FALL 2023

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Newsletter

COLORADO SMALL ACREAGE MANAGEMENT

USDA NRCS U.S. Department of Agriculture Natural Resources Conservation Service

COLORADO STATE UNIVERSITY EXTENSION

Inside this issue

Grass workshop at Boulder county-Recap

By Karla Melgar Velis, small acreage specialist, Front Range Region

Grass is one of those primordial and very characteristic plants of the state of Colorado, a great source of food to sustain livestock production and horse facilities, it is also a major part of recreational activities, restoration projects and ornamental uses. For this reason, we joined forces with the Boulder County Extension office to bring a workshop that focused on the different aspects of grass growth that would make decision making easier for those looking to maintain their pasture health. Although at the moment we will stay around the Front Range area for this workshop, we still want to share some of the highlights of this workshop, so keep reading to learn more about what we talked about during this event.

C3 AND C4 TYPES

The names C4 and C3 come from the role of carbon in the photosynthesis process of these plants. Cool season grasses, or C3 grasses use a three-carbon compound, called Rubisco. Rubisco is more attracted to oxygen particles, than CO2, its stomates open more often than C4 plants do. When temperatures are warm, C3 grasses can fixate O2, this process is called photorespiration, and results in lower carbohydrate production, therefore, less energy available to the plant. When photorespiration occurs the plant reduces it's growth, and with low water availability, this plants will often go dormant.
Warm season grasses or C4 grasses are more efficient at CO2 fixation in high temperatures. They use a different enzyme called PEP carboxylase. These grasses require more energy to produce carbohydrates than C3 but are able to do so without photorespiration, so they are more efficient at storing water in their system. So, because of their different adaptations, you may want to consider these characteristics when choosing a cool vs a warm season grass for your pasture.

HOW DO GRASSES GROW?

Grass stems, called culms grow from the base of the plant (called crown). Narrow leaves extend from the culms arounf structures called nodes that join different culm segments together.

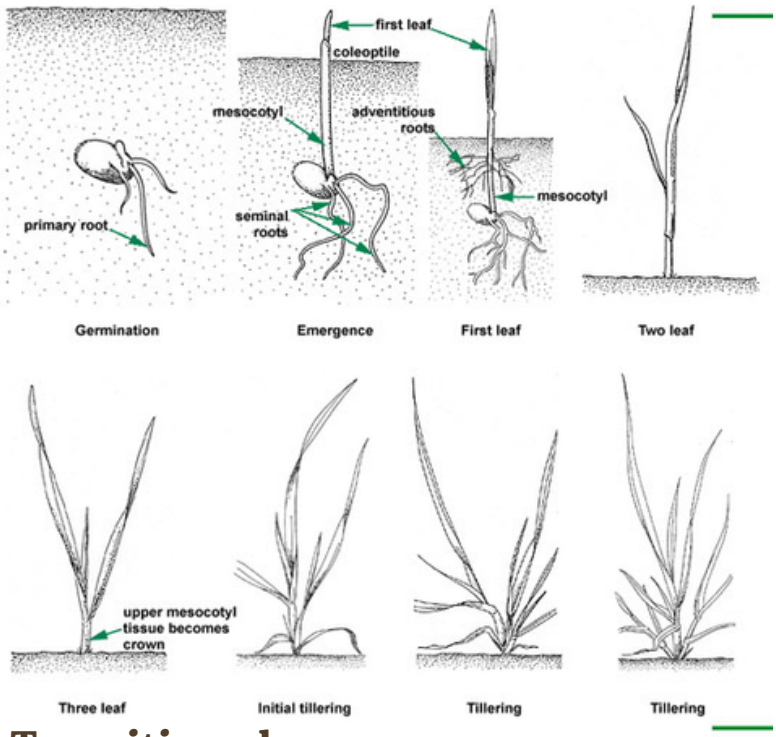
Regardless if a grass is warm or cool season, they will go through 3 different phases: vegetative phase, the transition phase and the reproductive phase.

During the vegetative phase, grasses germinate, emerge, produce their first 3 leaves and tillers. During this phase, leaf blade collars remain nested at the base of the plant and there is no evidence of sheath elongation or culm development. After that, environmental factors and hormones push grass into a transition phase, in which shoots elongate, and grasses produce up to 4 nodes. The reproductive or flowering phase of a grass starts with the conversion of the shoot apex from vegetative transforms to a floral bud. This process is mostly only seen once the seedhead starts emerging from the sheath of the flag leaf (which is called the boot stage). After a few days, individual florets within the seedhead will be ready for self or cross pollination. Many producers refer to the "boot stage" as an indicator for quality harvesting. The boot stage occurs when the seedhead is enclosed within the sheath of the flag leaf.

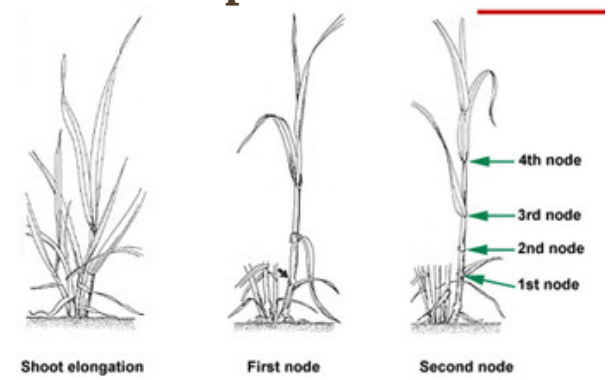
HOW DOES DEFOLIATION AFFECT GRASS GROWTH?

Depending on the timing and use of the grass, regeneration can take longer to occur. A common issue, especially in overgrazed fields is that growing points get removed from the plant as animals graze the plant down. The growing points of a plant move up on the culm as the plants grow. During the vegetative stage, growing points are often located close to the base of the plant, while at the elongation phase or transitional phase, growing points move up the culm. During the reproductive stage the plant has stopped growing in height and starts producing seeds, so defoliation during this stage and dormant stage may be less risky for the plant, as the plant has completed growth and will start growing new leaves after dormancy.

Vegetative phase



Transition phase



Reproductive phase

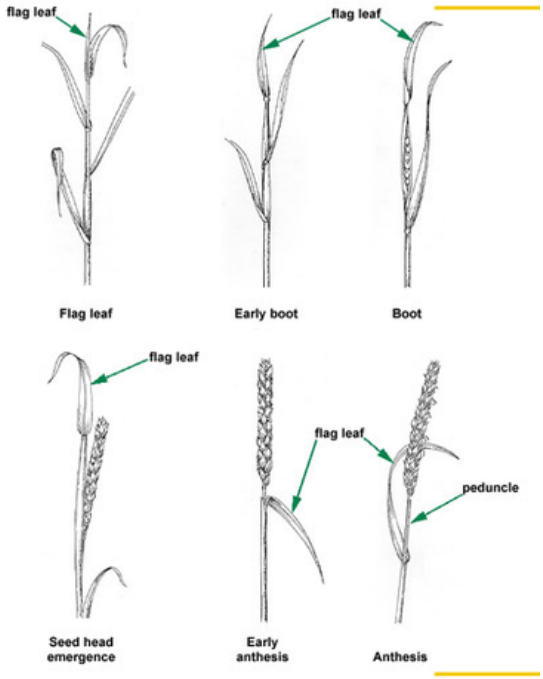


Photo courtesy of Oregon State Univeristy, Department of Crop and Soil Science.

HOW DOES DEFOLIATION AFFECT GRASS GROWTH? CONTINUED...

Removing tissue when the plant is actively growing, and leaving the growing point intact will most likely not affect the ability of the plant to grow actively for most of the season (if there is good soil moisture and temperatures) and removed tissue can be replaced at an efficient rate. When plants are severely defoliated during the vegetative and transition phase, there's a high chance of delaying the process of regrowth during next spring, as the new buds will not have enough energy to start regrowth.

Defoliation affects grass species differently. Some grasses keep their growing points or buds in the lower area of the plant and remain vegetative for longer and produce a lot of leaves rather than producing seedheads. An example of those plants is kentucky bluegrass, buffalo grass, bentgrass and blue grama. These plants are also considered short-grasses and are common ornamental/lawn grasses because they allow mowing at shorter heights, while keeping their characteristic green foliage and their growing points intact.

On the other hand, grasses like smooth brome, timothy, ryegrass, big bluestem, switchgrass tend to produce a lot of reproductive tillers, as opposed to vegetative tillers and usually push their growing points up the stem. Mowing or grazing height for these types of plants has a different effect because as plants are defoliated it is more likely that the growing points are removed from the plant, forcing it to produce new tillers from the crown, which requires more energy from the plant. If the growing points are constantly removed from the plant, it stops it's ability to photosinthesize and generate energy, and roots eventually reduce.

The ability of a grass to regrow will depend on keeping those growing points in the plant during the vegetative phase. Spring and early summer defoliation will usually have a good regrowth rate if the growing points are left intact, as the plant will have enough time to regrow leaves and start accumulating energy in the root system. Late summer and fall grazing may have opposite effect, as the plant sends carbohydrates to the root system for storage as the dormant season approaches. These stored carbohydrates will help the plant produce the initial growth in the spring.

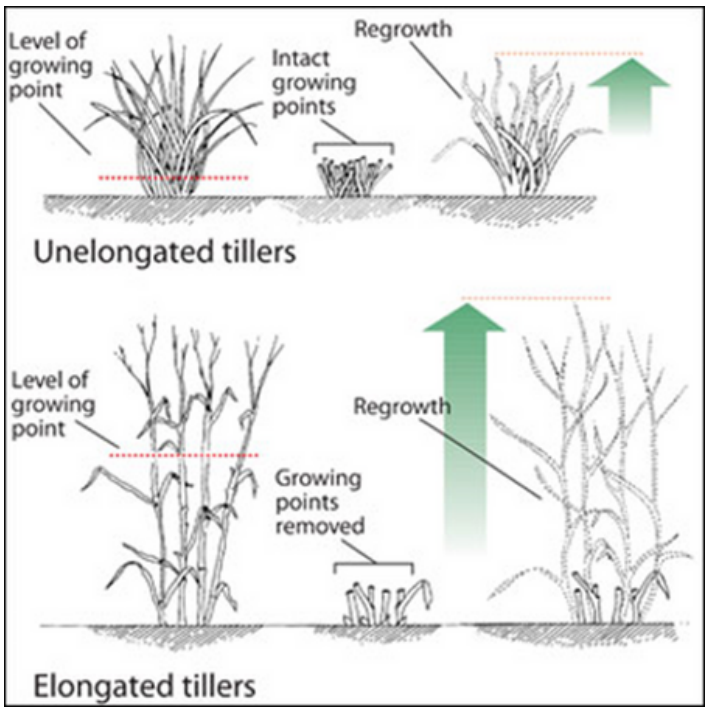


Photo courtesy of University of Missouri Extension- Dairy Grazing: Growth of Pasture Plants

SOURCES:

Oregon State University. (n.d.). Forage Information System. Retrieved from forages.oregonstate.edu: https://forages.oregonstate.edu/regrowth/how-does-grass-grow/developmental-phases

Schacht, W., Sandall, L., & Fick, W. (2004). Perennial plant response to defoliation- An Overview. Lesson. (P. a. Sciences, Ed.) University of Nebraska-Lincoln. Retrieved from https://passel2.unl.edu/view/lesson/50d18f39cff4

BEFORE YOU DIG

By Cindy Einsphar (NRCS Outreach & Beginning Farmer/Rancher Coordinator) and Andy Steinert (NRCS Soil Survey Leader)

This is an example of gas line that was hit during a dig in another state and the reason for the immense importance of calling before we dig. Let's keep us safe

WHAT IS 811?

811 is the national call-before-you-dig phone number. Anyone who plans to dig should call 811 or go to their state 811 center's website a few business days before digging to request that the approximate location of buried utilities be marked with paint or flags so that you don't unintentionally dig into an underground utility line.
811 protects you and your community! Hitting a buried line while digging can disrupt utility service, cost money to repair, or cause serious injury or death. Always contact your 811 center, wait the required time for utilities to respond to your request, and ensure that all utilities have responded to your request before putting a shovel in the ground.

DO I NEED TO CALL 811?

Yes! Any digging requires contacting your 811 center, either by calling 811 from anywhere in the U.S. or making your request through your state 811 center's website. Planting a garden? Installing a fence or mailbox? You must contact 811.

When you dial 811, you will automatically be connected to a representative from your state's 811 center who will ask you simple questions about the location and details of your digging project. If you make your request online, you will enter the same information into a form. Either way, you will receive a ticket number and instructions for how much time utilities have to respond to your request, as well as how to confirm that all utilities have responded before you can safely dig.

WHATS NEXT?

Digging Safely
You called before digging, waited for your lines to be marked, confirmed that all utilities responded to your request, and now it's time to roll up your sleeves and get to work!

Make sure to always dig carefully around the marks, not on them. Some utility lines may be buried at a shallow depth, and an unintended shovel thrust can bring you right back to square one -- facing potentially dangerous and/or costly consequences. Don't forget that erosion or root structure growth may shift the locations of your utility lines, so remember to call again each time you are planning a digging job.

DO I REALLY NEED TO CALL?

Yes! Even projects you might think are "small," like planting a garden, require you to contact 811.

"I am only planting a small flower bed or bush..."
Did you know that many utilities are buried just a few inches below ground? You can easily hit a line when digging for simple gardening projects, like planting flowers or small shrubs.

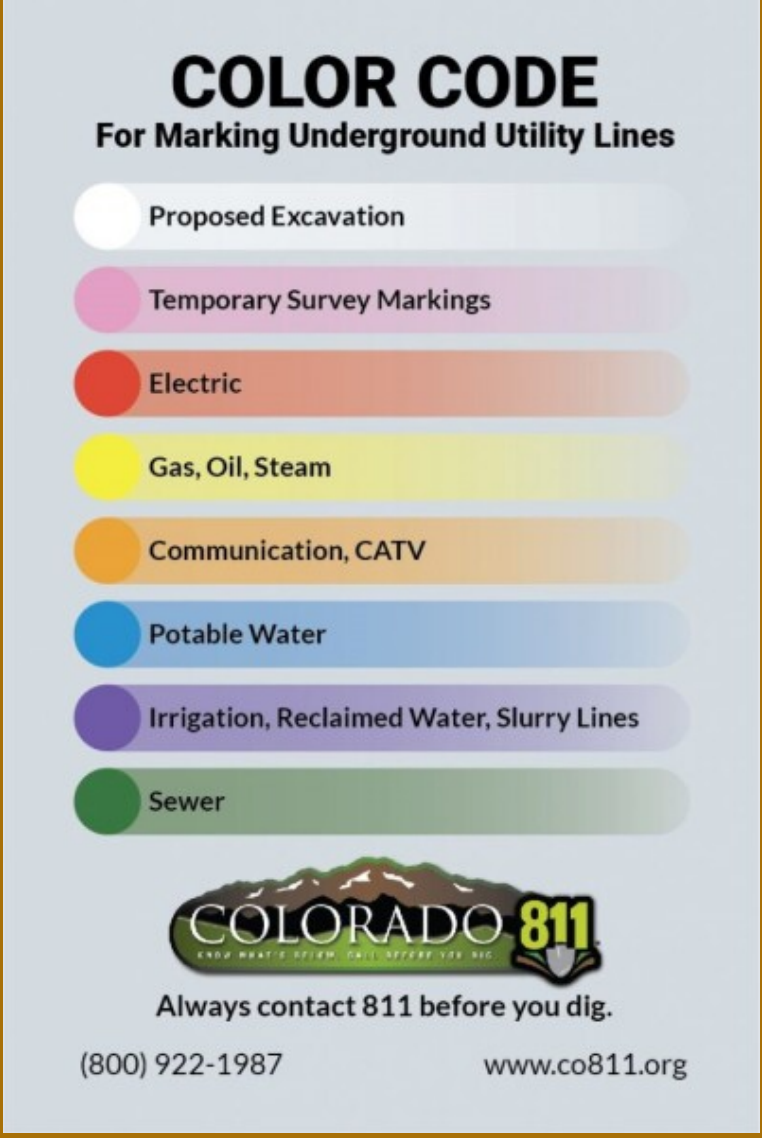
"I am just installing a mailbox..."
Buried utility lines are everywhere! Installing mailboxes and fences are examples of projects that absolutely require a call to 811 to know what's below before digging. Hitting a line can knock out service to your home and neighborhood or result in fines, damage, and serious injury.

I am digging in a spot that was previously marked...
Erosion and root system growth can alter the depth or location of buried lines, or your utility companies may have completed work on their lines since the last time you dug – so you must contact 811 before you dig, each and every time.

"I have hired a contractor or landscaper to do the digging project..."
Be sure to check with your contractor or landscaper to make sure that they will contact 811 a few business days before digging begins – whether it means you making the call, or your contractor doing so.

"I am only digging in a small area and don't want my entire yard marked..."
If you are only planning to dig in a small portion of your yard, you can outline the area in white paint or white flags available at home improvement stores to ensure that only the utilities in that part of your yard will be located and marked. Be sure to let your 811 center know about your plans, and they will help ensure the proper area is marked by utility locators.

If NRCS is going to do the digging, such as soils investigation, 811 notified soil scienist that we as NRCS need to call for the utility locate. If a utility locate is needed for a construction project the contractor is responsible for calling in the utility locate. In summary whoever is doing the digging/excavating is the person that needs to call the locate.



Weedy plants characteristics and management strategies

By Bonface Manono, Small Acreage Specialist, Mountain Region

WHAT ARE WEEDS?

Weeds are undesirable plants growing where they are not wanted and not intentionally sown. They are naturally strong competitors, persistent, and often have negative impacts on agricultural crop and livestock production. While correct weed identification is necessary for its management, knowing a plant's lifecycle can be used to exploit its weakness when making weed management decisions. For example, to avoid weed competition, herbicide application can be synchronized with a weed's lifecycle while tillage operations or planting date can be influenced by weeds germination period.

WEED IDENTIFICATION RESOURCES

Identifying a weed can be very difficult because its appearance can vary between different growth stages and environments. To aid weed identification efforts, Colorado State University Extension provides online resources free of charge in their respective county websites.
Additionally, you can check the guide to poisonous plants if you are in doubt of some weeds that could potentially be harmful to animals and humans.
Other excellent resources available online include:

1. https://ag.colorado.gov/conservation/noxious-weeds/species-id, Colorado Department of Agriculture's weed list.
2. https://cwma.org/weed-information/weed-list/, the Colorado Weed Management Association's weed list.
3. https://plants.usda.gov/home, The USDA-NRCS'S plants database.

You can also consult local extension agents, USDA-NRCS and county weed specialists.

WEED CHARACTERISTICS

Some plant traits make certain plants to behave like an weed. Additionally, not all weeds are introduced species. There are a few native "weeds" that can become weedy if not managed correctly. Plants that have some of the following characteristics may become weedy:

1. They produce many seeds.

2. The plant germinates and establishes quickly, and tend to outcompete desirable plants.

3. They adapt quickly to the environment and may exhibit different characteristics in different environments..

4. They develop a mechanism of seed dormancy that ensures seed germination when conditions are favorable. They also prolong the germination time to increase their ability to survive.

5. Weed seeds remain viable in the ground for many years if left undisturbed.

6. Their seeds easily spread by natural forces. For example, by floating and allowing dispersal on water or wind, clinging to animal fur or human clothing, and or passing through animal gut. They can also be spread by farm equipment.

7. In addition to seeds, perennial weeds, may have special vegetative structures that facilitate their reproduction without seed production. These vegetative structures can be:

- Stolons – aboveground horizontal stems that shoot at the buds.
- Rhizomes – below ground horizontal stems that grow near the soil surface.
- Tubers – starch storage structures below the soil surface that grow into new shoots.
- Bulbs – modified leaf tissues that are located at the base of the stem that can grow into new shoots.
- Some weeds have allelopathic effects (their plant parts exude chemicals that prevent other plants from growing in the same area by inhibiting germination of other seeds or altering the environment.

8. They are adapted to disturbed environments.

9. They may not have pests or diseases to regulate their population.

Additional resources

- https://extension.colostate.edu/topic-areas/agriculture/noxious-weeds-invasive-plant-species/
- Koski, T., Shonle, I., Jones, K. and Whiting, D. (2010). Colorado State University Extension Master Gardener Weed Management Course Notes.
- Whitson, T. D., Burrill, L. C., Dewey, S. A., Cudney, D. W., Nelson, B. E., Lee, R. D., & Parker, R. Weeds of the West. (Revised edition 2012). https://www.wyoextension.org/agpubs/pubs/wsws-1.pdf

WEED CLASSIFICAITON BY LIFE CYCLE

A weed's life cycle can provide the best guide to an effective weed management program. Based on this, there are three categories:

- Annual weeds

These weeds germinate, produce seeds, and die off within a year. They are common in disturbed sites characterized by annual cropping systems (tilled fields, areas treated by non-selective herbicides, and monocultures). Annuals often germinate as separate cohorts over an extended period.

Winter annual weeds complete their life cycle within a year.
They germinate in late summer or fall to early spring, although some like horseweed do germinate in the fall and early summer. On the other hand, summer annual weeds germinate in late spring or summer. These summer annual weeds produce flowers in a short time after emergence.

- Biennial weeds

These are weeds that complete their life cycles in two years. They germinate and establish in the first year into a rosette growth stage, that protects the plant from extreme temperature, drying winds and browsing animals. During the second year, the weed flowers, produces seed, and then dies off. These categories of weeds are common in areas of infrequent management such as pastures, roadsides, or hayfields.

- Perennial weeds

These are weeds that live for longer than two years with a tendency to live indefinitely. These weeds have developed structures that they use to regenerate each year. They are more common in less disturbed environments such as alfalfa and grass forage pastures. Perennial weeds are difficult to control after establishment since it may require killing both underground and aboveground structures. There are two types of perennials:
v Simple perennial weeds that form a deep taproot and reproduce by seed.

-Creeping perennials are either herbaceous or woody plants, and are spread by seed or vegetative structures. These are some of the hardest weed infestations to control.

EFFECTIVE WEED CONTROL BASED ON LIFE CYCLE

An effective weed management strategy can be developed by targeting its life cycle and growth stage.

- Seed producing weeds can be effectively controlled when young and actively growing before seed production. This cna be done with mechanical, biological or chemical methods.
- The rosette stage of biennial weeds provides the most susceptible stage for their control.
- Herbicides work better in established perennials just before flowering to the flowering stage.The fall is usually a good time to target these weeds as they try to store carbohydrates in their root systems. Herbicides will be translocated to all parts of hte plant during this time, providing more effective control.
- Frequent cutting can be effective in starving the plant's carbohydrate movement from the leaves to underground storage structures for perennial weeds.

NEW Inflation Reduction Act (IRA) Funding Opportunities Now Available for Colorado Historically Underserved and Beginning Farmers and Ranchers

Longmont, CO, October 13, 2023 - USDA's Natural Resources Conservation Service (NRCS) in Colorado encourages historically underserved and new and beginning farmers and ranchers to apply for Inflation Reduction Act (IRA) funding through its Environmental Quality Incentives Program (EQIP) or Conservation Stewardship Program (CSP). Ag producers have until November 13, 2023, to be considered for this round of IRA funding.

"IRA funds are designed to support climate-smart mitigation activities and other conservation activities that facilitate them," said Clint Evans, NRCS State Conservationist in Colorado. "It enables farmers and ranchers the ability to implement expanded conservation practices that reduce greenhouse gas emissions and increase storage of carbon in their soil and trees."

IRA EQIP

The Environmental Quality Incentives Program (EQIP) is NRCS' most flexible conservation program. Through it, landowners receive financial and technical assistance to implement structural and management conservation practices which optimize environmental benefits on working agricultural land. In this round of IRA_EQIP funding, Colorado landowners may apply to improve soil health, wildlife habitat, and forestry conditions.

IRA CSP

Through CSP, the NRCS offers ag landowners a variety of conservation practices and enhancements, and the opportunity to implement activities through new technologies and management techniques. CSP helps landowners build upon their existing conservation efforts while strengthening their operation. This round of IRA_CSP funding will prioritize cropland, pastureland, rangeland, farmstead, forest land, farmstead, and associated agricultural land for improved soil health, renewal ag land, and renewal non-industrial private forest land NIPF.

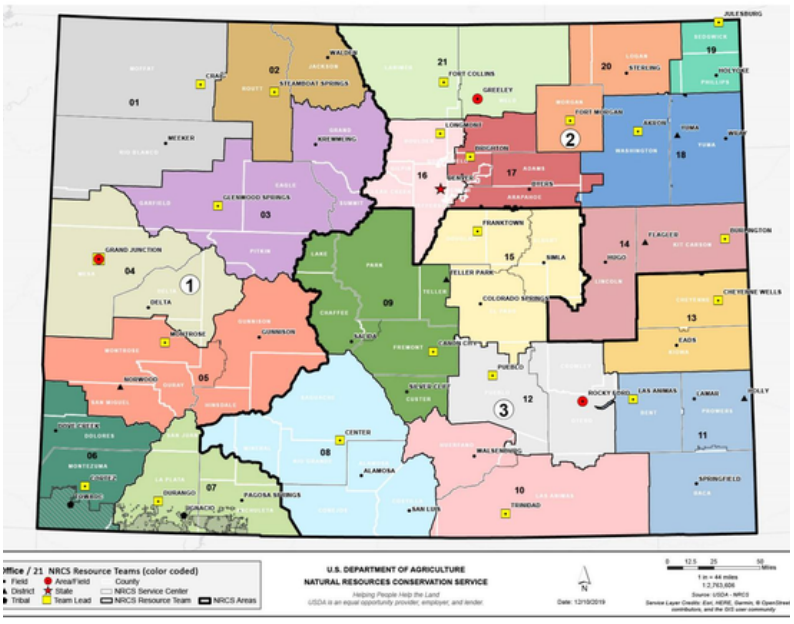
How to Apply?

Interested landowners in Boulder, Broomfield, Clear Creek, Gilpin, Jefferson Counties are encouraged to contact LONGMONT FIELD OFFICE contact Karen Mandujano, RTL-DC at karen.mandujano@usda.gov, or 720-978-5533 to learn more and apply. Applications must be submitted by November 13, 2023, to be considered in this round of IRA funding. Applications received after November 13th, will be considered in future IRA funding opportunities. The NRCS is also implementing this opportunity through its ACT NOW Initiative. ACT NOW allows producers who have fully established eligibility records with the Farm Service Agency (FSA) the opportunity to apply for applicable NRCS funding and potentially know if their project will be funded in an expedited manner.

USDA is an equal opportunity employer, provider, and lender.

Find your local NRCS point of contact by clicking here

Colorado NRCS Offices



RESOURCES AND EVENTS

Soil Revolution 2023 Conference

Wednesday, December 13, 2023
7 a.m. - 4 p.m.
Boulder JCC.
6007 Oreg Ave
Boulder, CO 80303
Register here

Colorado Women in Ag Conference

November 17 and 18, 2023
Conference begins Friday Afternoon and concludes Saturday early afternoon.

Island Grove Event Center, 421 N. 15th Avenue, Greely, CO
Click here for more information

2023 West Greely Ag Symposium

November 29th and 30th, 2023
8 AM - 5 PM
Island Grove, Greely, CO
Lunch included when you RSVP by November 10th.
Register to this FREE event here

Sign up for CO-HORTS online classes from CSU Extension Horticulture Specialists

A gardening year-in-review
Wednesday November 8, 12pm-1pm MT
Register here

Fresh New Gardening Myths
Wednesday, December 13, 12pm-1pm MT
Register here

Free backyard compost workshops

Saturday, Oct 21 from 10 am to noon
In-person workshop at the Boulder County Recycling Center.
Register here