

NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

COVER CROP

(acre)
Code 340



DEFINITION

Crops including grasses, legumes, and forbs for seasonal cover and other conservation purposes.

PURPOSE

- Reduce erosion from wind and water.
- Increase soil organic matter content.
- Capture and recycle or redistribute nutrients in the soil profile.
- Promote biological nitrogen fixation and reduce energy use.
- Increase biodiversity.
- Suppress Weeds.
- Manage soil moisture.
- Minimize and reduce soil compaction.

CONDITIONS WHERE PRACTICE APPLIES

On all lands requiring vegetative cover for natural resource protection and or improvement.

CRITERIA

General Criteria Applicable to All Purposes

Follow all federal, state and local laws, rules and regulations.

Prepare a good firm and smooth seedbed. Seedbeds may be prepared conventionally by disking and/or chiseling once or twice, smoothing with a harrow or field cultivator, then planting, either by drilling or broadcast. Cover crops may also be no-till seeded by the use of a no-till drill. Aerial and broadcast seeding may be done prior to leaf drop of the preceding crop. Cover the seed lightly according to the size of the seed.

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](#).

Follow the planting specifications in the [Florida Conservation Practice Standard Cover Crop, Code 340, Guidance](#), for selecting plant species, planting dates, and seeding rates. Other plant species can be used if they meet the purpose of this standard.

Apply lime and fertilizer according to [Florida NRCS Conservation Practice Standard, Nutrient Management, Code 590](#).

Terminate the growth of cover crops by harvest, mowing, tillage, or roller crimper with or without herbicides in preparation for planting the subsequent crop.

Use herbicides that are compatible with both cover crops and the subsequent crop(s) to be planted. Apply herbicides and/or pesticides according to [Florida NRCS Conservation Practice Standard, Integrated Pest Management, Code 595](#).

Do not burn cover crop residue.

In addition to other criteria for non-irrigated cover crop termination, the cover crop termination must be at or before the time periods specified in the [NRCS Cover Crop Termination Guidelines Ver. 2 \(Dec. 2013\)](#).

Avoid using plants that are on Florida's noxious weed or invasive species lists (see [FLEPPC](#)).

Avoid or minimize to the extent practical impact to cultural resources, wetlands, and Federal and State protected species during planning, design and implementation of this conservation practice. For more information, see National and Florida NRCS policy, [General Manual \(GM\) Title 420-Part 401, Title 450-Part 401, and Title 190-Parts 410.22 and 410.26](#); National Planning Procedures Handbook (NPPH, [Handbooks Title 180 Part 600](#)) FL Supplements to Parts 600.1 and 600.6; National Cultural Resources Procedures Handbook (NCRPH, [Handbooks Title 190 Part 601](#)); and The National Environmental Compliance Handbook (NECH, [Handbooks Title 180 Part 610](#)).

Additional Criteria to Reduce Erosion From Wind and Water

Time establishment of cover crop in conjunction with other practices so that the soil will be adequately protected during critical erosion period(s).

Plants selected for cover crops need to have the physical characteristics necessary to provide adequate protection.

Use current erosion prediction technology to determine the amount of surface and/or canopy cover needed. Data on crop tolerance and critical erosion periods can be found in the Florida Erosion Control Handbook.

Additional Criteria to Increase Soil Organic Matter Content

Select a cover crop species that produces high volumes of organic material and or root mass to maintain or improve soil organic matter.

Use the current approved NRCS Soil Conditioning Index (SCI) procedure to determine the amount of biomass required to have a positive trend in the soil organic matter subfactor.

Terminate the cover crop as late as feasible to maximize plant biomass production, considering the time needed to prepare the field for planting the next crop and soil moisture depletion.

Additional Criteria to Capture and Recycle Excess Nutrients in the Soil Profile

Cover crops need to be established and actively growing before expected period(s) of nutrient leaching.

Cover crop species will be selected for their ability to take up large amounts of nutrients from the rooting profile of the soil.

When used to redistribute nutrients from deeper in the profile up to the surface layer, the cover crop planting date of the following crop determines appropriate cover crop termination date. If the objective is to best synchronize the use of cover crop as a green manure to cycle nutrients, factors such as the carbon/nitrogen ratios in the cover crop and mineralization rate of the nutrients may dictate early termination dates to match release of nutrients from the cover crop with uptake by following cash crop. A late termination date may be used if the objectives are to use as a biocontrol and maximize the addition of organic matter. The right moment to terminate a cover crop will depend on the specific rotation, weather, and objectives.

Remove above ground biomass from the field for maximum nutrient removal.

Additional Criteria to Promote Biological Nitrogen Fixation and Reduce Energy Use

The specific rhizobia bacteria for the selected legume needs to either be present in the soil or the seed will be inoculated at the time of planting. Check with the seed company or UF/IFAS recommendations for the proper inoculant.

Account for nitrogen credits from legume cover crops in the nutrient management plan.

For this criteria, only legumes or legume-grass mixtures can be used as cover crops.

Additional Criteria to Increase Biodiversity

Select cover crop species to achieve one or more of the following: species mix with different maturity dates, attract beneficial insects, attract pollinators, increase soil biological diversity, serve as a trap crop for damaging insects, and/or provide food and cover for wildlife habitat management.

Additional Criteria for Weed Suppression

Select cover crop species for their chemical or physical ability to suppress or compete with weeds.

Higher seeding rates to provide additional cover will help control weeds to eliminate or reduce herbicide use.

Leave cover crop residues on the soil surface to maximize allelopathic (chemical) and mulching (physical) effects.

Select crops that grow fast and out compete weeds, (e.g., sunn hemp).

For long-term weed suppression, reseeding annuals and/or biennial species can be used.

Additional Criteria for Soil Moisture Management

Terminate growth of the cover crop sufficiently early to conserve soil moisture for the subsequent crop. Leave residue from cover crops established for moisture conservation on the soil surface.

In areas of potential excess soil moisture, allow the cover crop to grow as long as possible to maximize soil moisture removal.

Additional Criteria to Minimize and Reduce Soil Compaction

Select and manage cover crop species that will produce deep roots and large amounts of surface or root biomass to increase soil organic matter, improve soil structure, and increase soil moisture through better infiltration.

CONSIDERATIONS

Plant cover crop in a timely manner to establish a good stand.

When applicable, ensure cover crops are managed and are compatible with the client's crop insurance criteria.

Maintain an actively growing cover crop as late as feasible to maximize plant growth, allowing time to prepare the field for the next crop and moisture depletion.

When used to redistribute nutrients from deeper in the soil profile up to the surface layer, consider timing of termination of the cover crop in relation to the planting date of the following crop.

If the objective is to best synchronize the use of cover crop as a green manure to cycle nutrients, factors such as the carbon/nitrogen ratios and termination early enough to adequate time for mineralization of nutrients to match nutrient release with uptake by the following cash crop.

The right moment to terminate the cover crop will depend on the specific rotation, weather, and grower objectives.

Deep-rooted species provide maximum nutrient recovery.

When selecting species, consider that grasses will utilize more soil nitrogen and legumes will utilize both nitrogen and phosphorus.

Avoid cover crop species that harbor or carryover potentially damaging diseases or insects. For most purposes for which cover crops are established, a combined canopy and surface cover of 90 percent or greater, and an aboveground dry weight biomass production of at least 4,000 lbs/acre is considered adequate.

Consider conservation tillage as an alternative to plowing and/or disking.

Using residue management through the application of Florida NRCS Conservation Practice Standards [Residue & Tillage Mgt, No-Till/StripTill/Direct Seed, Code 329](#), or [Mulch Till, Code 345](#), will reduce erosion from wind and water.

In orchards, vineyards, and groves, plant areas between the rows of trees with grasses and legumes (such as perennial peanut), or allow naturally occurring vegetation to grow between the rows. Refer to Florida NRCS Conservation Practice Standards [Forage and Biomass Planting, Code 512](#), and [Conservation Cover, Code 327](#).

Low growing crops that have low nutrient and moisture requirements are desirable in groves, such as perennial peanut. Limit all tillage operations to mowing or light chopping with the exception of hand hoeing or disking next to the trees. Mowing or light chopping may be used to: control heavy vegetative growth which may be a potential fire hazard, reduce plant competition for water and nutrients, and facilitate harvesting operations.

Cover crops may be used to improve site conditions for establishment of perennial species.

Use plant species that enhance bio-fuels opportunities.

Use plant species that enhance forage opportunities for pollinators by using diverse legumes and other forbs.

Use cover crops to break pest cycles.

Use a diverse mixture of 2 or more species to address multiple purposes.

PLANS AND SPECIFICATIONS

Plans and specifications will be prepared for the practice site. Plans for the establishment of cover crops need to minimally include:

1. Field number and acres
2. Species of plant(s) to be established.
3. Seeding Rates.
4. Recommended seeding dates.
5. Establishment procedure.

6. Planned rates and timing of nutrient application.
7. Planned dates and method to terminate the cover crop.
8. Other information pertinent to establishing and managing the cover crop.

Plans and specifications for the establishment and management of cover crops may be recorded in narrative form, on job sheets, or on other forms.

OPERATION AND MAINTENANCE

The cover crop may be incorporated into the soil surface by minimum tillage or plowing and/or disking. Cover crops may be terminated with a roller crimper alone or in combination with herbicide when using a conservation tillage system.

Control growth of the cover crop to reduce competition from volunteer plants and shading.

Control weeds in the cover crop by mowing or by using other pest management techniques. Timing of mowing or other pest management techniques should be based on wildlife considerations.

Control soil moisture depletion by selecting water efficient plant species and terminating the cover crop before excessive transpiration.

REFERENCES

Florida NRCS Conservation Practice Standards and Guidance:

[Nutrient Management, Code 590](#)
[Integrated Pest Management, Code 595](#)
[Residue & Tillage Mgt, No-Till/Strip Till/Direct Seed, Code 329](#)
[Residue Management, Mulch Till Code 345](#)
[Forage and Biomass Planting, Code 512](#)
[Forage and Biomass Planting, Code, 512, Guidance](#)
[Conservation Cover, Code 327](#)

Florida Erosion Control Handbook

USDA, NRCS:

[General Manual – Titles 190, 420, and 450](#)

- NRCS, National Planning Procedures Handbook (NPPH, [Handbooks Title 180 Part 600](#))
- National Cultural Resources Procedures Handbook (NCRPH, [Handbooks Title 190 Part 601](#))
- National Environmental Compliance Handbook (NECH, [Handbooks Title 180 Part 610](#))

[USDA, NRCS. 2013. NRCS Cover Crop Termination Guidelines – Non-Irrigated Cropland.](#)

University of Florida, Institute of Food and Agricultural Sciences:

- [SS-AGR-66, Cover Crops](#)
- [SS-AGR-150, Planting Dates, Rates, and Methods of Agronomic Crops](#)
- [HS1141, Annual Cover Crops in Florida Vegetable Systems Part 2: Production](#)

[Clark, A. \(ed.\). 2007. Managing cover crops profitably. 3rd ed. Sustainable Agriculture Network Handbook Series; bk 9.](#)

[Hargrove, W.L., ed. Cover crops for clean water. SWCS, 1991.](#)

Magdoff, F. and H. van Es. Cover Crops. 2000. p. 87-96 *In* Building soils for better crops. 2nd ed. Sustainable Agriculture Network Handbook Series; bk 4. National Agriculture Library. Beltsville, MD.

Reeves, D.W. 1994. Cover crops and erosion. P. 125-172 *In* J.L. Hatfield and B.A. Stewart (eds.) Crop Residue Management. CRC Press, Boca Raton, FL.