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Establishing Sustainable Grasses on Dryland

By Kayla Young, Pawnee Buttes Seed Inc.

Establishing sustainable pasture and rangeland in Colorado's semi-arid climate can bring a number of challenges. There is no blanket formula for establishing a successful stand of native grasses, but there are best practices that will promote the ultimate viability of the planting. While seemingly easy, quick steps exist, seeking out short-term relief can create long-term problems.

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Grass drill on a prepared seedbed

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Keep in mind that on a dryland operation in Colorado, a healthy stand of grasses takes three to five years to become fully established. For land managers willing to take the time and effort to invest in their property, the pay-off is well worth the wait. Here are some general guidelines for reseeding your pasture or hayfield.

Timing: In an ideal situation, dryland grass seeding will occur between Dec. 1 and May 1. While this planting window will not always be feasible, timing is everything. On dryland, soil should never be laid bare and left vulnerable to wind or water erosion. For projects falling outside of the December-May timeframe, an alternative maintenance plan will need to be formed to ensure the best results for the land.

Planting should occur as soon as possible after a major soil disturbance, such as oil and gas drilling or construction of a roadway.



This 5 foot no-till drill is ideal for small acreage properties. A no-till drill can plant grass through standing plant residue, such as a cover crop or a sprayed field, so no tillage is necessary.

Control weeds: Before any other work is done, the weeds currently growing on the site must be controlled. Just like with other crops, grasses will not be able to establish in an area where weeds are already creating excessive competition. Plowing, chiseling and disking the soil will kill some existing weeds. Herbicides may be appropriate for particularly difficult perennial weed growth.

Prepare the seed bed: Work the soil with a plow, disc, chisel and/or harrow to achieve the consistency necessary for planting. The soil type and condition will determine how much work needs to be done. Ground that sinks more than an inch under a footstep is too loose. As a measure of adequate tilth, dirt clods should not be larger than an inch in diameter. Proper seed bed preparation will mean greater success later.

Give your crop the upper hand: Plant as soon as possible after the soil has been worked. Waiting will provide an advantage to remaining weed seeds. These seeds will have the first shot at setting down roots in the soil. By planting right away, the seed from the new crop will have less competition and greater opportunity to grow.

Consider a cover crop: If timed properly, planting a warm season cover crop on a dryland operation provides an extra boost to weed control. A sterile sorghum planted June 1 will provide protection from the elements until the ideal planting window opens in December. The sorghum will compete with weeds for the resources that once let them thrive. Ideally, this planting will outcompete the weeds and prevent production of a weed seed crop.

In the fall, the cover crop will die, leaving standing stubble. In December, a grass

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seed planting will be made directly into the stubble of the crop using a no-till drill. The residue provides an additional source of organic matter. This stubble will also capture snowfall and create a water bank to be used by the grasses as they begin to germinate in the spring.

Protect the residue: Do not burn, graze or bale the cover crop for hay. Any one of these will defeat much of the crop's utility, including providing soil cover and an additional source of organic matter. These measures will also leave the ground exposed and vulnerable to wind and water erosion.

Use the right drill: Successful grass seeding requires the right drill. A standard grain drill will plant grass seeds too deep. Bulky, fluffy or chaffy grass seed will also have difficulty passing through a grain drill. A grass drill will seed at the correct depth – about 1/4" to 1/2" deep.

Mow to control weeds after seeding: While several important steps were already taken to control the weed population, a seed bank still remains in the soil. Weeds will come up in the spring, but with

much less force than if the proper soil preparation had not been completed initially.

Once the weeds reach 2 feet in height, use a rotary mower, rather than a mower with a sickle blade. A rotary mower will mulch the growth, rather than laying over fully intact weeds. These weed plants can be left in the field to decompose and contribute organic matter. Mowing down to 4-8 inches will open the canopy for young grasses.

Hold off on grazing: Letting your grass grow without excessive disturbance (i.e. grazing or heavy foot traffic) is best in the first 12 months. While responsible grazing can provide great benefit to a stand of mature grasses, grazing too early will kill young grasses.

Avoid herbicides: Herbicides sprayed the first year after planting can damage new grass growth and compromise the long-term viability of the pasture. Mowing growth down to 4-8 inches one to three times in the first year will reduce competition from weeds.

Avoid fertilizers: Fertilizing a dryland operation can be cost-prohibitive and actually create more problems. The fertilizer will also encourage weeds to grow. Through proper maintenance, the growth of these unwanted plants will decrease naturally over time.

For more information:

[Watch Renovating and Reseeding Your Pasture](#) - a 1-hour recorded webinar, presented by CSU Extension Small Acreage Program.

[Watch Introduction to Pasture Stewardship on the West Slope](#) webinar.

Contact your local NRCS or CSU Extension office for assistance.



Mulching can help to reduce soil erosion after planting.

Canada Thistle

Canada thistle is a deep-rooted perennial that reproduces by roots and seeds. It is the most common noxious weed in Colorado. Seeds remain viable in the soil for 20 years. Canada thistle can be poisonous to cattle and alpacas due to nitrate accumulation.

Controlling this weed will take multiple years of persistent control using a variety of methods.

Control Options according to *Larimer County Weed Reference Guide, 5th edition*:

- ◇ Mow every month. Mowing and/or grazing throughout summer will suppress but plants will quickly regrow after management has stopped.
- ◇ Apply herbicide in the fall before dormancy or in spring prior to seed set.
- ◇ Spot treat escaped plants
- ◇ Contact Palisade Insectary for available biocontrols for Canada thistle (866) 324-2963
- ◇ Use a combination of methods over multiple years for best control. For example mow throughout the summer followed by application of Milestone in the fall.
- ◇ Best herbicides are Milestone, Perspective, Transline, and Tordon.

Do NOT:

- ◆ Shallow tilling, disking, and hand pulling are futile because extensive underground roots will remain and produce a more dense stand.
- ◆ Do not apply excess Nitrogen fertilizer.

For more information:

[Canada thistle factsheet, Colorado Department of Agriculture](#)

[Colorado Weed Management Association](#)

[Canada thistle Biocontrol, Colorado Depart. Of Agriculture](#)



Canada thistle

**Colorado Small Acreage
Services Database**

The source for landowners to
find contractors, equipment, and services.

<http://sam.ext.colostate.edu/>

Need help with weed control options?
Have a small pasture seeding project coming up?
Search the site today to find a local contractor!



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This is a free service brought to you by NRCS/CSU Ext. and your local Conservation District



How to Manage for Healthy Soil

By Francine Lheritier, Resource Soil Scientist, Natural Resources Conservation Service

Over the course of this series of articles celebrating the International Year of Soils, we've covered Why Soils Are Important (winter newsletter), What Soil is and How it Forms (spring newsletter), and How to Assess the Health of Your Soil (summer newsletter). In this fourth and final article celebrating the International Year of Soils, we will discuss How to Manage for Healthy Soil.

Regardless of whether you manage a large farm or a small raised bed, the NRCS's principles of soil health apply.

Follow four basic soil health principles to improve your soil health and sustainability:

1. Keep the soil covered as much as possible.

Erosion happens when the soil is not adequately covered. Wind or water can detach soil particles when the soil is exposed. Unfortunately, along with soil particles, nutrients and organic matter are blown or washed away resulting in a net loss of fertility. Keeping your soil covered as much as possible reduces the total amount of soil lost especially your nutrient-rich top soil.

In addition to soil erosion, soil cover can affect soil temperature and moisture. A soil covered with plant litter/mulch reflects radiation due to its "albedo". Bare and darker soil warms up more readily because bare soil absorbs more radiation than covered soil. The cover also serves as an insulator, mulch cover contains air which is a poor conductor of heat. Especially during the summer, the temperature difference between a covered and bare soil can be significant. At 113° F, some soil bacteria die and at 140° F the majority of soil bacteria die. Plants use soil moisture significantly less efficiently at higher temperatures as more water is lost

through evapotranspiration than utilized for plant growth.

2. Manage soils by disturbing them less.

Soil disturbance such as plowing and rototilling can impact soil by physically breaking up the soil structure and by stimulating microbial decomposition of organic matter. This includes the biological glues



such as polysaccharides and glomalin that are key in maintaining soil structure. Without these biological glues, when the soil gets wet, it collapses and loses large soil pores spaces resulting in a net reduction in infiltration, aeration, and soil microbial activity. Disturbed and compacted soils sometimes more closely resemble a brick than a healthy functioning soil!

3. Keep plants growing throughout the year to feed the soil

Soils feed plants and plants feed soils. Through photosynthesis plants capture soil energy and convert it to organic compounds (from simple sugars to complex organic molecules like lignin). Plants use this captured solar energy for maintenance and growth. Most soil organisms, like us, need an external food source. Plants are the main primary producer and

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solar energy flows through them and then through the food chain.

Plant litter is an important source of organic matter in the soil. But what may come as a surprise to many people, is that many plants also have the ability to “leak” carbohydrates and other root exudates to stimulate soil microbial activity. Fueled by this symbiotic relationship, the area around the root (rhizosphere) is teeming with life in a healthy, functioning soil. This biological activity drives nutrient cycling in the rhizosphere. Many plants also form symbiotic relationships with mycorrhizal fungi by providing carbon to the fungi in exchange for nutrients (especially phosphorous). In these instances, soil microbes are providing services to the plant (i.e. nutrient cycling) at the cost of organic compounds from the plant.

4. Use plant diversity to increase diversity in the soil.

As we know from the last principle, a growing plant adds organic carbon to the soil via plant detritus and root exudates. By increasing the diversity of plants above ground (at the same time or in a crop rotation), the diversity below ground can be enhanced. Diversity can build redundancies and synergies in the soil system which ultimately leads to increased resiliency (to drought for instance). Many would argue that this is the most important principle to improve soil health/function and increase long-term sustainability. For an added incentive, increasing crop diversity in agricultural systems has long been recognized as a tactic for increasing economic resiliency.

Thank you for taking the time to celebrate the International Year of Soils. Although soils are one of our most essential natural resources, they are often taken for granted. You have the opportunity to enhance the soils in your landscape by utilizing the four soil health principles above. Can you think of a better way to thank soils for all that they provide humanity?

For more information, visit [NRCS's soil health webpage](#), the [International Year of Soils webpage](#), or [Web Soil Survey](#).

Short video on soil and carbon—<http://thesoilstory.com/>

Livestock Enterprise Budgets for Small-Scale Operations

CSU Extension has developed numerous small-scale livestock budgets geared towards small acreages. These detailed budgets can be used to organize your current financial planning or use the budgets to help determine if you really want to start a small operation. Budgets are in excel spreadsheet format with default average costs that can be edited to fit your situation.

Detailed livestock budgets are available for turkey, ducks, chicken, wool and meat sheep, meat goats, beef cattle, and horse.

Download Enterprise Budgets at www.coopext.colostate.edu/abm/smallfarm.shtml



Order Your Tree Seedlings

The Colorado State Forest Service (CSFS) is now accepting orders on a first-come, first-serve basis for low-cost seedling trees, shrubs and perennials grown at its Fort Collins nursery. More than 100 species/size options are available, with seedlings ordered now to be distributed statewide next spring.

Coloradans interested in conservation goals such as creating natural wind-breaks, improving wildlife habitat or re-foresting properties impacted by wildfire or floods are eligible to purchase the seedlings. CSFS Nursery Manager Josh Stolz says Colorado-grown species are adaptable and ideal for a variety of conservation uses.

“We’ve really increased our selection over the past few years and now offer perennials, such as those favored by honeybees, in addition to larger trees and shrubs,” Stolz said.

The CSFS seedling tree program is designed to encourage Colorado landowners to plant seedling trees and shrubs for conservation purposes. Through a cooperative effort with Colorado State University Extension offices and county conservation districts throughout the state, approximately 5,000 Coloradans obtain CSFS seedling trees each year.

Conservation seedlings have many uses and benefits, including:

- Wind/snow control to protect roadways and livestock
- Enhanced wildlife habitat and reforestation
 - Increased property values
 - Energy conservation through reduced utility bills
 - Carbon sequestration
 - Reduced soil erosion

Creating habitat for honeybees and other pollinators

To purchase seedling trees from the CSFS, landowners must agree to use them for conservation purposes only. There is no minimum acreage requirement.

To order CSFS tree seedlings, find your local cooperating conservation district or Extension office at <http://csfs.colostate.edu/buying-seedling-trees/> or call the nursery directly at 970-491-8429.

Need help designing your windbreak? Visit the CSU Extension Small Acreage website for details at www.ext.colostate.edu/sam/windbreaks.html



Plant trees for a windbreak to protect your house or barn.



Promoting independence in agriculture for people with functional limitations and their families

JOIN US AT THESE COLORADO WORKSHOPS

About

Join fellow Colorado farmers, ranchers, veterans, their families, and their providers at these upcoming workshops across the state. These educational events are for individuals who are dealing with barriers created by illnesses, conditions, or limitations. **Workshops are from 10:00 a.m. to 2:00 p.m. with a free box lunch provided for those who pre-register at least one week prior to the workshop.**

- **Hayden:** October 29, 2015, Hayden Police Dept., 249 Hawthorne St., Hayden, CO 81639, w/ Todd Hagenbuch (970.879.0825)
- **Mancos:** Thursday, November 5, 2015, Southwest Colorado Community College, ITC Building, 33057 Highway 160, Mancos 81328-9196 w/ Tom Hooten (970.565.3123)
- **Alamosa:** November 6, 2015, SLV Water Conservancy District Office, 623 4th St., Alamosa, w/ Marvin Reynolds (719.852.7381 x15)
- **Burlington:** January 26, 2016, County Extension Office, 817 15th St., Burlington, CO 80807 w/Ron Meyer (719.346.5571)
- **Rocky Ford:** January 27, 2016, Extension Office in Rocky Ford, 411 N. 10th, Rocky Ford, CO 81067, w/ Bruce L. Fickenschier (719.267.5243)
- **Aurora:** February 9, 2016, Arapahoe County Fairgrounds & Event Center, Room 1, 25690 E. Quincy Ave., Aurora, CO 80016 w/ Johnathan Vrabac (303.730.1920)
- **Greeley:** February 11, 2016, SW Weld County Service Center, large conference room, 4209 County Rd. 24-1/2, w/ Keith Maxey (970.304.6535 x2075)
- **Sterling:** February 12, 2016, County Extension Office, 508 S. 10th Ave., Sterling, CO 80751 w/ Dennis Kaan (Voice: 970.345.2287, Mobile: 970.520.1826)

Topics

- AgrAbility
- Estate Planning
- Linking Elder Couples with Returning Veterans
- Beginning Farmers/Ranchers

Agenda

Introduction

- What is AgrAbility?

Estate Planning

- Why is it important?

Understanding Military Culture

- How to work with veterans

The Presenters

Candiss Leathers, CVRT, M.A., is the Rural Rehabilitation Specialist and Manager for Colorado AgrAbility at Goodwill Industries Denver. Her upbringing, education, and experience provide her with the essential tools to assist men and women actively engaged in the agricultural field with assessments and technical guidance.

James Craig, MA, JD, Ed.S., is a Rural Rehabilitation Specialist with the Colorado AgrAbility Project at Goodwill Industries Denver. He will present information that the impaired veteran may use to improve both success on the farm/ranch as well as quality of life.

Norman L. "Norm" Dalsted, Ph.D. is an Extension Economist in Farm and Ranch Management and Professor with Colorado State University Extension. He will present current information that ranch and farm families with disabilities can use for Estate Planning.

Interested in signing up?

To register or to learn more about these workshops, please contact:

Candiss Leathers

720.539.4435 • cleathers@goodwilldenver.org

Norm Dalsted

970.222.5657 • norman.dalsted@colostate.edu

Americans Tend to Think About Wildlife Like Their Ancestors Did

By Rob Novak

Researchers from Colorado State University and The Ohio State University have found evidence that we think about wildlife like our ancestors did. More specifically, the strength of Americans' "domination" wildlife values, or the belief that nature should be conquered and the natural environment used for the benefit of humans, can be traced to the country from which their ancestors migrated.

Values are shifting

Americans demonstrate a wide variety of values toward wildlife that inform their attitudes about wildlife management practices. At the same time, researchers demonstrated that, overall, Americans' values toward wildlife are shifting from a domination view to the view that wildlife deserves treatment equal to humans. Researchers call this line of thought about wildlife "mutualism."

The study of values has important implications for human-environmental interactions, and the management of wildlife throughout the country. Wildlife managers serve diverse constituencies with wide

-ranging viewpoints on management approaches. If managers understand the value orientations of their constituents they can frame the feedback they receive in those contexts, and can communicate their decisions more effectively.

In a recently published article [1] in *Conservation Biology*, researchers from CSU and OSU reported on their study that asked questions about values toward wildlife among residents of the western United States.

Link between values and ancestry

New research has shown that American's wildlife values can be traced back to their country of origin. "From what we know about human values, we assumed that they would persist over many generations and be unlikely to change without a significant reason," said lead investigator Mike Manfredo, head of CSU's Department of Human Dimensions of Natural Resources. "Still, it was a bit surprising to find we could make such clear links between wildlife values and countries of ancestry."

The researchers grouped respondents by country of origin and then compared wildlife value scores to contemporary value scores for residents living in
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Source URL: <http://source.colostate.edu/americans-tend-to-think-about-wildlife-like-their-ancestors-did/>

Wildlife Values continued from page 9

those same countries. These country's values scores were obtained from a global values survey that included a measure of "mastery" over the environment. Wildlife managers use their understanding of their constituencies wildlife values to effectively communicate the reasoning for various management practices. "The relationship was striking," said Manfredo. "For example, the Netherlands, Germany, Denmark and Norway had the highest mastery scores, and Americans who claimed ancestry from those countries had high scores on domination toward wildlife."

Differences among urbanized states

Interestingly, while values toward the environment appear persistent, the researchers also found residents of more urbanized states with higher levels of income and education have lower levels of domination and a growing emphasis on mutualism. In practical terms, those with mutualism values have very different environmental priorities than those with domination values. Mutualism is associated with concerns about declines in wildlife populations and limiting human use of the environment. In contrast, domination is associated with concerns for a healthy economy, private property rights, and lethal control of carnivores when they conflict with human interests.

Can we expect values to keep changing in ways that appear to be more consistent with environmental sustainability? The findings are mixed, according to Manfredo. "It appears as though that type of change is occurring with modernization," he said. "However, we simply do not know if it will continue and if it does, how fast it will occur."

Endnotes:

1. article: <http://onlinelibrary.wiley.com/doi/10.1111/cobi.12619/abstract>
long-term research program:
www.wildlifevalues.org/content/wildlife-values-west

Land Stewardship Program

The Land Stewardship program will train interested residents to become knowledgeable and skilled land stewards and provide the tools necessary to implement cost effective management activities on the land. Utilizing local know-how and research-based information, participants will leave the course with their own customized management plan to put into place on their property. Classes offered in:

Larimer County

Tuesday Evenings from 6:30pm to 8:30pm
January 19 - March 15, 2016

Larimer County Fairgrounds, McKee 4H Building
[Click here for info and registration](#) for Larimer Cty

Montezuma County

Thursday Evenings from 6pm to 8:30pm
January 21 - March 17, 2016

First National Bank of Cortez Community Room
[Click here to register](#) for Montezuma Cty

More information visit www.ext.colostate.edu/sam/ms/

	Topic (agenda varies by location)
Class 1	Setting the Stage: Inventory Resources
Class 2	Focusing your goals, formulate a game plan
Class 3	Soil testing and water holding capacity Improving soil health and fertility
Class 4	Water in Colorado My place in the watershed Irrigation water in my back yard
Class 5	How to grow grasses for forage and hay Woody vegetation growth and benefits
Class 6	How and what to do to control weeds Pasture establishment and renovation
Class 7	Managing grazing and forage production Managing forests and Firewise Planning
Class 8	Dealing with Wildlife
Class 9	Stewardship for Sustainability

Colorado Small Acreage Services Database

The source for landowners to find contractors, equipment, and services



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For a list of upcoming events in your area visit CSU Extension Small Acreage

Management website

www.ext.colostate.edu/sam/

Do you have a question about managing your small acreage?

Contact CSU Extension /NRCS Small Acreage Coordinators:

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John Rizza
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