NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

HEDGEROW PLANTING

(Ft.)
Code 422

DEFINITION

Establishment of dense vegetation in a linear design to achieve a natural resource conservation purpose.

PURPOSE

- Habitat, including food, cover, and corridors for terrestrial wildlife.
- To enhance pollen, nectar, and nesting habitat for pollinators.
- Food, cover, and shade for aquatic organisms that live in adjacent streams or watercourses.
- To provide substrate for predaceous and beneficial invertebrates as a component of integrated pest management.
- To intercept airborne particulate matter.
- To reduce chemical drift and odor movement.
- Screens and barriers to noise and dust
- To increase carbon storage in biomass and soils.
- Living fences and boundary delineation
- Contour guidelines

CONDITIONS WHERE PRACTICE APPLIES:

Apply practice on all land uses where it accomplishes at least one of the purposes.

CRITERIA

General Criteria Applicable to All Purposes

No minimum width beyond a single row is required except where wildlife food, cover, or corridors are objectives.

Select species suited and adapted to the soils, climate, and conservation purpose(s). Refer to Florida NRCS Plants for Conservation Alternatives List for acceptable woody and perennial herbaceous materials for the state. Other plant material not found on the list may be suitable, but they need to be approved by the State Biologist before use.

Establish hedgerows using woody plants, perennial bunch grasses producing erect stems attaining average heights of at least 3 feet which will persist throughout the winter season, or a combination of the two components.

Do not use any species listed as Category I or II invasive plant species as listed by the Florida Exotic Pest Plant Council (http://fleppc.org/).

Protect hedgerows from livestock grazing and trampling, to the extent necessary, to ensure the hedgerow will perform the intended purpose(s).

Control competing vegetation until the hedgerow becomes established. Continue control beyond the establishment period, if necessary, following an operation and maintenance plan.

Plan all work to comply with federal, state and local laws and regulations. Evaluate impacts to cultural resources and Federal and State protected species during planning, design and implementation of this conservation practice in accordance with established National and Florida NRCS policy (General Manual, Title 420-Part 401;Title 450-Part 401; Title 190-Parts 410.22 and 410.26, National Planning Procedures Handbook, (FL Supplements to Parts 600.1 and 600.6), National Cultural Resources Procedures Handbook, and National Environmental Compliance Handbook .

Additional Criteria for Habitat, Including Food, Cover, and Corridors for Terrestrial Wildlife

Use native species whenever possible, but at minimum two native species must be used in the planting.

Select plants that provide cover and/or food to support the landowner's wildlife objectives.

Plan hedgerow width to be ≥25 feet at maturity.

To reduce nest predation when ground-nesting birds are the primary wildlife concern, plan hedgerow width to be ≥50 feet at maturity and include perennial bunch grasses

Additional Criteria for Pollinator Habitat

Select hedgerow plants to provide abundant pollen and nectar resources.

Include multiple species with different blooming periods (i.e. winter, spring, summer, and fall). The actual number of species is dependent upon the availability of adjacent flowering plants. When possible, avoid plants that bloom during the same period as adjacent insect-pollinated crops.

Additional Criteria for Food, Cover, and Shade for Aquatic Organisms that Live in Adjacent Streams or Watercourses.

Select plants that can be planted close enough and will be large enough at maturity to shade the watercourse. Information on adaptation and heights of specific trees and shrubs can be found at the University of Florida, Dept. of Environmental Horticultures web pages on shrubs and trees.

Additional Criteria for Creating Beneficial Insect Habitat (IPM)

Select plants attracting the beneficial insects and mites that prey upon the indentified or expected pest insect. Refer to:

Natural Enemies and Biological Control

Plants that Attract Beneficial Insects

Additional Criteria for Reducing Particulate Matter Movement

Plan hedgerow orientation as close to perpendicular to the prevailing wind direction as possible.

Plan hedgerow density at maturity to be ≥ 50% on the upwind side and ≥ 65% on the downwind side.

See Florida NRCS Conservation Practice Windbreak Planting, Code 380, for guidance information on densities.

Additional Criteria to Reduce Odor Movement and/or Chemical Drift

Plan hedgerow orientation as close to perpendicular to the prevailing wind direction during the period of concern as possible, and between the source of the odor or chemical drift and the sensitive area(s).

At a minimum, plan hedgerows upwind of the odor producing area and/or the chemical application area.

Select tree and shrub species having foliar and structural characteristics that optimize interception, adsorption and/or absorption of airborne chemicals or odors. Plant species shall be selected that are tolerant of anticipated chemical use. See Florida NRCS Conservation Practice Standard Windbreak Planting, Code 380, Guidance for information plant tolerances to different chemicals.

Additional Criteria for Screens and Noise Barriers

Plan hedgerows locations where they most completely obstruct a line of sight or offensive sound.

Select plant expected to attain a height and fullness sufficient to break the line of sight or baffle sound.

Additional Criteria to Increase Carbon Storage in Biomass and Soils

Incorporate large, fast-growing trees into the hedgerow plan (e.g. laurel oaks)

See Florida NRCS Conservation Practice Standard Tree and Shrub Establishment, Code 612 for more information.

Additional Criteria for Living Fences and Boundary Lines

When used as a living fence, select plants that will reach the size needed to create a barrier to contain livestock or humans. For this purpose, a predominance of trees and shrubs used will usually be thorny or spiny.

The plants or their seed/fruit used for a living fence should not be poisonous to the animals or humans. See Florida NRCS Conservation Practice Standard Brush Management, Code 314, Supplement for more information on toxicity of many Florida native species.

When used for a boundary line, plan alignment of hedgerows along boundaries of fields or forest stands to differentiate land management units.

Additional Criteria for Contour Guidelines

If hedgerows are to be used to provide permanent contour markers supporting implementation of Florida NRCS Conservation Practice Standards Contour Farming, Code 330 or Strip Cropping, Code 585, refer to those conservation practice standards for alignment criteria.

CONSIDERATIONS

General

Hedgerows that are made up of mixture of predominantly native trees, shrubs, and grasses will be most likely to provide benefits to multiple natural resources.

Plan hedgerows larger than the minimum length and width to increase the amount of carbon stored in the soil and biomass.

Plan hedgerows in combination with other practices to develop complete conservation systems that enhance landscape aesthetics, reduce soil erosion, improve sediment trapping, improve water quality and provide wildlife habitat.

Hedgerows are natural wildlife attractors; therefore, consider wildlife enhancement during planning, even when wildlife is not the primary purpose.

Plan hedgerows to follow land contours creating meandering lines on the landscape, produce a natural appearance, and increase the availability of “wildlife edge” between different land uses.

Consider the amount of shading a hedgerow will provide at maturity. Shading may impact growth of adjacent plants, microclimate and aesthetics.

Consider avoiding the use of plants that spread by root suckers to prevent the hedgerow from expanding outside the desired treatment area.

Avoid selecting plants poisonous or hazardous to people, livestock, and wildlife.

Improvement of Landscape Appearance

The hedgerow design shall meet the aesthetic objectives of the landowner.

Plants shall be selected based upon the landowner’s preferences for color, texture and growth habit.

Wildlife Food, Cover and Corridors

Incorporating a variety of fruit and nut producing (mast) trees and shrubs into the hedgerow will provide food to a variety of wildlife species.

Hedgerows can function as travel lanes and corridors that allow wildlife to move safely across a landscape.

Generally, wider corridors accommodate more wildlife use.

Linking fragmented habitats may increase wildlife use of an area.

In grassland ecosystems, woody hedgerows may adversely affect ground-nesting by fragmenting habitat patches and increasing the risk of predation. Consider using only bunch grasses if ground-nesting bird habitat is an objective.

Hedgerows can complement the availability of naturally occurring wildlife foods.

Hedgerows can provide wildlife with cover for feeding, loafing, nesting and caring for young.

Dense or thorny shrub thickets provide songbirds with important nesting sites and a refuge to escape predators.

Establishment of evergreen plants, ≥25% of hedgerow, provides year-round concealment and thermal cover for wildlife.

Establishment of herbaceous vegetation along the edges of a hedgerow can further enhance the habitat functions of a hedgerow. The use of native, warm-season perennial grasses should be encouraged in all hedgerows.

Installation of artificial nest boxes with predator guards can encourage cavity-nesting birds and small mammals to utilize a hedgerow.

Pollinator Habitat

Refer to Plant Materials Fact Sheet No. 3 – Planting Native Species for Flower Rich Pollinator Habitat.

Refer to Plant Materials Fact Sheet No. 4 – Developing Planting Mixtures for Pollinator Habitat.

Refer to Biological Control

Refer to Beneficial Insects.

Screens and Noise Barriers

From eye-level, hedgerows reduce the line-of-sight across open areas, concealing objects behind them from view.

Consider the design from viewpoints on both sides of the screen.

Locate noise barriers as close to the source of noise as possible.

Combination of shrubs and/or trees can create more effective screens than single species plantings.

Evergreens provide foliage that can maintain a screen's year-round effectiveness.

Reducing Particulate Matter Movement, Odor Movement, and/or Chemical Drift

Combinations of upwind and downwind hedgerows are most beneficial. Upwind hedgerows will reduce wind speed and subsequent movement of particulates, odors, and chemicals into the air stream, while downwind hedgerows trap and reduce drift of particulates, odors, or chemicals that have become airborne.

Water Quality and Quantity

Water quality benefits may arise from:

- Arresting sediment movement and trapping sediment-attached substances.
- Infiltration and assimilation of plant nutrients.
- Water cooling effects resulting from increased shade on small watercourses.

A hedgerow will increase surface water infiltration by improving soil structure around its root zone. However, evapotranspiration may reduce groundwater recharge benefits.

PLANS AND SPECIFICATIONS

Plans and specifications for this practice shall be prepared for each site. Plans and specifications shall be recorded using approved specification sheets, job sheets, or narrative documentation in the conservation plan, or other acceptable documentation.

See NRCS Technical Note, FL-Biology-37: "Guidelines for Hedgerows" and Florida NRCS conservation practice standards Tree and Shrub Establishment, Code 612, and Forage and Biomass Planting, Code 512, for establishment guidance.

Specifications shall include, but are not be limited to the following:

1. Plan map showing the location of the practice.
2. A sketch map showing the planting patterns to be used.
3. Plant species to be established and their desire performance density following establishment.
4. Land or site preparation to be performed.
5. Liming and fertilization requirements.
6. Planting rates, spacing, and dates.
7. Control of competition needed for establishment and maintenance.

OPERATION AND MAINTENANCE

Maintain hedgerow planting to ensure continued desired function.

Supplemental planting may be required when survival is too low to produce a continuous hedgerow; replant as necessary to maintain desired function

Protect vegetation from unwanted fire and grazing throughout its life span.

Monitor and control pests as needed.

Protect pollinator hedgerows from pesticides that may harm pollinators. If pest control is required, treat only non-blooming plants, and/or apply only pesticides non-toxic to pollinators.

Periodic applications of nutrients and water may be needed to maintain plant vigor.

Schedule any renovation activities within the hedgerow to accommodate reproduction and other requirements of wildlife species of concern. Limit renovation to one-third of a hedgerow's length at a time to prevent sudden elimination of the practice's wildlife habitat function..

Periodic root pruning can reduce nutrient and water robbing from adjacent cropland.

REFERENCES

Florida Exotic Pest Plant Council, Category I and II lists, http://www.fleppc.org/

Gilman, G.F. and R. J. Black. 1999. Your Florida Guide to Shrubs: Selection, establishment and maintenance. University Press of Florida. 116p.

Miller, J. H. and K. V. Miller. 1999. Forest Plants of the Southeast and Their Wildlife Uses. Southern Weed Science Society. 454pp.

NRCS. Field Office Technical Guide:
Section II: Threatened and Endangered Species

Plant Materials Fact Sheet No. 3 – Planting Native Species for Flower Rich Pollinator Habitat; FOTG Section II, G – Plant Materials

Plant Materials Fact Sheet No. 4 – Developing Planting Mixtures for Pollinator Habitat; FOTG Section II, G – Plant Materials

Section IV: Conservation Practice Standards, Fence, Code 382, Pasture and Hay Planting, Code 512 Tree/Shrub Establishment, Code FL612, Tree/Shrub Pruning, Code 660, Upland Wildlife Habitat Management, Code 655, Contour Farming, Code 330, Stripcropping, Code 585

NRCS. General Manual,
Title 190-Compliance with NEPA, Part 410.22 –
Threatened, and endangered species of plants and animals.
Title 190-Compliance with NEPA, Part 410.26 –
Protection of wetlands
Title 420- Social Sciences, Part 401 – Cultural Resources (Archeological and Historic Properties)

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NRCS, Technical Note, FL Biology 37: Guidelines for Hedgerows

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