INSTRUCTION MANUAL!

"Instructions" (also referred to as procedures and in the case of Pesticides Labels, *WARNINGS)* should be easy to locate and use, easy to understand, reflect best practice or use of the product and give clear warnings when applicable.

What You Need to Know About Pesticides and Their Labels
So, you've tried organic, mechanical, cultural and biological weed controls – it's time for the big guns! Chemicals and Pesticides! (Insert Tim Taylor *Home Improvement* Show tool-man grunt here!!)

Pesticides can serve a useful purpose around the home and garden by reducing some of the problems we face from pests. Pesticides include insect killers (insecticides), weed killers (herbicides), and fungus

killers (fungicides). If not used according to label specs humans, pets and water supplies can be harmed. This can happen even when pesticides are used according to the label.

Sounds simple, but to head off problems with pesticide use, the most valuable time spent in pest control is the time you take to read the label. Before you buy a pesticide, read the label to determine:

- whether it is the right pesticide for the job
- whether the pesticide can be used safely under your application conditions
- whether there are any restrictions on the pesticide
- how much pesticide you should buy for the area you are treating when to apply the pesticide.

Pesticide labels are the legal document located on the pesticide container that provides information concerning the safe and effective use of the pesticide.

Here are the ABC's of following Pesticide Labels for the best outcomes:

1. **The label is the law.**
   This is a huge deal! The user of any pesticide is liable for all aspects of handling the product, including but not limited to mixing, loading, application, spill control, and disposal of a pesticide or its container.
2. **Read the label thoroughly. It includes the following items:**

a) FIRST AID INSTRUCTIONS - Before you mix and apply a pesticide, read the label to determine:

- what protective clothing to use and safety measures to follow
- what the chemical can be mixed with
- how much pesticide to mix
- the mixing process
- how long you should wait after application to reenter the area, harvest the crop, or plant another crop.

b) EPA REGISTRATION NUMBER - You can search the Pesticide Product Label System (PPLS) using the EPA Pesticide Product Registration Number at http://oaspub.epa.gov/pestlabl/ppls.home

c)NAME and ADDRESS OF MANUFACTURER

d) SIGNAL WORDS and LEVELS OF TOXICITY - indicate the toxicity and/or hazards associated with the use of the pesticide. The label indicates the level of toxicity with one of three signal words: DANGER, WARNING, or CAUTION. The precautionary statement describes the hazards to the applicator, children, domestic animals, wildlife, and the environment. If protective clothing and equipment are necessary, the precautionary statements will tell you.

The label must list the active ingredient—the ingredient that actually kills or inhibits the pest. Inert ingredients, such as carriers or solvents, do not have to be specified, but their concentrations must be listed.

e) USES INCONSISTENT WITH LABELING - It is a violation of federal law to use any pesticide in a manner inconsistent with its labeling, with the following four exemptions:

a) Application at a rate of frequency less than specified on the label.
b) Application on a target species not specified on the label as long as application is to the site or use specified on the label, unless the label specifically prohibits use on that specific pest.
c) Employing any method of application not prohibited on the label.
d) Mixing with a fertilizer, as long as such a mixture is not prohibited on the labeling.

f) APPLYING - a pesticide at any dosage, concentration, or frequency less

Than that specified on the labeling; Applying a pesticide against any target pest not specified on the labeling if the application is to the crop, animal, or site specified on the labeling, unless the labeling specifically prohibits use against other pests

g) DO NOT - Apply pesticides at a higher rate than is on the label; Remove the label; Put pesticides in other containers, or other liquids in pesticide containers; Store pesticides near children and/or pets.

h) STORING and DISPOSAL - Before you store or dispose of a pesticide, read the label to determine:

- where and how to store the pesticide
- how to clean and dispose of the chemical container
- how to dispose of surplus pesticide.

i) PESTICIDE ACRONYMS

a) GUP: General Use Pesticide. Products available to the general public.
b) MSDS: Material Safety Data Sheet. A technical bulletin that supplements information found on the product label. Visit www.cdms.net

c) PPE: Personal Protective Equipment. Listed under the

"Hazards to Humans" section on the label.
d) RUP: Restricted Use Pesticide. Restricts the purchase of a product, and its uses, to a Certified Pesticide Applicator (CPA), or to anyone under the direct supervision of a CPA.

More information on pesticide product labels

- Globally Harmonized System (GHS) of Classification and Labeling of Chemicals
- Consumer Labeling Initiative (CLI)
- Search The Colorado Pesticide Information Retrieval System database at http://state.ceris.purdue.edu/doc/co/stateco.html
- http://www.epa.gov/pesticides/label/
- http://www.cepep.colostate.edu/labels.htm

Important phone numbers:
Colorado Department of Agriculture
Pesticide Section, (303) 239-4147
Colorado Department of Health/Environment
Household Hazardous Waste Division,
(303) 692-3320
Colorado State University Cooperative Extension
(970) 491-6027
EPA Region VIII Pesticide Office
(303) 312-6286
Rocky Mountain Poison Control Center
(800) 332-3073
The National Pesticide Information Center
(800) 858-7378
http://npic.orst.edu

Living Snow Fence

By Meg Sitarik, SAM Volunteer

Winter 2006/2007 was an unusually snowy winter. Exceptionally large back-to-back storms blessed us with the opportunity to experience awesome natural beauty and the peaceful joy of a white Christmas. Snowdrifts that magically reappeared after having been removed the previous day illustrated Mother Natures' sense of humor. I can't speak for anyone else but my sense of humor abandoned me by storm number three. Generous neighbors who usually stop to assist made sure not to establish eye contact with me as they drove by. I vowed to put aside my lazy ways and be proactive for the next winter. Procrastination being my most consistent characteristic I find myself two years later ready to make a plan.

What is a living Snow Fence??

These are multiple rows of trees and/or shrubs planted in strategic locations to influence and redirect snow collection. A living snow fence offers the benefits of less maintenance once established, a longer life span, crop protection, soil erosion control and aesthetic value. They also provide screening, enhance wildlife habitat by providing travel corridors, nesting sites, food and escape cover for many wildlife species.

A snow fence may be made out of living or non-living material. For this article I will address the living snow fence however the basic principles remain the same for either. There is a wide range of cost depending on the size trees you choose to plant and whether or not you hire a landscaper or do the work yourself. Once establish a living fence is much more cost effective and less maintenance than non-living materials.

Boulder County has a great example of a living snow fence on Foothills Highway (US 36), which was installed about 18 years ago. Located on the west side approximately 1 mile north of the Broadway/Foothills intersection and at the McGuckins Warehouse.

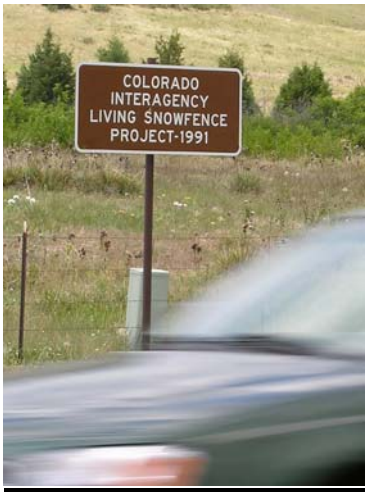

Figure 4 Foothills Highway snow fence.

Getting Started

Any large-scale project needs organization to run smoothly. I find it helpful to set long term and short term goals. These goals will help

identify materials needed, a rough estimate of time needed, budgeting needs and amount of labor necessary to complete the project.

The goals I will be using are:
Long term:

- Prevent snowdrifts in driveway.
- Promote snow storage in pasture.
- Enlist the help of neighborhood teenagers.
- Complete project by fall 2008.

Short term:

- Gather information and educate myself.
- Draw a site plan with accurate measurements.
- List items needed.
- Research tree prices.
- Gather items on list.
- Endear myself to neighborhood teenagers by offering access to my lake and home baked goodies.

Education

Windbreaks modify wind flow so that blowing snow will be distributed over a large area or deposited in a specific restricted area. There are two types of windbreaks, low density and high density.

A **low-density windbreak** will spread snow by decreasing velocity allowing it to fall to the ground over a large area. The snow will provide additional moisture to crop fields, pastures and rangelands, which can lead to an increase in productivity and economic return.

A **high density windbreak** or snow fence will deposit snow in a restricted area reducing the need for continuous drift removal, when located on the windward side of a stock pond snow will be deposited in the pond providing a significant amount of water for summer use. Other uses include preventing drifts in barn areas such as the livestock pens or anywhere you don't want drifting.

The density of the windbreak dictates where and how the snow is collected. Density is defined as the ratio of the solid area of trees to the total area of the windbreak. Barrier density is determined by the species of trees and shrubs selected number of rows, spacing between rows and spacing of plants within each row. The amount of snow stored or collected is directly related to density and height of the windbreak for example a 50 % density will allow half the wind to blow through it. A snow fence should have a density of 70-80 %. A field windbreak used to distribute snow over a pasture or crop field needs to be only 25-35 %. The height is measured by the tallest row planted and effects drift depth and length. Snow storage capacity increases more than 4 times when the height doubles.

Height:
Increase height = increase amount snow collection/storage.
Density:
High density = snow collected close to barrier.
Low density = snow spread over large area.

Location

A poorly placed windbreak will cause problems such as drifts placed in the drive, roadway or in front of a door. For the most effective and efficient protection the windbreak should be perpendicular to prevailing winds. Generally snow fences will be located on the north side of an east-west road/driveway, or on the west side of a north-south road/driveway. The area to be protected must be located on the leeward side of the fence, which means the fence must be between the blowing snow and the driveway.

It's also important for the snow fence to be set back far enough from the driveway to allow plenty of room for the drifts to collect, when choosing location err on the side of farther rather than closer. Drifts will be on the leeward side of the fence, between the fence and the driveway. If the fence is not placed far enough away the drifts will collect in your driveway. While doing research for this article I found a wide range of set back recommendations from 65-300 feet with an average of 167.5 feet. Other articles recommend a set back of 35xH (35x height of fence). Example: An 8 foot high fence should be set back 280 feet. Set back should be measured from the center of the area to be protected, for example from the center of the

driveway. I know from personal experience that a snow fence too close to the road/driveway will **increase** the amount of snow on the road. Fifteen years ago I had a ¼ mile north/south driveway with only fields between it and the foothills. I put up a snow fence along side the pasture fence that was setback from the drive about 10 feet. The drifts were three times the size of what normally drifted in the driveway in previous years. For this fence project I am planning to use 100-foot setback. I would encourage you to follow some of the links provided at the end of this article to figure out what will work best for you.

Figure 5 The Foothills snow fence has a row of shrubs in front of two rows of conifers. Note the set back distance.

Design

Plan to make the snow fence longer than the length of the area needing protection. If not the snow will cause visibility and drifting problems at the beginning or end of the driveway. Depending on tree species the fence will need to be 2 – 3 rows.

There are three components of a multi-row snow fence.

- Dense conifer trees to reduce wind velocity.
- Tall broadleaf or conifer trees to extend area of protection.
- Low shrubs and/or tall native grasses to trip snow and provide wildlife habitat.

The standard design for a 3-row windbreak is:

- Windward--------- conifer or shrubs.
- Center----------tall broadleaf trees.
- Leeward----------conifer or shrubs.

Spacing between rows:

- 12 ft between shrub rows
- 16 ft between large tree rows and shrub rows
- 16-20 ft. between large tree rows

Tree spacing within rows:

- 3-10 ft between shrubs
- 8-16 ft between large trees

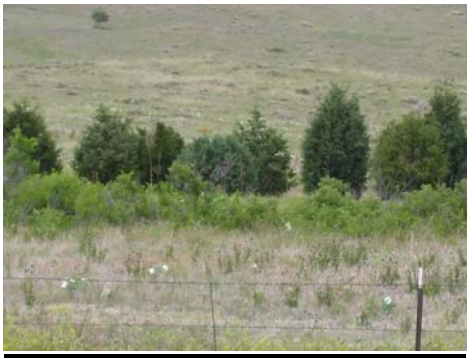

Figure 6 The two rows of conifers are staggered.

Tree Species

When choosing species it is important to maximize diversity of species. This reduces risks of insect, disease or environmental problems and is better wildlife habitat. When selecting the density remember that some trees and shrubs lose their leaves in the winter therefore are less dense.

The criteria for species selection must include:

- Match the species with the climate and local growing conditions.
- Type of soil.
- Available space.
- Goal of the barrier, snow fence or field windbreak.

The Colorado State Forest Service has a very helpful, easy to read guide. The Species Suitability Guide for Colorado can be found at csfs.colostate.edu/suitability. It's user-friendly set up in table form listing suitable trees, cold/drought hardiness, alkali tolerance,

windbreak suitability, wildlife suitability, mature height, growth form, and elevation range.

There are many sources for trees in our area. If you have a restricted budget the Colorado State Forest Service has a seedling sale every spring. They offer seedlings in bundles of 30-50 depending on the selection. Only trees and shrubs suitable to Colorado are offered. Applications are available on line, csfs.colostate.edu/nursery and the cost is minimal. Orders are accepted in January and February with April delivery. When I picked up my order at the Boulder County Fair Grounds the CSU Ext. Master Gardeners were there with lots of free helpful fact sheets on planting and caring for young trees. These are also available on line at www.coopext.colostate.edu/boulder.

In summary, there are multiple issues to educate yourself about before planning your snow fence. I have provided you with the basic framework. For more information follow the links provided. Good luck!

Well, I have planted my seedlings and can't wait for that winter 10-15 years from now when snowdrifts will not be a problem. Until then I will keep on baking cookies for the neighborhood teens and keep a few good snow shovels on hand.

Resources:

www.coopext.colostate.edu/boulder

Enhancing Wildlife Habitat
www.oacd.org/factsheet_16

Windbreak Design
Windbreaks for Snow Management
www.ianrpubs.unl.edu/forestry/ec1770
University of Nebraska Lincoln Extension, Institute of Agriculture and Natural Resources

Living Snow Fences
www.extension.umn.edu/distribution/naturalresources/DD7277
University Of Minnesota Extension

Living Snow Fences
USDA, Natural Resources Conservation Service
Conservation Reserve Program CRP-CP17A

Designing and Caring for Windbreaks
University of Toronto's Faculty of Forestry
Land Owner Resource Center

Recommended Trees for Colorado Front Range Communities
Species Suitability Guide
Colorado State Forest Service
csfs.colostate.edu

Summer 2008 Upcoming Events

Four events that will be happening this summer that may be of interest are the Boulder County Fair, the High Altitude Revegetation Summer Field Tour and the Pawnee Buttes Grass Tour and the final Weed ID and Control Workshop.

The Boulder County Fair is August 1-9, 2008. For those with a garden, consider entering your prize tomato or pumpkin in the Crops Show next year. Pre-entry is required at a cost of $2/exhibitor/10 exhibits. Prizewinners are awarded monetary prizes. Even if you didn't enter the fair this year, come out and support the 4-H youth by viewing their projects, eating at the dairy bar and maybe even participating in the livestock auction. For more information check out the website.
http://www.bouldercountyfair.org/
Unfortunately, the deadline has passed to enter crops, open class livestock and creative living and arts entries, but you can always plan ahead to next year.

The High Altitude Revegetation Summer Field Tour is occurring August 7 and 8, 2008. This is a free tour that will be focusing on the revegetation of surface coal mining and oil and gas sites and also be visiting one of the largest Colorado revegetation materials nurseries. The tour will take place on the western slope. Contacts for more information about the tour are Mike Ellis (303-279-8532), Joe Brummer (970-491-4988), or Wendell Hassell (303-431-6405).

Pawnee Buttes Seed Company and CSU Extension Weld County will be having their

annual Grass Tour again on August 7 and 8. Day 1 covers Pasture Establishment and Grass Management, Day 2 covers Reclamation, Sustaining, and Conservation. The cost prior to August 5th is $25 for one day, $40 for 2 days. After August 5th is $30 for one day $50 for 2 days. The starting point is Island Grove Park in Greeley. For more information, contact Pawnee Buttes Seed at info@pawneebuttesseed.com or 970-356-7002, 1-800-782-5947.

On August 12, 2008, Adrian Card, Agriculture CSU Extension Agent and Steve Sauer, Boulder County Weed Management Coordinator will be presenting their final Weed ID and Control Workshop for 2008 from 6:30 to 8:30 p.m. The workshop will be held in the Parks and Open Space Building, 5201 St. Vrain Rd., Longmont. The workshop is designed for small acreage owners. During the workshop, you will identify your weeds, look at control strategies, gain an understanding of county and state weed laws and learn the differences between native plants, noxious weeds and other invasive ornamental species and learn to develop an Integrated Weed Management Plan. There is a $10 fee payable at the workshop. Contact the Extension Office to sign up at 303-678-6238.

SAM Issues for the summer

Just a quick reminder about summer grazing, perennial weed control and planning for fall reseeding.

With temperatures increasing, we know summer is here. The cool season grasses that make up most pastures are beginning to go dormant (slow down in growth) during the summer. If you do not have irrigation, this means that pastures and grazing cells need longer rest periods before being re-grazed. As always, keep horses off pastures until the grass is 6-8" tall and let them graze until grass is 3-4" tall. Any grazing prior to that height will damage the grass growing point and slow regrowth even more or stop it entirely. If you are fortunate enough to have irrigation, the grass will still grow only slower than during cooler periods.

Perennial weed control during summer is best accomplished by mowing to stop or limit seed production. If you are considering herbicide application, please be aware of the temperatures. Products containing 2,4-D are especially volatile (become a vapor) at higher temperatures. If used improperly, the vapor can drift onto non-target plants and areas causing desirable plant damage or contaminate water. The applicator can also be exposed to the vapor. If possible, mow the weeds and plan a late summer early fall herbicide application. It has been demonstrated that the plants more readily absorb the herbicide in the fall and the herbicides are therefore more effective.

With the high temperatures and lack of precipitation, weed control this fall may be more difficult. Even the weeds are under stress with the lack of moisture. When weeds are stressed, they form a thicker cuticle (skin) making it more difficult for the herbicide to be absorbed. For more information on herbicide performance during drought see this link http://www.ext.colostate.edu/pubs/crops/00567.html to a fact sheet.

Summer is a great time to start your reseeding plan. Review the weeds you have and plan on controlling them prior to replanting. If you will not be doing the work yourself, start calling and interviewing contractors. If you wait, they may be busy helping other people and not able to help you in a timely manner. Find an organic material source, if you are planning on amending your soil. Choose the pasture mix you want and need for your property, whether non-irrigated, irrigated or native grasses. For grass planting tips and questions to ask a contractor, please see the small acreage website link. http://www.coopext.colostate.edu/boulder/AG/smallacreagepasture.shtml

Place your SAM related classified ad or print advertisement here!

Classified Advertising Rates are as follows:
SAM Volunteer: 20 cents/word
4-H Member/Leader: 20 cents/word
General Public, Individual: 25 cents/word
General Public, Business/Show: 30 cents/ word

Print Ad Rates are as follows:
Quarter Page Ad: $50.00
Half Page Ad: $80.00
Full Page Ad: $100.00

Email Sharon Bokan for more details
mailto:sbokan@bouldercounty.org