

NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

PASTURE AND HAY PLANTING

(Acre)

CODE 512

DEFINITION

Establishing native or introduced forage species

PURPOSE

- Establish adapted and compatible species, varieties or cultivars for forage production
- Improve or maintain livestock nutrition and/or health
- Balance forage supply and demand during periods of low forage production
- Reduce soil erosion and improve water quality
- Increase carbon sequestration

CONDITIONS WHERE PRACTICE APPLIES

This practice may be applied on lands where forage production and/or conservation is needed and feasible.

CRITERIA

General Criteria Applicable to All Purposes

Select plant species and their cultivars based upon the following factors.

1. Climatic conditions, such as annual rainfall, seasonal rainfall patterns, growing season length, humidity levels, temperature extremes and USDA Plant Hardiness Zones
2. Soil condition and position attributes such as pH, available water holding capacity, aspect, slope, drainage class, fertility level, salinity, depth, flooding and ponding, and levels of toxic elements that may be present
3. Resistance to disease and insects common to the site or location

Specified seeding rates, methods and dates of planting shall be consistent with Colorado NRCS and Colorado State University Guidance.

Calculate seeding rates on a pure live seed (PLS) basis.

Plant to proper depth ensuring seed will contact soil moisture uniformly. Prepare site to provide a medium that does not restrict plant emergence.

Schedule planting dates during periods when soil moisture is adequate for germination and establishment.

All seed shall be labeled and meet Colorado Seed Law and Federal Seed Act requirements.

Select species that according to Federal, state or local regulations, are not noxious or invasive.

Make fertilizer and soil amendment recommendations based on a current soil test and a plan that meets the Colorado 590, Nutrient Management Conservation Practice Criteria.

Inoculate legume seed with the proper species of viable Rhizobia before planting.

If using coated seed, recalibrate the planting equipment to deliver the same number of seeds per area as would be applied with non-coated seed.

Exclude livestock until the plants are well established.

If application of this practice will affect cultural resources (archaeological, historic, historic landscape or traditional cultural properties), follow NRCS national policy and Colorado operating procedures for considering cultural resources.

Additional Criteria for Establishing Adapted and Compatible Species, Varieties or Cultivars for Forage Production

Select forage species based on the intended use, realistic yield goal, maturity stage, compatibility with other species and level of management the producer is willing to provide. Verify plant adaptation to the proposed planting area prior to planting.

Additional Criteria for Improving or Maintaining Livestock Nutrition and/or Health

Establish forage species that are most capable of meeting the desired level of nutrition (quantity and quality) for the kind and class of livestock.

Additional Criteria for Balancing the Forage Supply and Demand during Low Forage Production Periods

Select plants that will produce forage for use during periods when other on-farm/ranch forage does not meet livestock needs. Forage species selected shall balance or help balance the dry matter demand of the animals for the specified period.

Additional Criteria for Reducing Erosion and Improving Water Quality.

Plants shall provide adequate ground cover, canopy cover, root mass and vegetative retardance to protect soil against wind and water erosion.

Additional Criteria to Increase Carbon Sequestration

For optimal carbon storage, select species that increase site biomass.

CONSIDERATIONS

In areas frequented by a high density of animals, establish persistent species that can tolerate close grazing and trampling.

Where wildlife management is an objective, use an approved habitat evaluation procedure to aid in selecting plant species and providing for other habitat requirements.

Where air quality concerns exist, site preparation techniques should be utilized that will minimize airborne particulate matter generation and transport.

Plan and implement Cover Crop, Prescribed Burning, Prescribed Grazing, Brush Management, Grazing Land Mechanical

Treatment and Forage Harvest Management Conservation Practices in combination with Pasture and Hay Planting.

Forage species planted in a mixture should exhibit similar palatability to one another to avoid spot or selective grazing.

PLANS AND SPECIFICATIONS

Prepare specifications for the establishment of pasture and hay plantings for each site or management unit according to the Criteria, Considerations and Operations and Maintenance sections of this standard. Specifications shall describe the requirements for applying this practice to meet the intended purpose.

Record specifications on job sheets, in narrative statements included in the conservation plan or in other acceptable documentation that is referenced in the conservation plan.

A completed Colorado ECS-5, Grass Seeding Planned and Applied Worksheet, is required for all Pasture and Hay Planting plans.

Specifications shall address the following elements, as applicable, to meet the intended purpose.

Seedbed Preparation

Irrigated Sites – The seedbed should be firm and smooth, and free of annual and perennial noxious weeds and other plants that may interfere with stand establishment.

Plant seed in clean ground, weed free stubble or herbicide treated sod. Stubble and herbicide treated sod are ideal seedbeds for slopes where erosion from irrigation may be a problem. Plant companion crops if adequate water is available and management favors stand establishment rather than companion crop harvest.

Nonirrigated Sites – Seedbeds are required to have protection against water and wind erosion by one of the following methods or conditions.

1. Leave a standing preparatory dead litter stubble cover of sorghum or sudangrass to provide protection from blowing. If cover crop growth is more than desirable or if the cover crop will produce mature seed, clip the cover crop to a 12-15 inch height and remove the excess biomass from the field, unless restricted by program requirements.

2. Seeding into existing sorghum or small grain cover harvested the previous season may be used in place of a cover crop provided the stubble height is maintained at 12 inches or more and weeds and volunteer grain are controlled. When weeds and volunteer grain are not controlled, tillage and cover crop planting are required before grass seeding. Do not use cereal rye for existing cover.

Seeding

Use planting equipment capable of placing seed at the proper depth and rate for the selected species and site conditions.

Fertilizer Application

Base nutrient recommendations on soil test results and a nutrient management plan that meets the Colorado 590 Conservation Practice Standard Criteria. If phosphorus is required, apply and incorporate before seeding. Delay nitrogen applications until the stand is established.

Fertilizer applications made without a soil test recommendation may cause excess weed growth that will inhibit stand establishment.

Species Selection

Select species for Pasture and Hay Planting according to Colorado Plant Materials Technical Note No. 59, Table 6, 2002.

Seeding Rates

Calculate grass and legume seeding rates according to Colorado Plant Materials Technical Note No. 59, Table 5, 2002. Calculate cover crop seeding rates according to the Colorado Cover Crop Specification Guide, Code 340, 2003.

Planting Dates, Nonirrigated

Plant grasses, legumes and other seeded species within the seeding periods specified in Colorado Plant Materials Technical Note No. 59, Table 2, 2002, with a provision that allows 10 days flexibility from the specified periods for adapting to local soil moisture conditions.

Planting Dates, Irrigated

Spring and summer seeding is acceptable where adequate irrigation water is available for stand establishment. Control early weeds before seeding and or plant a cover crop and seed late summer where irrigation water supply is dependable.

In areas with open winter ground conditions, plant late summer seedings before July 15 to prevent winter kill or frost heaving of seedlings.

Plant warm season species and hard to establish cool season species at least 60 days prior to the average date (2 years in 10) for a temperature less than 24° F. (Colorado Climate)

Plant easily established cool season species at least 30 days prior to the average date (2 years in 10) for a temperature less than 24° F. (Colorado Climate)

Seed Analysis

All seed either purchased or grown for personal use will meet the following minimum standards if the seeding is cost shared.

1. Seed labeling, quality and testing will be in accordance with the Colorado Seed Law. This requires that seed be tested according to "Rules for Seed Testing" Association of Seed Analysts (AOSA) and Rules and Regulations under the Federal Seed Act.
2. Purity and germination tests for all lots of seed shall be less than one year old.

Seed Source

Use adapted improved varieties and cultivars in the following order of preference, when available.

1. Certified named varieties
2. Named varieties
3. Common seed

Certified named varieties are required for all NRCS cost shared programs. If certified seed is not available, submit a request for exemption to the State Resource Conservationist. If both Certified named varieties and Named varieties are not available, common seed originating from the same general locality as the planting site may be used upon approval.

Management for Establishment

Control weeds and seed production from volunteer small grain and cover crops with mowing or herbicide applications, as appropriate. Harvest during initial establishment is limited. Refer to the Colorado Forage Harvest Management Conservation Practice Standard, Code 511, 2003, for minimum stubble heights to maintain stand life.

OPERATION AND MAINTENANCE

The operator will inspect and calibrate equipment prior to use to insure proper rate, distribution and depth of planting.

Monitor growth of seedlings or sprigs for water stress. Depending on the severity of drought and water stress, reducing weeds, early harvest of any companion crops, irrigating when possible, or replanting failed stands may be required.

Control invasion by undesirable plants by cutting, using a selective herbicide, or by grazing management by manipulating livestock type, stocking rates, density and duration of stay.

Control insects and plant diseases when an infestation threatens stand survival. Evaluate forage stands each season or as needed to determine management input requirements to achieve the intended purpose(s).

REFERENCES

Colorado Field Office Technical Guide, Section I. Plant Materials Technical Note No. 59. 2002. Plant Suitability and Seeding Rates for Conservation Plantings in Colorado. USDA, Natural Resources Conservation Service. Lakewood, CO.
http://efotg.nrcs.usda.gov/efotg_locator.aspx?map=CO

Colorado Field Office Technical Guide, Section IV. Cover Crop Conservation Practice Standard. Code 340. 2004. USDA, Natural Resources Conservation Service. Lakewood, CO.
http://efotg.nrcs.usda.gov/efotg_locator.aspx?map=CO

Colorado Field Office Technical Guide, Section IV. Forage Harvest Management Conservation Practice Standard. Code 511. 2003. USDA, Natural Resources Conservation Service. Lakewood, CO.
http://efotg.nrcs.usda.gov/efotg_locator.aspx?map=CO

Colorado Field Office Technical Guide, Section IV. Nutrient Management Conservation Practice Standard. Code 590. 2003. USDA, Natural Resources Conservation Service. Lakewood, CO.
http://efotg.nrcs.usda.gov/efotg_locator.aspx?map=CO

Colorado State University Cooperative Extension Crop Publications, Fort Collins, CO.

No. 0.103, Planting Guide for Field Crops.
<http://www.ext.colostate.edu/pubs/crops/00103.pdf>

No. 0.303, Improve Yield with High Quality Seed.
<http://www.ext.colostate.edu/pubs/crops/00303.pdf>

No. 0.305, Legume Seed Inoculants.
<http://www.ext.colostate.edu/pubs/crops/00305.pdf>

No. 0.537, Fertilizing Alfalfa and Grasses.
<http://www.ext.colostate.edu/pubs/crops/00537.pdf>

No. 0.703, Alfalfa: Production and Management.
<http://www.ext.colostate.edu/pubs/crops/00703.pdf>