Natural Resources Conservation Service

CONSERVATION PRACTICE STANDARD

CULTURAL PLANTINGS FOR SOIL HEALTH

CODE 825

(ac)

UNDER EVALUATION

DEFINITION

Managing and improving a soil ecosystem by growing two or more culturally significant plants together using cultural and biological strategies that improve soil health, foster the cycling of resources and promote biodiversity.

PURPOSE

This practice is used to accomplish one or more of the following purposes:

- Improve soil organism habitat and diversity.
- Maintain or increase soil organic matter.
- Improve soil aggregate stability.
- Decrease compaction.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies on all lands suitable for production of desired forages, crops, or other plants, shrubs and trees, where two or more culturally significant plants are grown together to improve soil conditions and promote biodiversity.

CRITERIA

General Criteria Applicable to All Purposes

Establish cultural plantings into one or more of the following arrangements:

- seeding or transplanting herbaceous vegetation, and/or woody plants into existing stands of woody perennials, forested land, and/or agroforestry systems (e.g., Yarrow, Huckleberry/Blueberry, Thimble Berry into established forest edges, Breadfruit trees planted for polyculture system).
- seeding or transplanting herbaceous vegetation, and/or woody plants into perennial vegetation such as native range or pasture systems (e.g., Bitterroot, Cous Root, Camas, & Wild Onion planted into perennial grass).
- plants simultaneously growing in no distinct arrangement (e.g., Miyawaki Agroforestry).
- Seeding or transplanting woody and/or herbaceous plants into cropland (e.g., food forests)

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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Plant suitable plant species according to local soil and climate conditions. Consider water source and supply for selects plants if supplemental water is necessary for survival.

Any chosen plant species cannot be listed on any federal, state, or county noxious species list.

Any chosen plant species cannot be listed as a controlled substance.

Select plants with complementary water requirements to avoid water stress on either species.

Use plant materials representing at least two different plant species. If planting into an existing stand, the existing species may constitute one of the two required plant species.

For this practice, “Culturally Significant Plants” are a diverse selection of plants that contribute directly to people’s well-being, spirituality, heritage, and/or food sovereignty. Culturally significant plant species are valued for their traditional, present, and potential uses for human and environmental benefits. These plants are determined by any one of the following sources:

- USDA Plants Database – Culturally Significant Plants
  https://plants.usda.gov/home/culturallysignificantplants
- NRCS State Culturally Significant Plants List or Ecological Site Descriptions
- CEMA 222 - Indigenous Stewardship Methods Evaluation species recommendations or other tribal species recommendations
- Other State identified/approved Culturally Significant Plants Resource, such as from another state or federal agency, or university resources (ex. https://hilo.hawaii.edu/library/guides/hawaiian-collection/plants-in-hawaiian-culture)
- If client wishes to select species not present from the above sources, the client shall consult with state NRCS specialists.

Additional Criteria to Improve Soil Organism Habitat and Diversity, Soil Organic Carbon, and Soil Aggregate Stability

Minimize soil disturbance from establishment, cultivation, and/or production methods.

Select plants with diverse physical characteristics (height, leaf arrangement, growth form: prostrate vs vertical) to ensure soil is covered.

Maximize year-round soil cover by one of the following methods: Increasing living roots, increasing plant residue, and/or implementing mulching.

Additional Criteria to Improve Compaction

Combine shallow rooted plants with deep rooted plants, as defined in the USDA PLANTS Database or other list approved by your NRCS specialist, as applicable.

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CONSIDERATIONS

Consider selecting species that can:

- Improve plant productivity and health.
- Improve plant structure and composition.
- Habitat for wildlife and pollinators.

Consider allelopathic properties of plants.

Consider pest deterrence or pest host attributes of selected plant species if pest pressure is a consideration.

Consider plant varieties that exhibit desirable qualities for the purpose in the given region. For example, some varieties of corn are taller and provide more structural support for the growth of a vining legume.

Consider legume seeds inoculated with N fixing bacteria to maximize N contribution.

Consider maintaining 50% adequate soil cover with plant residues, dormant perennial plants, and/or mulches. Use CPS 484 Mulching or CPS 384 Woody Residue Treatment if cover is insufficient.

Consider that harvest is permitted but plant residues and undisturbed decomposition should be maximized at every opportunity.

Consider limiting livestock and/or wildlife browsing until grazing pressure will no longer impact species survival.

Ensure practice does not conflict with crop insurance eligibility.

Minimize competition for resources such as sunlight, water, and nutrients among by selecting compatible and/or synergistic species.

Select appropriate sites with consideration to light, moisture, and soils.

If establishing plantings into forest stands, select plants with attention to planting date, size at maturity, and other physical characteristics of both species to promote successful establishment and plant vigor, or

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establishing a second plant into an already established stand before the existing plant has fully reached maturity.

PLANS AND SPECIFICATIONS

Develop plans and specifications for each field or production area within the operation according to the Criteria and Operation and Maintenance requirements of this standard.

The plan documentation should include:

- Purpose(s)
- Activities planned to meet the Criteria for each purpose.
  - In Field Soil Health Assessments for cropland, rangeland, pastureland, and forestland.
  - Summary information gathered designating culturally significant species (ex. CEMA 222 - Indigenous Stewardship Methods Evaluation outcomes).
- Inventory of all species in planting area during initial meeting (including culturally significant and non-culturally significant species)
- Plants species to be grown and planting strategy. Include whether the desired species are on the Culturally Significant Species list.
- Narrative of cultural significance of chosen plant(s) to the producer.
- Aerial site photograph(s) or site map(s) of where practice is planned and implemented.
- Soil survey map and inherent soil properties of each map unit, including any soil properties, features, or characteristics limiting plant establishment and growth including but not limited to:
  - Soil Type
  - Soil Texture
  - Soil Drainage Class
  - Depth to root restrictive layer
- Site properties including but not limited to:
  - Sun exposure
  - Flooding potential
  - Drought potential
  - Risks of Introducing Unwanted Plants to Adjacent Sensitive Habitat
  - Benchmark Weed/Invasive Plant Species Pressure
  - Current dominant plant species on site
- Initial benchmark and planning data including:
  - inventory of site species composition with photos at establishment
  - in-field cropland soil health assessment, range soil health assessment, interpreting indicators of rangeland health assessment, pasture condition score, forest health assessment, or soil conditioning index (SCI) as applicable.
- Planting information including but not limited to:
  - Site preparation and timing
  - Plant species list
  - Plant material type (bare root, plug, seed, etc.)

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  - Number or PLS
  - Planting period
  - Plant material handling
  - Planting method
  - Plant protection
  - Layout/arrangement
  - Weed/brush management during establishment
  - Irrigation requirements
  - Fertilizers and amendments
- Survival for woody and herbaceous species is MLRA dependent and shall be determined by the state specialists.
- Annual management plan for planted species to ensure successful establishment and survival.
- Keep records of plant establishment dates, timing, seeding rates, and available plant materials tags.

OPERATION AND MAINTENANCE

Following implementation, follow up data shall be collected including:

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  - inventory of site species composition with photos at establishment
  - in-field cropland soil health assessment, range soil health assessment, interpreting indicators of rangeland health assessment, pasture condition score, forest health assessment, or soil conditioning index (SCI) as applicable.
    - NOTE: These assessments may not change/trend in a positive direction immediately upon species establishment given that soils may be slow to show improvement.
  - Monitoring plant monthly for the first year
  - Take pictures following establishment for certification

Inspect site annually to ensure establishment and survival. If survival of woody or herbaceous species does not meet requirements the client must replant in failed areas.

Control weeds as necessary.

Control pests based on the threshold levels of pest presence and plant damage expected.

Review or revise plan periodically to determine if adjustments or modifications are needed.

Planning CEMA 216 Soil Health Testing is recommended to monitor plan.

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