

**NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD
FORAGE AND BIOMASS PLANTING**

(Ac.)

CODE 512



DEFINITION

Establishing adapted and/or compatible species, varieties, or cultivars of herbaceous species suitable for pasture, hay, or biomass production.

PURPOSE

- Improve or maintain livestock nutrition and/or health.
- Provide or increase forage supply during periods of low forage production.

Reduce soil erosion.

Improve soil and water quality.

Produce feedstock for biofuel or energy production

CONDITIONS WHERE PRACTICE APPLIES

This practice may be applied as a stand alone practice or as part of a conservation management system.

This practice applies all lands suitable to the establishment of annual, biennial or perennial species for forage or biomass production. This practice does not apply to the establishment of annually planted and harvested food, fiber, or oilseed crops.

CRITERIA

General Criteria Applicable to All Purposes

Forage and biomass plantings need to comply with all local, state and Federal laws and regulations.

Impact to cultural resources, wetlands, and Federal and State protected species shall be evaluated and avoided or minimized to the extent practicable during planning, design and implementation of this conservation practice in accordance with established National and Florida NRCS policy, General Manual (GM) Title 420-Part 401; Title 450-Part 401, Title 190-Parts 410.22 and 410.26), and National Planning Procedures Handbook (NPPH) FL

Conservation practice standards are reviewed periodically and updated if needed. To obtain the current version of this standard, contact your Natural Resources Conservation Service [State Office](#) or visit the [Field Office Technical Guide](#).

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Supplements to Parts 600.1 and 600.6, National Cultural Resources Procedures Handbook (NCRPH), and The National Environmental Compliance Handbook (NECH).

All necessary permits and letters of exemption need to be obtained prior to implementation of this practice.

Evaluate site specific practice effects for the practice in accordance with guidance information contained in the NPPH, and Sections III and V of the NRCS Field Office Technical Guide (FOTG).

Unless permitted by law for biomass production (Florida Administrative Code Biomass Planting 5B-57.011 [<https://www.flrules.org/gateway/RuleNo.asp?title=INTRODUCTION%20OR%20RELEASE%20OF%20PLANT%20PESTS,%20NOXIOUS%20WEEDS,%20ARTHROPODS,%20AND%20BIOLOGICAL%20CONTROL%20AGENTS&ID=5B-57.011>]), do not plant any species found on the Florida Dep. of Agriculture and Consumer Services or the Florida Dep. of Environmental Protection noxious or prohibited weed lists or any species listed as a Category 1 invasive species by the Florida Exotic Pest Plant Council (see FL FOTG [Section I f \[4\]](#)).

Select plant species and their cultivars based on:

- 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.

Follow recommendations for planting rates, methods, and dates obtained from the plant materials program, land grant and research institutions, extension agencies, or agency field trials.

All seed and planting materials will meet state quality standards. When seeded material is used, seeding rates will be calculated on a pure live seed (PLS) basis or percent

germination (<http://www.plant-materials.nrcs.usda.gov/pubs/idpmstn04265.pdf>).

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. This means that when planting into a tilled field, plant seed or vegetative material into a firm, weed-free seed/plantbed.

When overseeding into existing sod, the site needs to be heavily grazed, mowed, or burned to remove top growth. If prescribed burning is used the practice shall be planned and implemented in accordance with Florida Conservation Practice Standard Prescribed Burning, Code 338.

Plant when soil moisture is adequate for germination and establishment.

Apply all plant nutrients and/or soil amendments for establishment purposes according to a current soil test. Where nutrients are applied at maintenance rates, a current soil test is one that is \leq 5-yr old. For nutrient applications above maintenance levels, a current soil test is one that is \leq 1-yr old. Application rates, methods and dates are obtained from the plant materials program, land grant and research institutions, extension agencies, or agency field trials.

When planting legumes, use pre-inoculated seed or inoculate with the proper viable strain of rhizobia immediately before planting. If coated seed is used, planting rates may need to be adjusted and equipment calibrated to deliver the recommended weight or seed per square foot.

Exclude livestock until the plants are well established. Annual grasses are generally well established when they are 6 to 8 inches tall, the third leaf is fully developed, and the plant cannot be easily pulled out of the ground. Perennial grasses usually require 90 days to become well established. Some plants, such as native, warm season grasses and perennial peanut may require 1 full year or more to become well established. See Florida NRCS Conservation Practice Standard Fence, Code 382, if fencing is required.

Select forage species based on the intended use, level of management, realistic yield estimates, maturity stage, and compatibility with other species. Make sure that the forage or biomass species considered for planting is adapted to the area prior to planting. Follow current variety and species recommendations from the plant materials program, land grant and research institutions, extension agencies, or agency field trials.

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

Use forage species that will meet the desired level of nutrition (quantity and quality) for the kind and class of the livestock to be fed.

To avoid selective grazing, use only forage species with similar palatability in mixed plantings.

Additional Criteria for Providing or Increasing Forage Supply During Periods of Low Forage Production

Select plants that will help meet livestock forage demand during times that normal farm/ranch forage production are not adequate.

Additional Criteria for Reducing Erosion and Improving Water Quality.

Ground cover and root mass need to be sufficient to protect the soil from wind and water erosion. Where the purpose is to improve water quality, use species with high potential to assimilate (take up) nutrients of concern and prevent water quality degradation due to soil erosion. To obtain information on nutrient assimilation (uptake) rates refer to Chapter 6 (<http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=6621.wba>) of the Agricultural Waste Management Field Handbook (AWMFH).

Additional Criteria for Producing Feedstocks for Biofuel or Energy Production

Select plants that provide adequate kinds and amount of plant materials needed. See Florida Conservation Practice Standard Forage and Biomass Planting Supplement for additional information.

CONSIDERATIONS

In areas where animals congregate, consider establishing persistent species that can tolerate close grazing and trampling.

Where wildlife and pollinator concerns exist, consider plant selection by using an approved habitat evaluation procedure.

Where air quality concerns exist, consider using site preparation and planting techniques that will minimize airborne particulate matter generation and transport.

Where carbon sequestration is a goal, select deep-rooted perennial species that will increase underground carbon storage.

During and upon stand establishment planning and application of the following Florida Conservation Practice Standards should be considered as applicable: Forage Harvest Management, Code 511; Pest Management, Code 595; Prescribed Grazing, Code 528; Herbaceous Weed Control, Code 797; and Nutrient Management, Code 590.

PLANS AND SPECIFICATIONS

Prepare plans and specifications for the establishment planting for each site or management unit according to the Criteria, Considerations, and Operations and Maintenance described in this standard. Record them on a site specific job sheet or in the narrative of a conservation plan.

The following elements will be addressed in the plan to meet the intended purpose:

1. Site Preparation
2. Fertilizer Application (if applicable)
3. Seedbed/Planting Bed Preparation
4. Methods of Seeding/Planting
5. Time of Seeding/Planting
6. Selection of Species
7. Type of legume inoculant used (if applicable)
8. Seed/Plant Source
9. Seed Analysis
10. Rates of Seeding/Planting
11. Supplemental Water for Plant Establishment (if applicable)

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12. Protection of Plantings (if applicable)

OPERATION AND MAINTENANCE

Inspect and calibrate equipment prior to use. Continually monitor during planting to insure proper rate, distribution and depth of planting material is maintained.

Monitor new plantings for water stress. Depending on the severity of drought, water stress may require reducing weeds, early harvest of any companion crops, irrigating when possible, or replanting failed stands.

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

Harvest intervals, cutting height, grazing management and stocking rates may need periodic adjustment based on the health and vigor of the forage.

Control insects and diseases when an infestation threatens stand survival.

Pasture and hay lands shall be evaluated periodically throughout the year to determine management adjustments or inputs needed to achieve the desired purpose(s).

REFERENCES

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