Front Range Sustainable Small Acreage News

Fall 2009 Issue 3

www.ext.colostate.edu/sam

Inside this issue:

Soil Testing

By Sharon Bokan, Small Acreage Coordinator, Boulder County CSU Extension

Soil sampling is a vital part of pasture and field management. The soil test identifies the type of soil (texture), pH (acidity/alkalinity), nutrient content, salinity or sodic problems, and organic matter content.

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Choosing a Forestry Contractor

By Richard M. Edwards, CF; Co-owner/President; High Country Forestry

If you are one of the 200,000 plus forest landowners in Colorado, you are, no doubt, acutely aware of the challenges ahead for Colorado's forests. Private forests comprise approximately 6 million acres of Colorado's 22 million total acres of forest land.

The Colorado State Forest Service (CSFS) identified our forests' most pressing issues as, "declining forest health and extended wildfire seasons linked to climate change" as well as forest fragmentation and development.

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Knowing your **soil texture** can help you determine your irrigation, fertilization needs, and compaction potential. Sandy soils (sandy and sandy loam) allow a more rapid transmission of water and fertilizer to deeper subsoil depths and away from root system availability, thus requiring more water and nutrients. Clay and clay loam soils can hold more water and are more easily compacted forcing oxygen out of the soil causing root problems.

Soil pH is how acidic or alkaline the soil is (pH of 7.0 is neutral). Most soils in Colorado are in the range of 7.0 to 8.0, which means they are slightly alkaline (containing more sodium). Little can be done to change the soil pH except in very small areas and with a great deal of effort.

Nutrient content is made up of nitrate nitrogen, phosphorus, potassium, zinc, iron, copper, and manganese. Nitrogen is used for foliage growth. Nitrate nitrogen is soluble and is the form most readily available for plant uptake and use. Phosphorus is vital for root growth, while potassium is essential for fruiting crops. Our soils have an adequate amount of iron, but the iron is quite often tied up (chemically bonded) in the soil in such a manner that it is unavailable to plants. Adding more iron to the soil is not the solution, as the added iron also becomes bonded and unavailable. Zinc, copper, and manganese are micronutrients that are needed for good plant growth but do not usually need to be added.

Excess salt or sodium can affect certain sensitive crops. Sodic or saline soils may need a drainage system installed or additional irrigation to move the salts to below root level; or consider planting more salt tolerant plants.

Organic matter is the main nitrogen source in soil. Thirty pounds of nitrogen is released for each 1% organic matter in soil. Organic matter also helps maintain soil moisture and promotes healthy soil organisms. In sandy soils, organic matter increases water holding capacity. While in clay soils, organic matter helps keep the soil particles separated reducing compaction and allowing more oxygen in the soil.

How do I test my soil?

In order to obtain an accurate soil test, follow the instructions provided by your local Extension Office, Colorado State University soil testing lab, or independent lab.

When sampling, use stainless steel sampling tools or a clean rust free shovel. Galvanized or brass equipment can contaminate the sample with micronutrients.

The fields to be tested should have similar soil texture, color, slope, and drainage throughout, or be divided into sections by the soil characteristics. Continued on page 3

http://www.ext.colostate.edu/sam/soil.html

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For irrigated areas, the sample area should be no more than 40 acres; 100 acres for non-irrigated fields.

Samples for accurate nitrogen levels should be taken at the surface (4-12" deep) and subsurface (2-4' deep) levels. Surface soil testing is adequate for perennial pastures and hay. Subsurface samples only need to be taken for crops where subsurface nitrogen is needed, i.e. sugarbeets.

For 40 acres, 15-20 surface samples should be taken. Remove surface litter such as leaves, sticks, and crop residue; 6-8 subsurface samples should be taken (as applicable). All samples are then mixed in a plastic or stainless steel container. Remove 1 pint (ziplock sandwich bag size) for the sample and allow to air dry for 12 hours. Do not heat to dry the soil, as this will alter nutrient content.

The closer to cropping/planting time the more representative the sample will be and less change is possible. Fall sampling is good for fall fertilizations and for spring planting. Be aware that heavy rainfall/snowmelt may leach some nitrogen and provide inaccurate results.

Fields should be sampled on a routine basis in order to maximize production with minimum fertilizer expense.

Choosing a Forestry Contractor continued from page 1

As a forest landowner, you may be faced with hiring a forestry contractor at some point in the near future in order to help manage your forest; whether it is to remove insect infested trees, create a defensible space around a structure, or to have a management plan written for your land. In order to insure a productive relationship with a contractor and get your money's worth, there are some important points to consider before you choose a contractor. Choosing a "good" contractor offers some legal protection and safety while preserving your land's aesthetics and property value.

References: Ask for at least three references from past customers and check them. It is best to have references over the last one to three years in order to insure company stability, and good hiring and work practices. The references should be for a similar type of work that is being proposed for your property.

Check the CSFS website http://csfs.colostate.edu for contractor lists for specific forest districts. Local CSFS district forest personnel are also good contacts regarding availability of contractors and lists. Some counties also maintain contractor lists for forestry work. Be informed, however, agencies cannot directly recommend contractors, and listed contractors are not all insured.

Insurance: Make sure the contractor is fully insured and can supply you with a *mailed* Certificate Of Insurance (COI) naming you as a certificate holder. The minimum types of insurance should include automotive liability, commercial general liability (CGL), and workers' compensation. Consultants should carry Errors & Omissions (professional liability) insurance. For large, long term projects, it may be advantageous to be named as an "Additional Insured" on the contractors CGL policy.

Colorado state law requires employers who employ one or more persons to carry workers' compensation insurance. If the company is using independent contractors (or subcontractors); these entities should also be able to supply you with a *mailed* COI.

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Hiring a contractor and/or subcontractor without insurance could result in you personally being held liable for an accident and/or loss on your property.

Credentials: Is the contractor a Certified Arborist, Certified Forester, Master Logger, etc.? In some parts of Colorado specific licenses are required to do certain types of tree work. Do they have a business license? If you are having trees sprayed or using pheromones, the contractor should have a Commercial Pesticide Applicator's License. Does the company have a company profile and/or website available to peruse? Are they members of organizations such as the Association of Consulting Foresters, Better Business Bureau (BBB), local Chamber of Commerce, Colorado Timber Industry Association, International Society of Arboriculture, or the Society of American Foresters? Oftentimes these organizations require members to follow a code of ethics or membership guidelines. The BBB www.bbb.org allows you to check a company's background. The Colorado Secretary of State also allows you to check a company's "Certificate of Good Standing" at www.sos.state.co.us.

Quotations: Get at least three written estimates. Make sure each contractor is given the same criteria in order to do the estimate. Be as specific as possible regarding the scope of the work. If possible, try to arrange for all contractors to meet at once at the project area so everyone receives the same information. This will also save you time, rather than meeting separately with each contractor.

One of the biggest mistakes is to go for the "bottom line" (i.e. take the lowest quote) once the quotes are received. Landowners also need to consider references, insurance, and credentials. Oftentimes, a higher quote may reflect the fact that a contractor may be paying higher wages and benefits, to retain a more stable, quality workforce. Using lower impact equipment will have less environmental damage, but may cost more for the landowner.

Contract: Make sure everything important is in writing before signing any written agreement / contract. This does not have to be detailed; it will depend on the scope of the project. The size of the contract can range in size from a one page project estimate to a multi-page timber sale agreement. If you are not comfortable with any aspect of the contract, you should seek legal counsel or speak with a forestry professional such as a consultant or CSFS personnel familiar with forest operations.

By considering each one of these points in the contractor selection process, you will better know what to expect from the contractor that you hire to do your forestry work. In turn, your contractor will understand what you, the customer, desire and will result in a job well done.

Native Edibles

By Jennifer Cook, Small Acreage Management Coordinator, CSU Extension/NRCS

Why grow native edibles?

- Create biodiversity in the foods we eat
- Integrate our diets into our ecosystem
- Grow foods that naturally flourish in Colorado's climate
- Be able to eat locally grown foods

Looking back at traditional native American diets can give us a clue as to what plants we can grow and eat in the Colorado climate. Natives depended on hunting buffalo and gathering berries and herbs, as well as growing corn, beans, and squash. Here are some native edible ideas for your backyard.

Yucca (*Yucca glauca*)

This plant grows in dry areas and its roots and flowers are edible! Roots can be baked or fried like a potato, and flowers can be eaten raw in salads. Additionally natives used the wood to make fires.

Additional Info:
Native Shrubs for Colorado Landscapes
http://www.ext.colostate.edu/pubs/garden/07422.html
The Atriplex Project: A Permaculture database for the Front Range
http://wildgreenyonder.wordpress.com/2009/07/30/atriplex/

Bee balm/Wild bergamont/Horsemint (*Monarda fistulosa*)

This herb prefers sunny spots and is very drought tolerant. Leaves can be used to make teas and also make a great spice for meats and other foods. This plant has a medium palatability for grazing animals. A close relative *Monarda Didyma* that grows in eastern North America was used as a tea substitute during the Boston Tea Party.

Clove Current/Golden Current (*Ribes odoratum* syn. *Ribes aureum*)

This medium-sized deciduous shrub bears edible fruits. In the past, kitchen gardens of the 19th century commonly grew this shrub. Its golden yellow flowers fill the air with a clove or vanilla scent in the spring. Ripened fruit, amber yellow to black in color, are sweet, tart, and aromatic. Fruits are good popped right in the mouth, or made into jams. The plant is remarkably drought tolerant.

Mountain Pine Beetle

By Jennifer Cook, Small Acreage Management Coordinator, CSU Extension/NRCS

The demise of Colorado's densely populated monoculture (single species) forests by the mountain pine beetle (*Dendroctonus ponderosae*) epidemic, is a natural cycle that we are unfortunate enough to witness. This article will explain how to properly dispose of dead trees and what strategies to use when replanting our forests.

Mountain pine beetles are native to Colorado and attack pine trees including lodgepole, ponderosa, and western white. If you're not sure what types of trees are on your property, a rule of thumb is that if the needles grow in bundles of two or more, it's a pine tree, and may be susceptible to attack by the mountain pine beetle.

Mountain pine beetles fly from July 15 to September 15, seeking living green trees to attack. They can fly great distances and favor densely populated, old, and large diameter pine trees. During this time, beetle pairs (male and female) attempt to bore into the lower portion of a tree trunk to lay their eggs. Approximately 75 eggs are laid per pair!

The larvae live through the winter in the tree. They use the tree's water to produce ethylene glycol (antifreeze), introduce a fungus called blue stain into the tree, and eventually break down the tree's defenses enough to kill the tree. Then in mid July, the beetles emerge from their home tree in search of a tree to attack and lay their eggs in.

Considering the life cycle of the mountain pine beetle, the best time to manage dead trees (and kill the larvae) is in the fall, winter, or early spring, before July 15 when the beetles emerge and attack green trees in the area. The trick is knowing which trees are dead before the needles begin to turn brown and fall off.

How do we know which trees were attacked by the mountain pine beetle? Look on the trunk for lots of pitch tubes with orange colored pitch. Also look at the base of the tree for boring dust. You can also let woodpeckers show you. Black backed woodpeckers eat the mountain pine beetle larvae in tree bark, so notice which trees woodpeckers prefer. **Continued on page 7**

This tree trunk is covered with orange colored pitch tubes (sap). The pitch is the tree's natural defense mechanism to try and push the beetles out. As the beetles bore into the bark, boring dust is left around the pitch tubes and at the base of the tree.

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Fall is a great time to survey your trees and determine treatment options. Downing dead trees may be an overwhelming proposition depending on the size of your forested land. Protect yourself by focusing on your defensible space starting with the land around your home and roads in case of a fire.

Simply cutting down the dead trees is not enough. The beetle larvae can survive in the tree even after it's been cut. Properly managing the cut wood is imperative to killing the larvae in the tree.

Methods to kill the larvae on cut logs:

Haul to a "safe" site. Colorado State Forest Service and the US Forest Service have partnered to create Community Forestry Sort Yards in the Front Range (www.peaktopeakwood.org) where landowners can drop off their cut trees for free. The sort yard staff will properly kill the beetle larvae and utilize the wood for local uses;

Chip and thinly spread the wood chips or haul it offsite;

Debark by peeling off the bark;
Solar treat by wrapping the cut wood under plastic to create an extended period of high heat;

Burn the wood. Obtain local county health department and local fire protection district permits before burning; or

Bury by covering logs with at least 8 inches of soil.

The next step is to plan your future forest. Contact a local forester to help you develop a forest management plan that allows for both age and species diversity to protect from future outbreaks and disease.

Solar treating cut logs will kill the larvae if done properly

Debarking cut logs will kill the larvae.

Additional Resources:

www.frontrangepinebeetle.org frequently asked questions and information about mountain pine beetle.

http://www.csfs.colostate.edu/ Colorado State Forest Service Factsheets, "Mountain Pine Beetle," "Preventative Spraying for Mountain Pine Beetle," "Solar Treatment of Mountain Pine Beetle Trees"

Winter Planning

By Jennifer Cook
Small Acreage Management Coordinator
NRCS/CSU Extension

I love this time of year because I have more time to cozy up with a book or with my knitting and relax. On cold snowy weekends, I seem to spend more time in the kitchen cooking warm soups and hearty meals. I also like winter because it's a great time to reflect on the accomplishments of the past year, and to think about what things still need to be done. When it comes to land management, there are always improvements to be made and additions to plan. Now is the time to make plans. Here are a few items to consider (while sipping a cup of tea or hot chocolate of course).

Garden planning- What crops did well this year? What do I want to grow next year? A good crop rotation plan is an important strategy to keep pests and diseases under control. It also balances nutrient demands and deters weeds. Make a sketch of your garden and consider moving plants from spot to spot each year. And don't forget to plan on having your soil tested before you apply fertilizers in the spring. Visit the CSU Extension Denver Garden and Horticulture website for LOTS of gardening information. http://www.coopext.colostate.edu/4dmg/

Soil Improvement – I started a compost heap a few weeks ago. It's a great way to recycle food scraps (no meats or oils), bedding, manure, leaves, and grass clippings. The result is nutrient rich soil that can be used in the garden or house plants. Basically, bacteria break down material in the compost heap when the right amount of water, materials, and aeration are added. For more information on composting, visit the NRCS backyard composting website at http://www.nrcs.usda.gov/FEATURE/backyard/compost.html

Manure Management – Evaluate where manure is stored. To reduce water quality contamination, keep manure at least 300 feet away from wells, ditches, or other water sources. Consider composting manure to make a usable product out of this waste product. Read "Composting Horse Manure in Dynamic Windrows" available at the CSU Equine Extension website http://equineextension.colostate.edu/content/view/172/57/

Tree and Shrub Plantings – Now is the perfect time to start planning a windbreak or living snow fence. In order for them to function properly they must be well planned out. Planning includes learning about the soil types on your property, choosing plant species, site location, and maintenance requirements. Contact your local NRCS and Soil Conservation District for planning assistance and to order trees and shrubs.

Weed Management – The dormant time of year is generally not a good time to fight weeds (with a few exceptions). But you can get a head-start on weed management planning for the spring so you are ready to fight them when they come. Make a list of the weeds on your property and read up on the best ways to manage them. A combined approach that incorporates mechanical, chemical, and biological controls is usually the best way to go. Read the CSU Extension fact sheet "Weed Management for Small Rural Acreages" available at http://www.ext.colostate.edu/pubs/natres/03106.html

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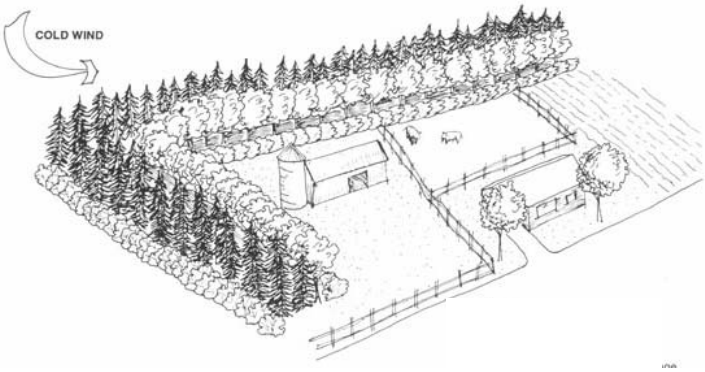

Example sketch of a farmstead windbreak.

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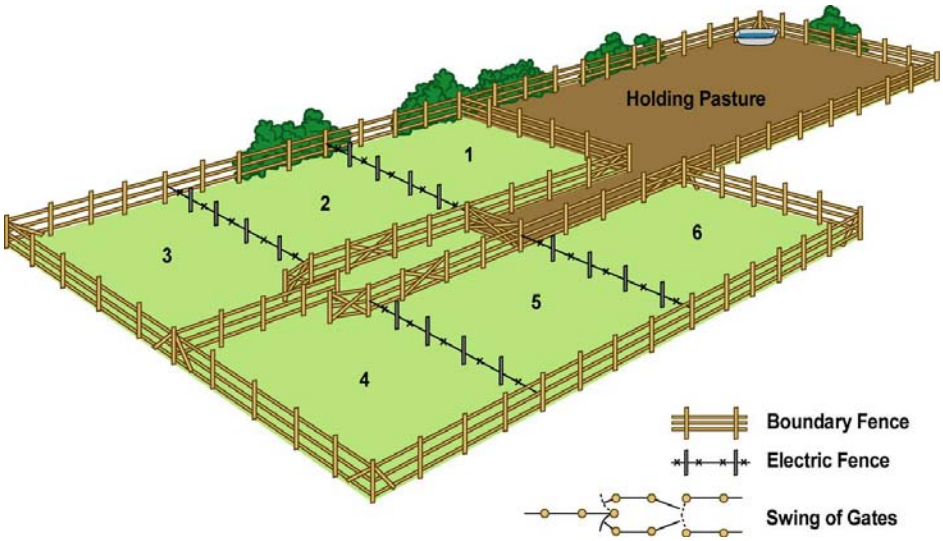
Pasture Management – We had a fairly wet growing season this year. But we can't plan on all that moisture again next year. It takes management to keep pasture grasses healthy in our semi-arid climate. Take some time to read-up on pasture management techniques. Grass plants need their leaves in order to photosynthesize and grow. If the leaves are eaten down to the ground, the grass plants take much longer to recover. Understanding how grazing affects grass growth, and weed growth, will help you make better judgments next year.

Consider splitting your pasture into small turn-outs using temporary fencing. Fencing will allow you to manage where your animals are grazing each day. Ideally, animals can be moved around so that each turnout has plenty of un-grazed time for grasses to re-grow. Try sketching a map of your pastures and design various ways you could divide the area. Contact your local NRCS, CSU Extension, or Soil Conservation District for planning assistance. For more information on pasture/range management, visit CSU Small Acreage Management website at http://www.ext.colostate.edu/sam/pasture.html



Example of a rotational grazing fence layout.

Do you want to learn more about a particular topic?
Do you have a small acreage related story or event to share?
Please let us know. Contact Jennifer Cook at Jennifer.cook@colostate.edu

TEMPORARY FENCING

By Jennifer Cook, Small Acreage Management Coordinator, NRCS/CSU Extension

Temporary fencing can be used to establish a rotational grazing system in which one pasture is subdivided in to two or more areas or paddocks. With the use of temporary electric fencing, animals can be moved around according to forage availability. This article will discuss temporary fencing materials and installation.

Wire

There are two basic types of temporary fencing wires: polywire (electroplastic twine) and polytape (electroplastic ribbon). Both are made of fine metal filaments, which carry the shock, braided with strands of plastic for strength and durability.

The advantage of polwire is that it's about half as expensive as polytape. Manufacturers use stainless steel or aluminum filaments. Although aluminum is a better electrical conductor, stainless steel will be more durable and last longer if you are moving the fence around frequently.

The advantage of polytape is that it is more visible than polywire. Polytape costs more per foot and is slightly more difficult to pick up and move. Polytape usually consists of five to 15 strands of metal (usually stainless steel) filament woven with strands of plastic to form a flat ribbon.

Polywire and polytape won't last forever, especially if you are moving them a lot. Five to seven years is a common life expectancy. Polytape is heavily effected by snow and ice weight, polywire is as well, but not as much.

Reels

If you plan to move the fence for any reason, invest in a reel. Rolling the wire back onto your arm or a spool will just cause a mess, and will kink the wires and break the fine metal filaments. Buy a reel specifically made to hold temporary fence wire.

Posts

There are four basic kinds of posts generally used for temporary fencing. Most common are plastic and metal posts.

Plastic posts have built in treads to step the posts in to the ground. They can be difficult to drive into to dry hard ground. Plastic posts are slightly more expensive than other temporary posts and have a life span of three to five years.

Metal posts are stronger and last longer than any other temporary posts, but they cost more and require more labor to install and remove. Metal t-posts with plastic covers are commonly used.

Fiberglass rods are less expensive than plastic posts but are less convenient to move around. Fence suppliers sell a cap to put on the end of the post to keep it from splintering as it drives in to the ground. Spent shotgun shells also work well.

Some people use 4-foot long 3/8" metal rebar posts. They are cheaper and last longer than plastic and fiberglass posts, but they are not as flexible and will bend if the fence is hit. Plastic insulators slide onto the top to hold the wire in place.

Electric Fence Chargers

It takes a minimum of 700 volts to produce a shock sufficient enough to control short-haired breeds of cattle, pigs, and horses; and a minimum of 2000 volts for long-haired cattle, sheep, and goats. A common fence charge will deliver 4500 to 7000

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Temporary Fencing continued from page 10

volts. The voltage determines whether or not a shock will be delivered, and is not a measure of how much shock is felt. The energy output in a shock is measured in joules. Remember double the joules equals double the shock.

Low-impedance (as compared to high-impedance) chargers are commonly used in temporary fencing because they eliminate heat build-up in the wires. If your field is near a 120-volt power source, you can use an AC-powered charger. If not, use a battery-operated DC charger. Some DC chargers have a battery and recharging system (solar panel) built into the unit. Others operate on a separate system in which you can either recharge the batteries with a battery charger or you can buy a solar pack to keep the batteries charged.

Installation
Generally, one to three strands of wire are needed for cattle and horses. Sheep may need two or three strands. Be careful not to overstretch the wire as the metal filaments may break. Posts can be used every 100 feet, depending on terrain. Good grounding is the most important part of the system. The shock felt by a poorly grounded system may not be enough to keep an animal from walking through the fence. Check the manufacturer's recommendations for grounding your system properly. Grounding techniques will vary depending on soil (rocky, moist, sandy, dry). Check with your local NRCS or CSU Extension office for advice.

Lightning Protection
Electric fence chargers are easily damaged by lightning. If possible, disconnect the charger from the power source and the fence during a lightning storm. Another option is to plug your charger into a surge protector.

For more information about fencing, check out:
ATTRA publication, "Paddock Design, Fencing, and Water Systems for Controlled Grazing"
http://attra.ncat.org/attra-pub/paddock.html#fencing

CSU Small Acreage Management Website
http://www.ext.colostate.edu/sam/

Small Acreage Landowner Forum

December 5, 2009 (9-11:30am)
Brighton, CO

Free!
Get advice from experienced local producers. Informal Open House, bring your questions concerning: dryland, irrigation, windbreaks, tree planting, livestock, pasture management, equipment, feed, hay and crop production, animal care and security, wildlife, soils, agricultural structure design, and weeds.

Location: Adams County Fairgrounds, CSU Extension Administration Building Meeting Room, 9755 Henderson Road, Brighton, CO.
For more information contact
Jennifer.cook@colostate.edu

Animal Grazing Behavior Workshop

December 10, 2009 (8-5)
Wray, CO

Why do cows eat poisonous plants, especially when there's perfectly good grass around? Why do they lick utility poles, exposed soil, and corral poles?

Get a glimpse at what makes animals chose what to eat and where to hang out. Dr. Fred Provenza will present this one day workshop in a practical and entertaining manner. Workshop will be held at the Wray City Hall.

To register for the Animal Grazing Behavior Workshop, send check payable to Yuma County Conservation District (YCCD) to: 247 North Clay, Wray, CO 80758. Registration is $10 before Nov. 25 and $20 afterwards. Lunch, refreshments, and take home materials are included. For more information, contact Julie Elliott at 970-322-3173 x3 or julie.elliott@co.usda.gov

Managing Nitrogen to Maximize Gains

January 7, 2010 (10:30-2:30)
Longmont, CO

Introducing new technology and tools available to optimize nitrogen application, reduce loss, and increase profit per acre. Lunch is provided.

Location: Barn A-Boulder County Fairgrounds, 9595 Nelson Road, Longmont, CO
RSVP to Longmont Conservation District 303-776-4034 ext.3

Toxic Plants for Livestock

January 28, 2010 (1-3pm)
Greeley, CO

Dr. Tony Knight will be speaking about toxic plants for livestock and symptoms.
Location: Colorado Farm Show at Island Grove Fairgrounds, Greeley.

Small Acreage Management Workshop

February 20, 2010
Greeley, CO

Free!
Registration & Coffee: 8:30
Workshop Presentations: 9:00 to 12:30

Topics include Successional Weed Management, Planning Spring Weed Control, and special guest speaker, Kathy Voth will speak about Livestock as Weed Managers.

Workshop will be held in Room 5, of the Weld County Extension Exhibition Building, Island Grove Park, Greeley.

For more information & to RSVP contact Ellen Nelson, West Greeley Conservation District ellen.nelson@wgcd.org

CO Agriculture Big & Small Conference

February 27, 2010
Brighton, CO

Don't miss the Small Acreage portion of the Big & Small Conference. Small acreage managers will learn about grass identification, rotational grazing, weed management and weed identification, water rights, water harvesting, and livestock planning.
Location: Adams County Fairgrounds

For more information, and to register visit **www.coloradoagriculturebigandsmall.com**

CSU Small Acreage Management website
www.ext.colostate.edu/sam/
Topics Include: Events, Frequently Asked Questions, Animals, Composting, Energy, Fencing, Pasture/Range, Soil, Trees and Woodlands, Water, Weeds, Wildlife, Windbreaks and Living Snow Fences

USDA NRCS
United States Department of Agriculture
Natural Resources Conservation Service

Colorado State University
Extension