



Natural Resources Conservation Service
CONSERVATION PRACTICE STANDARD
ANNUAL FORAGES FOR GRAZING SYSTEMS

CODE 513

(Ac)

DEFINITION

Establish adapted and compatible species, varieties, or cultivars of annual forage suitable for grazing.

CRITERIA

General Criteria Applicable to All Purposes:

PURPOSE

Use this practice to accomplish one or more of the following purposes:

- Balance the quantity and quality of forage to meet livestock nutritional requirements during known periods of forage quality deficit.
- Reduce plant pest pressure on sites where perennial forages exist or will be established.
- Reduce nutrient transport to surface or groundwater.
- Reduce soil compaction and improve soil aggregate stability.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to lands where annual forages are planted as part of a grazing system forage budget.

This practice is applicable to pastureland used for silvopasture.

This practice does not apply to the establishment of annually planted crops that are mechanically harvested.

This practice does not apply to forest or range land uses.

Do not use this practice to increase herd size through added forage production.

CRITERIA

General Criteria Applicable to All Purposes:

NRCS reviews and periodically updates conservation practice standards. To obtain the current version of this standard, contact your Natural Resources Conservation Service State office or visit the Field Office Technical Guide online by going to the NRCS website at <https://www.nrcs.usda.gov/> and type FOTG in the search field.

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Month Year

Establish annual species capable of providing an alternative forage supply to address the grazing animals' nutritional demand. Select plants that will produce forage of sufficient quality and quantity during periods when other on-farm forage species may not meet livestock nutritional demands.

Select annual plant species and cultivars based on:

- Forage quality and suitability to address animal nutritional requirements during known periods of forage nutritional deficiency.
- Plant-animal interactions or toxicity issues inherent to the forages being utilized.
- Limited or manageable anti-quality issues or livestock safety risk factors such as prussic acid, high nitrates, or bloat.
- Adaptation to the soils, site conditions, ecological sites, and climatic conditions. Ensure that the species selected are suitable for the planned conservation practice, purpose, and management for example, yield estimates, maturity stage, season of use, and compatibility with other species. Use NRCS state seeding lists, Ecological Site Descriptions, Plant Materials Center recommendations, and NRCS species selection tools to choose appropriate species and cultivars/selections for the site and purpose. Ensure that species selected are not on federal or state noxious weed lists or local invasive species lists.
- Resistance to herbicide carryover and disease/insects common to the site or location.

When appropriate, select cultivars and named selections that are intended for the practice and purpose for better adaptation and performance.

Always purchase high quality seed and plants from reputable sources. Seed must have a label or seed lab analysis which complies with federal and state seed laws, including germination, purity, and weed content. Seeding recommendations are based on pure live seed (PLS) to ensure the planting meets state implementation requirements for the practice and purpose.

- Introduced forage, turf, and agronomic species may base seeding rates on bulk pounds as long as they meet the germination and purity minimums, typically 80-90% PLS, as regulated by Federal and state seed laws (refer to the species covered by these laws).

When harvesting seed locally to be used in an NRCS conservation planting, use an accredited lab to test seed to determine germination, purity, and inert matter content, and conduct a state noxious weed analysis. This will provide required information to determine the planting rate and identify any included weed species so that appropriate controls and/or monitoring can be planned to avoid spreading undesirable species.

If the specific rhizobium bacteria for a selected legume is not expected to be sufficiently present in the soil, either purchase pre-inoculated legume seed or treat the seed prior to planting with the appropriate inoculum.

In plantings where coated seed is used, follow state, local, and/or vendor seeding rate guidance to ensure the planting meets the seeding recommendation as specified in state NRCS seeding guidance. Coated seed will vary from uncoated seed in seeds per pound, germination rates, and establishment, which must be accounted for to ensure the conservation practice is met. Coated seed planted at a bulk rate must also meet the germination and purity minimums, typically 80-90% PLS, as regulated by Federal and state seed laws.

Follow a grazing management plan that will address the nutritional needs of livestock during known periods of forage quality deficit.

If planting annuals into an existing perennial stand or establishing perennials following the annual planting, manage grazing to ensure field conditions are suitable for promoting regrowth of perennials or establishing perennials.

When sheet, rill, or wind erosion are a concern, maintain adequate residue or growing cover.

Additional criteria to reduce plant pest pressure on sites where perennial forages exist or will be established:

When replacing a stand of existing plants, fully terminate or control the existing vegetation prior to planting. If needed when planning vegetation control, refer to CPS Herbaceous Weed Treatment (Code 315), CPS Brush Management (Code 314), CPS Prescribed Burning (Code 338), or Pest Management Conservation System (Code 595).

Select species that are effective at controlling or suppressing undesirable target species.

When using this practice to facilitate the establishment of perennial forages, select annual forage species that improve biotic or abiotic site conditions and promote the establishment of desired perennial species. Avoid planting species that have allelopathic effects.

When necessary, plant follow up crops of annual forages in subsequent years to achieve sufficient control of weeds or perennial vegetation and ensure favorable site conditions for establishing new perennial forages.

Follow a grazing management plan designed to optimize the capability of the annual forages to suppress undesirable species.

Additional criteria to reduce nutrients transported to surface or ground water:

To determine existing soil nutrient levels, perform annual soil tests according to land grant university procedures.

Account for nutrients provided by legumes, manure, or compost.

Utilize plant species having nutrient requirements that will provide uptake and removal of excess nutrients.

Select annual forage species with root depth sufficient to reach the nutrients not removed by the previous crop.

Additional criteria to reduce soil compaction and improve soil aggregate stability:

Select plant species based on their ability to improve soil aggregation or reduce compaction. For example, use plants with fibrous roots to address shallow compaction and soil aggregation and deep-rooted plants to address deep compaction.

Follow a grazing management plan designed to minimize soil compaction, enhance soil organic matter, and support soil biological activity. If soils are susceptible to compaction, do not graze when saturated.

CONSIDERATIONS

Use this practice to facilitate the transition to a land use or production system that results in a higher level of conservation benefit as documented in a nationally approved environmental evaluation.

Evaluate the effects of successive applications of this practice by observing the long-term impacts on plant community dynamics and other site attributes such as soil biology, soil movement, and water quality.

Incorporate livestock grazing on cropland to enhance ecological benefits.

When planning repeated grazing events, select species that will tolerate the planned grazing frequency.

To mitigate air quality concerns, incorporate site preparation measures that will minimize airborne particulate matter generation and transport.

Identify opportunities to enhance or achieve additional conservation benefits by using this practice in

combination with other conservation practices, including, but not limited to:

- CPS Brush Management (Code 314)
- CPS Herbaceous Weed Treatment (Code 315)
- CPS Prescribed Burning (Code 338)
- CPS Critical Area Planting (Code 342)
- CPS Filter Strip (Code 393)
- CPS Pasture and Hay Planting (Code 512)
- CPS Grazing Management (Code 528)
- CPS Nutrient Management (Code 590)
- CPS Pest Management Conservation System (Code 595)

To increase both above and below-ground organic material, use heavy stemmed forages with high carbon to nitrogen ratios such as millets, sudangrass, sorghum-sudangrass crosses, or other species with known fibrous root systems.

Maintain adequate stubble heights to capture snow and contribute to improved soil moisture.

Select plants that will provide adequate ground cover to protect the soil against wind and water erosion.

Choose a mix of at least two plant functional or structural groups to enhance biodiversity and improve soil health.

Evaluate potential species for negative effects on subsequent crops.

Develop grazing management plans to ensure sufficient residual plant material is maintained to protect the soil against wind and water erosion.

As part of a livestock grazing management system, consider using this practice to change grazing rotations for the benefit of breaking disease, parasite, or other pest reproductive cycles and enhancing livestock health.

Manage grazing to maintain sufficient above-ground plant material to reduce runoff and transport to surface waters.

Manage grazing such that manure and urine are evenly distributed across the field.

When using this practice to uptake excess soil nutrients from livestock feeding areas, rotate the location of animal feeding areas annually to reduce nutrient over accumulation.

Plant annual forages at a stand density and row arrangement adequate to reduce runoff and transport of sediment and nutrients to surface waters.

Use CPS Filter Strip (Code 393) near riparian areas to reduce sediment, chemical, pathogen, and nutrient transport.

If plant nutrients or soil amendments are applied, base applications on the results of a current soil test and NRCS state guidance, land grant university, extension, or research institute recommendations, or agency field trials. Refer to CPS Nutrient Management (Code 590).

If herbicides are applied, ensure applications are in accordance with label directions. Observe all herbicide label restrictions, including those for livestock grazing, when forages are treated with herbicides. Refer to CPS Herbaceous Weed Treatment (Code 315).

PLANS AND SPECIFICATIONS

Prepare plans and specifications for the establishment of the chosen species of annual forage(s).

Document the requirements for implementing the practice using implementation requirements, specifications, or other similar documents.

Plans will include the following:

- The client's goals and the supporting objectives.
- Map with field number(s) and acres.
- Species of plant(s) to be established.
- Site preparation.
- Planting dates, rates, and depths.
- Inoculants needed for legumes, if applicable.
- Type of planting equipment.
- Length of time each annual forage will be grown.
- Method of termination of existing or prior vegetation, if applicable.
- Weed control methods and rates, if applicable.
- Description of successful establishment for addressing the practice purpose and when evaluation of establishment should be completed (e.g., minimum percent ground or canopy cover, percent stand, and stand density).
- Protection of plantings (if applicable), such as minimum grazing heights for plant establishment, livestock exclusion periods, or harvest deferment periods.
- A grazing plan written to address the general and any specific criteria for the purpose(s) for which this practice is used.

OPERATION AND MAINTENANCE

Provide the client with an Operation and Maintenance plan that includes a list of the required management and corrective actions that contribute to the longevity and function of the annual forage planting.

At a minimum, include procedures for:

- Monitoring and recording forage utilization and minimum residual (i.e., stubble) heights for the annual forages.
- Monitoring forage crop establishment and performance and adapting grazing or harvest management to meet the intended purpose.
- Identifying and assessing potential needs for fertilization or soil amendments.
- Monitoring for undesirable ecological effects on the site, such as soil movement, reduced soil biological activity, reduced water quality, or outbreaks of undesirable plants or other pests.
- Contingencies or necessary adjustments to the planting and management plan, such as replanting, changing the species or mix of species, planting methods, strategies, and timing, grazing periods, and weed or pest management.

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PRE-DECISIONAL/DELIBERATIVE