United States Department of Agriculture

Conservation Enhancement Activity

E512C

CONSERVATION STEWARDSHIP PROGRAM

Cropland conversion to grass for soil organic matter improvement

Conservation Practice 512 - Forage and Biomass Planting

APPLICABLE LAND USE: Crop (Annual & Mixed); Crop (Perennial)

RESOURCE CONCERN: Soil

ENHANCEMENT LIFE SPAN: 5 years

Enhancement Description

Conversion of cropped land to grass-based agriculture. Mixtures of perennial grasses, forbs, and/or legume species are established on cropland where annually-seeded cash crops have been grown.

Criteria

- The current NRCS wind and water erosion prediction technologies must be used to document the average annual soil erosion estimates and soil conditioning index improvements.

- Establish perennial grassland mixture on cropland. Select deep-rooted perennial species that provide adequate kinds and amount of plant materials needed to increase soil organic matter. Mixtures shall be selected based on:

    - Minimum of 50% grass species.
    - Must contain at least one legume.
    - Climatic conditions, such as annual precipitation and its distribution, growing season length, temperature extremes and the USDA Plant Hardiness Zone.
    - Soil condition and landscape position attributes such as; pH, available water holding capacity, aspect, slope, drainage class, fertility level, salinity, depth, flooding and ponding, and levels of phytotoxic elements that may be present.

  - Resistance to disease and insects common to the site or location.
  - Intended use, level of management, realistic yield estimates, maturity stage, and compatibility with other species. Verify plant adaptation to the area prior to planting.

- Follow state specific recommendations for planting rates, methods and dates. Seeding rates will be calculated on a pure live seed (PLS) basis. Plant at a depth appropriate for the seed size or plant material, while assuring uniform contact with soil.
- Prepare the site to provide a medium that does not restrict plant emergence.
- Plant when soil moisture is adequate for germination and establishment.
- All seed and planting materials must meet state quality standards.
- Do not plant federal, state, or local noxious species.
- Apply all plant nutrients and/or soil amendments for establishment purposes according to a current soil test and developed specifications.
- When planting legumes, use pre-inoculated seed or inoculate with the proper viable strain of Rhizobia immediately before planting.
- Exclude livestock until the plants are well established.

Additional criteria when livestock are included in the system:

- Grazing plan must be developed to keep grazing period(s) sufficiently short to allow for plants to recover before re-grazing occurs.
- No more than 20% of the mixture may be alfalfa. Other legumes (especially non-bloating species) may be used in place of or in addition to alfalfa up to a maximum legume percentage of 50%.
- In areas where animals congregate, establish persistent species than can tolerate close grazing and trampling.

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Documentation and Implementation Requirements

Participant will:

☐ Prior to implementation, select a perennial grassland mixture for establishment. Verify the mixture contains at least one legume. *If livestock are included in the system, no more than 20% of the mixture may be alfalfa. (NRCS will provide technical assistance, as needed.) If livestock are included in the system, in areas where animals congregate, establish persistent species than can tolerate close grazing and trampling.*

Species	Species type (grass, legume, broadleaf)

☐ Prior to implementation, select planting technique, seeding rates, and timing appropriate for the site and soil conditions. (NRCS will provide technical assistance, as needed.)

Planting Date	
Planting Technique	
Seeding rates	

☐ *If livestock are included in the system, during implementation following establishment, a grazing plan must be developed to keep grazing periods sufficiently short to allow for plants to recover before re-grazing occurs.*

☐ During implementation, keep the following documentation:

- Records and photographs of planting preparation and any materials purchased or materials on hand used for the implementation of the enhancement.
- Documentation of seed (Pure Live Seed) and any fertilizer or soil amendments used for the implementation of the enhancement.
- *If livestock are included in the system, keep documentation and photographs of turn in/turn out grazing records for each field.*

☐ After implementation, make documentation and records available for review by NRCS to verify implementation of the enhancement.

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NRCS will:

- ☐ As needed, provide technical assistance to meet the criteria of the enhancement.
- ☐ Prior to implementation, use selected mixture and site information to calculate the soil loss and the Soil Condition Index (SCI) values using current NRCS wind and water erosion prediction technologies. **Soil erosion = _____t/ac/year and SCI value = _____**
- ☐ Prior to implementation, verify the enhancement is planned for cropland.
- ☐ Prior to implementation, verify the selected perennial grassland mixture includes a minimum of 50% grass species. *If livestock are included in the system, no more than 20% of the mixture may be alfalfa. If livestock are included in the system, in areas where animals congregate, establish persistent species than can tolerate close grazing and trampling.*
- ☐ As needed, prior to implementation, NRCS will provide technical assistance:
    - o Planning site preparation and establishment specifications meeting NRCS Conservation Practice Standard Forage and Biomass Planting (512).
    - o Preparing specifications for applying this enhancement for each site using approved specification sheets, job sheets, technical notes, and narrative statements in the conservation plan, or other acceptable documentation.

☐ Prior to implementation, verify the enhancement is planned for cropland.

☐ During implementation, evaluate any planned changes to verify they meet the enhancement criteria.

☐ *If livestock are included in the system, verify during implementation following establishment, that a grazing plan is developed to keep grazing periods sufficiently short to allow for plants to recover before re-grazing occurs.*

☐ After implementation, verify the planned perennial grassland mixture was established to specifications developed for the site.

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NRCS Documentation Review:

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

Participant Name _____ Contract Number _____

Total Amount Applied _____ Fiscal Year Completed _____

_____ _____

NRCS Technical Adequacy Signature Date

United States Department of Agriculture

South Dakota (SD) Supplement to Conservation Enhancement Activity

CONSERVATION STEWARDSHIP PROGRAM

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Additional Criteria for SD:
In addition to the criteria specified in the National job sheet E512C, the following additional criteria apply in SD:

- See the SD Range Technical Note No. 4 (found in Section 1 of the SD Technical Guide at http://efotg.sc.egov.usda.gov) for more information on:
  - Table 1 lists allowable varieties for use in SD
  - Table 2 provides seeding rate guidance
  - Table 3 provides information on species characteristics and adaptability
  - Table 4 lists allowable species for each forage suitability group by Major Land Resource Area (MLRA).
- On slopes over 8 percent (%), 50% of the seed mixture (pure live seed (PLS) basis) will be rhizomatous species.
- Cool-season grasses are recommended when including non-native legumes in the mix.
- If mixing native and introduced grasses, species must be similar in phenology, morphology, and seedling vigor.
- Do not utilize until the stand is fully established. This period will be a minimum of one full growing period.
- Varieties of alfalfa or other legumes suitable for hay may be selected.
- For additional information see the SD Prescribed Grazing Standard (528), the SD Forage and Biomass Standard (512) and the appropriate SD Range Technical Note.

Additional Documentation Requirements for SD:

In addition to the documentation requirements specified in the national job sheet E512C, the following additional documentation requirements apply in SD:

- Complete the SD Range Tool (SD-CPA-39 Forage/Animal Inventory, Grazing Schedule using the SD-CPA-15 or similar form, and SD-CPA-16 or similar grazing records document) *if applicable*.
- Complete a drought contingency plan using the SD Drought Tool or provide the participant with a copy of the example drought contingency plan located within the SD Prescribed Grazing Technical Note 9 *if applicable*.
- Complete the SD Seeding Tool (SD-CPA-4).
- Complete the appropriate erosion prediction software (RUSLE2, WEPS, IET) for conditions before and after implementation of enhancement.
- Include a Forage Harvest Management narrative in the conservation plan *if applicable*.