

**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.

**PURPOSES**

To provide one or more of the following functions:

Food, cover and corridors for terrestrial wildlife.

Food and cover for aquatic organisms that live in watercourses with bankful width less than 5 feet.

Living fences

Boundary delineation

Contour guidelines

Screens and barriers to noise, dust, and light.

Improvement of landscape appearance.

Intercept airborne particulate matter.

Reduce chemical drift and odor movement.

Increase carbon storage in biomass and soils.

**CONDITIONS WHERE PRACTICE APPLIES**

This practice may be applied in, across, or around agricultural fields and other open areas such as urban, industrial, and recreational areas.

This practice does not apply to plantings for which other standards are applicable such as Field Border (Code 386) or Riparian Forest Buffer (Code 391).

**CRITERIA**

**General Criteria Applicable to All Purposes**

Hedgerows shall be established using woody plants, or grasses producing erect stems attaining average heights of at least 3 feet.

Avoid plants that may be alternate host to undesirable pest or that may be considered invasive or undesirable. Species diversity should be encouraged in order to minimize problems due to species-specific pest.

Species used must be suitable and adapted to the soils, climate, and purpose. Although woody vegetation must be included as a minimum, best results will be achieved where there is a mixture of trees, shrubs, and herbaceous species.

Plantings consisting of two or more species, especially locally native plant species, shall be encouraged.

Hedgerows shall be a minimum of 1-3 feet wide if seeded, or minimum of one row wide if planted with seedlings or larger stock. Shrub, trees, or both species shall be used.

Conservation practice standards are reviewed periodically, and updated if needed. To obtain the current version of this standard, contact your Natural Resources Conservation Service <a href="#">State Office</a> , or download it from the <a href="#">electronic Field Office Technical Guide</a> for your state.
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Spacing between and within rows shall be as follows:

Plant Type	Spacing (feet)*	
	Visual screens	Wildlife habitat, landscaping, and other use
Shrub/woody vine/grasses	1-4	4-8
Tree	4-6	6-15

\* It is necessary to maintain continuous row with dense vegetation at ground level (wall).

One should estimate between 2000 and 4000 plants per km (3,280 ft.) of hedge, highest density being the most effective.

Establishment of vegetation by planting is the preferred method for creating hedgerows.

Only viable, high quality seed and planting stock shall be used.

The method of planting shall include hand or machine planting techniques, suited to achieving proper depths and placement for the selected species.

Plant species shall be selected based on: the proposed uses of hedgerows, preferences of land user, conditions of the soils, plant growth rate and shade tolerance. The table on page 6 includes several plant species recommended for hedge-rows.

**Additional Criteria to Provide Wildlife Food and Cover**

Minimum hedgerow width, at maturity, shall be 15 feet. This may necessitate the establishment of more than one row of plants.

All plant species used should benefit wildlife as either food or cover. Native species will be used whenever possible.

A variety of fruit and nut producing trees and shrubs will be used.

Any renovation activities within the hedgerow will be scheduled to accommodate reproduction and other requirements of target wildlife species.

In plantings adjacent to small watercourses, the plantings shall be site-adapted, large enough at maturity, and installed close enough to shade the watercourse.

**Additional Criteria for Living Fences**

Selected plants shall attain a size adequate to create a barrier to contain livestock or humans, as needed.

If the purpose is to contain livestock, selected plants shall not be poisonous or hazardous to animals

**Additional Criteria for Boundary Delineation**

Hedgerows shall be aligned along boundaries of fields, or forestlands to differentiate land management units.

**Additional Criteria to Establish Contour Guidelines**

Hedgerows shall be aligned so they provide permanent contour markers supporting implementation of Contour Farming Conservation Practice (330). Refer to this conservation practice for alignment criteria.

The grade of the hedgerow shall be aligned as closely as possible to the contour. This will allow adjacent cropped strips to be designed to achieve the greatest erosion reduction possible.

Hedges planted on the contour, or parallel to cultivated cropland should not exceed 6 or 8 feet in height because shade produced may interfere with crop growth.

**Additional Criteria to Provide Screens, Noise, and Dust Barriers**

Screening hedgerows provide privacy, hide unsightly areas from view or reduce noise.

At least one row of the plants selected will be evergreen plants, providing year-round screening.

Hedgerows shall be located where they most completely obstruct a line of sight, offensive sound, or dust.

Selected plants shall attain a height and fullness sufficient to break the line of sight, or baffle sound and dust.

### **Additional Criteria for 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.

Aesthetic values of the plants selected will be considered. At least some of the plants will provide colorful foliage, flowers, and/or fruits during part of the year.

### **Additional Criteria for Reducing Particulate Matter Movement**

The hedgerow will be oriented as close to perpendicular to the prevailing wind direction as possible.

Hedgerow density on the upwind side shall be at least 50% at maturity.

Hedgerow density adjacent to the particulate source shall be at least 65% at maturity.

### **Additional Criteria to Reduce Odor Movement and/or Chemical Drift**

Orientation of the hedgerow shall be as close to perpendicular to the prevailing wind direction during the period of concern, and between the source of the odor or chemical drift and the sensitive areas.

Hedgerows shall be located upwind of the odor producing area and the chemical application area.

Tree and shrub species used shall have foliar and structural characteristics that optimize interception, adsorption and absorption of airborne chemicals.

## **CONSIDERATIONS**

### **General**

Hedges are thicker, more densely spaced fences that generally include a number of different species and do not support barbed wire.

Hedges should be planted where there is little risk of bush fire. They should be weeded regularly.

Hedgerows can be planned 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.

Planting a hedgerow larger than the minimum width will increase the amount of carbon stored in the soil and biomass.

Hedgerows following land contours create meandering lines on the landscape, produce a natural appearance, and increase the availability of "edge" wildlife habitats.

Hedgerows containing a mixture of native shrubs and small trees provide greatest environmental benefits.

Use of bare root and containerized seedlings will accelerate hedgerow development.

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

Limiting renovation events to one-third of a hedgerow length or width will prevent sudden elimination of the wildlife habitat function.

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

Consider avoiding the use of plants that spread by root suckers as hedgerow may expand beyond the desired treatment area.

Hedgerows are natural wildlife attractors therefore, wildlife enhancement should be considered during planning, even when wildlife is not the primary purpose. Targeted wildlife needs should be considered when selecting plant species.

The use of native or naturalized grasses should be encouraged in all hedgerows. See Caribbean Area NRCS Pasture and Hayland Planting standard for planting information.

Hedgerows enhance aesthetics around fields, can help reduce erosion from wind and water, can assist in sediment trapping, and can provide a harbor for beneficial and/or pest insects.

### **Wildlife Food, Cover, and Corridors**

Hedgerows can provide travel lanes, or 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, hedgerows may adversely affect area-sensitive nesting birds by fragmenting habitat patches and increasing the risk of predation.

Hedgerows can complement the availability of naturally occurring wildlife foods.

Hedgerows can provide wildlife with cover for feeding, 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 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.

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

### **Living Fences**

Thorny shrubs and trees can improve the barrier effect of a living fence.

### **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 year-round effectiveness to the screen.

### **Improving Landscape Appearance**

Seasonal display of colors on bark, foliage, flowers, and fruit plants should be considered.

Growth habits (outline, height and width) of plants should be considered.

### **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 ground water recharge benefits.

### **Incidental Trapping of Soil**

Although not a primary purpose, hedgerows may incidentally trap wind blown soil.

Consider installing hedgerows on alignments that prevent trapping and accumulation of sand on public roads.

Refer to the Windbreak/Shelterbelt Establishment (380) standard for criteria when sand trapping is a primary conservation purpose.

## **PLANS AND SPECIFICATIONS**

Plans and specifications shall be prepared in accordance with the criteria of this standard and shall describe the requirements for installing the practice.

Specifications shall be recorded using approved specification sheets, job sheets, and narrative statements in the conservation plan.

The following is a list of the minimum data and documentation to be recorded in the case file:

Field location, extent of the hedgerow in length and width, conservation plan map or sketch showing the location of the practice, and assistance notes.

Species selected for establishment, number of each, spacing and planting dates:

Land preparation to be performed.

Liming and fertilization requirements.

Control of competition needed for establishment.

### **OPERATION AND MAINTENANCE**

Competing vegetation will be controlled until the woody plants are established. Control shall continue beyond the establishment period, if necessary.

Replanting will be required when survival is inadequate to provide enough woody plants to form a continuous hedge.

About the first four years pruning is desirable when plants reach 2-3 ft. high in order to strengthen the effectiveness of the hedge at the bottom. Climate and soils conditions affect the pruning frequency. At maturity pruning purpose is limiting the extension of the hedge in both width and height.

Existing hedgerows may be improved by removing or topping selected less desirable trees or shrubs, thus improving growing conditions for the remaining species. Most desirable species can also be interplanted in the hedgerow.

Renovation activities shall be scheduled to prevent disturbance during the wildlife nesting season.

When renovation of the hedgerow is needed, use herbicides, or mechanical means to set back the vegetation to an earlier stage of succession. To preserve wildlife habitat, renovate only one-third of the length of the hedgerow at a time, allowing re-growth before proceeding to the next section.

Livestock shall be excluded as necessary so that the vegetative cover can be established and maintained to meet its intended purpose.

Supplemental watering may be desirable to ensure adequate survival.

Damaging pests are monitored and controlled.

Prevent uncontrolled spreading by using mechanical methods or herbicides to destroy seedlings.

Noxious weeds shall be controlled as required by federal and state laws.

All planned work shall comply with federal, state, local laws, and regulations.

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

### **References:**

Flora of Puerto Rico and Adjacent Islands: A Systematic Synopsis, Henri Alain Liogier-Luis F. Martorell.

National Biology Handbook, Part 614.4, "Conservation Corridor Planning at the Landscape Level." Natural Resources Conservation Service, August 1999.

Virtual Research and Development Centre (Livestock, Environment and Development Initiative).

<http://www.virtualcentre.org/en/frame.htm>

<http://www.gardendepot.org/prod02.htm>

[http://www.infojardin.com/arbustos/Lista\\_setos\\_bajos.htm](http://www.infojardin.com/arbustos/Lista_setos_bajos.htm)

## Plant Guide for Hedgerow Establishment

Type		Common Name		Technical Name
S			Areca palm	<i>Areca L.</i>
S		Astromelia	Crapemyrtle	<i>Lagerstroemia indica</i>
S		Crotón de jardín	Garden croton	<i>Codiaeum variegatum</i>
S		Cruz de Malta	Jungleflame Ixora	<i>Ixora coccinea</i>
S		Gallego	Geranium aralia	<i>Polyscias guilfoylei</i>
S		Hibiscos	Hibiscus	<i>Hibiscus spp.</i>
S		Macaco	Fragrant dracaena	<i>Dracaena fragrans</i>

Type		Common Name		Technical Name
S		Mirtos, Café de la India	Chinese box	<i>Murraya paniculata</i>
S		Sauco amarillo	Yellow trumpetbush	<i>Tecoma stans</i>
S		Trinitaria	Bougainvillea	<i>Bougainvillea ssp.</i>
T	No images available at this time.	Bucayo	Mountain immortelle	<i>Erythrina poeppigiana</i>
T		Doncella		<i>Byrsonima ssp.</i>
T		Emajaguilla	Portia tree	<i>Thespesia populnea</i>
T		Ficus		<i>Ficus spp</i>

Type		Common Name		Technical Name
T		Madre de cacao	Quik stik or quickstick	<i>Gliricidia sepium</i>
T	No images available at this time.		Mahoe	<i>Hibiscus elatus</i>
T		Roble blanco	White cedar	<i>Tabebuia heterophylla</i>
T		Tachuelo	Fustic	<i>Pictetia aculeata</i>
T		Ucar	Black Olive	<i>Bucida buceras</i>
T/S		Uva playera	Seagrape	<i>Coccoloba uvifera</i>

Type		Common Name		Technical Name
T/S	No images available at this time.	María	Santa-maría	<i>Calophyllum calaba</i>
T		Vomitel		<i>Cordia spp.</i>
G		Caña de azucar	Wild sugarcane	<i>Saccharum spontaneum</i>
G		Pacholí	Vetiver, khus-khus	<i>Vetiveria zizanioides</i>
G		Bambú	Bamboo	<i>Bambusa vulgaris</i>

S- Shrub

T- Tree (Tree species need intensive management; pruning).

G - Grass

<http://www.gardendepot.org/prod02.htm>

[http://www.infojardin.com/arbustos/Lista\\_setos\\_bajos.htm](http://www.infojardin.com/arbustos/Lista_setos_bajos.htm)