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

Providing at least one of the following conservation functions:

- Food, cover and corridors for wildlife
- Living fences
- Boundary delineation
- Contour guidelines
- Screens and barriers to noise and dust
- Improvement of landscape appearance

CONDITIONS WHERE PRACTICE APPLIES

This practice applies wherever it will accomplish at least one of the purposes stated above.

CRITERIA

General Criteria Applicable To All Purposes

Hedgerows shall be established using woody plants, or perennial bunch grasses producing erect stems attaining average heights of at least 3 feet and persisting well over winter.

Plants selected must be suited and adapted to the soils, climate and conservation purpose.

No plant listed by the state as a noxious weed or invasive species shall be established in a hedgerow.

The practice shall be protected from livestock grazing and trampling to the extent necessary to ensure performance for the intended purpose(s).

Competing vegetation shall be controlled until the hedgerow becomes established. Control shall continue beyond the establishment period, if necessary.

Additional Criteria for Food, Cover and Corridors for Wildlife

Establish at least two species of vegetation.

Choose native plants whenever possible.

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

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

Additional Criteria for Living Fences

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

Selected plants shall have a densely branched growth habit.

Plant at the minimum recommended distance between plants for the species selected.

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

Additional Criteria For Boundary Delineation

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

Conservation practice standards are reviewed periodically, and updated if needed. To obtain the current version of this standard, contact the Natural Resources Conservation Service.

Additional Criteria for Contour Guidelines

Hedgerows shall be aligned so they provide permanent contour markers supporting implementation of the Contour Farming (330) and Contour Stripcropping (585) Conservation Practices. Refer to those conservation practices standards (above) for alignment criteria.

Additional Criteria for Screens and Barriers to Noise and Dust

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

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 baffles sound and dust.

If only one row is planted, use evergreen species to provide year round benefits.

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.

CONSIDERATIONS

General

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.

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.

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's length or width will prevent sudden elimination of the practice's wildlife habitat function.

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

Considerations for Wildlife Food, Cover, and Corridors

Hedgerows can provide travel lanes, or corridors that allow wildlife to move safely across a landscape.

Avoid planting hedgerows in combination with grassland/prairie restorations when the goal is creating habitat for grassland dependent wildlife. The hedgerow creates a travel lane for nest predators thereby increasing the likelihood of above ambient nest predation rates of grasslands without hedgerows.

Generally, wider corridors accommodate more wildlife use.

Linking fragmented habitats may increase wildlife use of an area.

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 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.

Considerations for Living Fences

Thorny shrubs and trees, and evergreen shrubs and trees with low branches, can improve a living fence's barrier effect.

Considerations for 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.

Considerations for Improving Landscape Appearance

Consider plants' seasonal display of colors on bark, twigs, foliage, flowers, and fruit.

Consider plants' growth habits (outline, height and width).

Considerations for 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 of soil structure around its root zone. However, evapo-transpiration may reduce groundwater recharge benefits.

Considerations for Incidental Trapping of Snow or Soil

Although not a primary purpose, hedgerows may incidentally trap wind blown snow or soil particles. Consider installing hedgerows on alignments that trap snow and soil.

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

PLANS AND SPECIFICATIONS

Plans and specifications for 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.

Plant Species

Suggested species for the purpose of food, cover and corridors for wildlife are listed in Table 1.

Establishment

Site preparation, establishment, planting dates, spacing, planting methods and care in handling and planting of the plant material shall be in accordance with practice standard Tree/shrub Establishment (612) or Conservation Cover (327) practice standard as applicable.

Natural Regeneration – A natural growth of native shrubs or trees can be allowed to develop into a hedgerow. Where there is no existing fence, this process can be speeded up by providing a single wire at a 3-5 foot height to serve as a perch for seed and fruit eating birds. Remove or kill undesirable, invasive and noxious vegetation.

OPERATION AND MAINTENANCE

Supplemental planting may be required when survival is too low to produce a continuous hedgerow.

Vegetation shall be protected from unwanted fire and grazing throughout lifespan.

Pests shall be monitored and controlled.

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

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

Where food and cover for wildlife is one of the purposes, management practices and activities are not to disturb cover during the primary nesting period April 1 – August 1. Exceptions may be made to maintain the health of the plant community. Mowing may be needed during the establishment period.

REFERENCES

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

Table 1 – Suggested Species for Hedgerow Wildlife Plantings

TREE AND SHRUBS

SPECIES	SITE ADAP-TATION*	Ave. Mat. Height (Ft.)	Month of fruit	COMMENTS
Alder, hazel *Alnus serrulata*	VPD – WD FS – PS	12	9-10	Prefers wet to moist soils. Seeds persistent and eaten by songbirds, forms dense cover. Nitrogen fixer.
Arrowwood, downy *Viburnum rafinesquianum*	SPD – WD FS - PS	6	8-11	¼" bluish-black drupe. Erect branches. Fruits persist into winter, eaten by many species.
Arrowwood, southern *Viburnum dentatum*	SPD – WD FS - PS	6	8-11	¼" bluish-black drupe. Erect branches. Fruits persist into winter, eaten by many species.
Ash, prickly *Zanthoxylum americanum*	SPD – WD FS - PS	9	9-11	A thicket forming shrub with prickly leafstalks. Fruits are a small reddish-brown pod.
Blackberry, wild *Rubus allegheniensis*	MWD–WD FS - PS	6	7 - 9	Upright arching shrub with stout prickles. Provides cover and food for birds and mammals. Recommended for quail.
Buttonbush *Cephalanthus occidentalis*	VPD – WD FS - PS	12	9-11	Best on wet sites. Wilted leaves may be toxic to livestock.
Cherry, black *Prunus serotina*	SPD - WD FS - PS	100	8-9	Fruit is an important food for many species of birds and mammals.
Chokeberry, black *Aronia melanocarpa*	SPD – WD FS – PS	6	8-11	1/3" dark-purple fruit eaten by birds.
Chokecherry *Prunus virginiana*	SPD – WD FS – PS	20	7 - 9	Grows in a wide variety of sites. 1/3" red becoming black edible fruit eaten by many species
Coralberry *Symphoricarpos orbiculatus*	MWD–WD PS	5	9-10	Fruits coral to purple. Eaten by songbirds, quail, and ruffed grouse.
Crabapple, prairie *Malus ioensis*	SPD – WD FS	25	9-10	Showy white flowers. Fruit 1.5 inches across. Susceptible to cedar apple rust. Used by many species of wildlife.
Crabapple, wild sweet *Malus coronaria*	SPD – ED FS	25	9-10	Yellow-green, 1 inch across, edible fruit with highly fragrant flowers. Recommended for quail.
Cranberry, Am. highbush *Viburnum opulus L. var. americanum*	VPD – WD FS - PS	12	8 - 9	Tart red edible fruits. Eaten by grouse, pheasant and songbirds. Showy.
Dogwood, alternateleaf *Cornus alternifolia*	SPD – WD FS - PS	18	7 - 9	Blue-black fruit with red stems. Fruit eaten by birds. Twigs browsed by deer and rabbits.
Dogwood, flowering *Cornus florida*	MWD –WD FS - PS	30	9-10	Showy flowers, glossy red drupe. Recommended for quail.

TREE AND SHRUBS (continued)				
SPECIES	**SITE ADAP-TATION***	**Ave. Mat. Height (Ft.)**	**Month of fruit**	**COMMENTS**
Dogwood, gray *Cornus racemosa*	SPD – WD FS	8	9-10	Red pedicles in winter, white drupe eaten by birds.
Dogwood, redosier *Cornus sericea*	VPD – WD FS	10	8-10	Reddish stem, white drupe, good winter color. Fruit sought by songbirds, grouse, and quail. Twigs browsed by deer, rabbits.
Dogwood, roughleaf *Cornus drummondii*	PD – WD FS – PS	15	8-10	White drupes. Fruit eaten by several songbirds, grouse, quail, turkey and pheasant. Browsed by rabbits and deer.
Dogwood, silky *Cornus obliqua*	VPD – WD FS - PS	10	8-10	Blue fruit eaten by birds, likes moist soils and partial shade. Browsed by rabbits and deer.
Elderberry *Sambucus nigra L. ssp. canadensis*	VPD – WD FS - PS	9	7 - 9	Purple-black edible drupe. Fruits eaten by many birds including pheasant, quail, dove and turkey.
Hackberry *Celtis occidentalis*	SPD -MWD FS - PS	60	9-10	Fruit used by birds and mature trees for nest sites.
Hawblack *Viburnum prunifolium*	SPD – WD FS - PS	15	8-10	½ " long blue black edible drupe, eaten by song birds, quail, and fox.
Haw, red *Crataegus mollis*	PD - MWD FS	30	9	Fruit consumed by a number of birds and mammals. Nesting site for many birds.
Haw, rusty *Viburnum rufidulum*	PD - MWD FS-PS	25	7-9	Many species of birds and mammals utilize the fruits. Leaves twigs and bark used by mammals.
Hawthorn, Washington *Crataegus phaenopyrum*	SPD – ED FS	30	9-12	Red fruit that lasts into winter and attracts many birds. Also fed on by deer, fox, rabbit, grouse and pheasant. Excellent nesting habitat for songbirds.
Hawthorn, cockspur *Crataegus crus-galli*	PD - MWD FS	25	8-12	Variety of wildlife use flowers, leaves and fruits. Excellent nesting habitat for songbirds.
Hazelnut, American *Corylus americana*	MWD–WD FS – PS	15	7-10	Often forms large colonies. Small edible nut, eaten by squirrels, deer, jays, grouse, quail and pheasant.
Hickory, shagbark *Carya ovata*	MWD - WD FS - PS	90	9-10	Nuts are a major food source for squirrels and used by deer and turkey.
Hickory, shellbark *Carya laciniosa*	PD - MWD FS - PS	70	9-10	Nuts used by wood duck, squirrels, deer and turkey.
Maple, red *Acer rubrum*	PD - WD FS - PS	70	4-6	Provide food and cover for many species of birds and mammals.
Nannyberry *Viburnum lentago*	SPD – WD FS - PS	15	8-10	Blue-black fruits similar to raisins, eaten by birds and mammals. Provides cover and nest sites.
Ninebark *Physocarpus opulifolius*	VPD – WD FS - PS	10	6-7	Fruit are small dry bladders lasting through winter. White to pinkish flowers.
Oak, bur *Quercus macrocarpa*	PD - WD FS	80	8-11	Acorns are eaten by squirrels, blue jays, crows, red-headed woodpeckers, deer, turkey, quail, mice, chipmunks, ducks and raccoons
Oak, northern red *Quercus rubra*	MWD - WD FS	100	9-11	Acorns are eaten by squirrels, blue jays, crows, red-headed woodpeckers, deer, turkey, quail, mice, chipmunks, ducks and raccoons
Oak, pin *Quercus palustris*	VPD -MWD FS	75	9-12	Acorns are eaten by squirrels, blue jays, crows, red-headed woodpeckers, deer, turkey, quail, mice, chipmunks, ducks and raccoons

TREE AND SHRUBS (continued)

SPECIES	SITE ADAP-TATION*	Ave. Mat. Height (Ft.)	Month of fruit	COMMENTS
Oak, white *Quercus alba*	MWD - WD FS	100	9-11	Acorns are eaten by squirrels, blue jays, crows, red-headed woodpeckers, deer, turkey, quail, mice, chipmunks, ducks and raccoons.
Pawpaw *Asimina triloba*	SPD – WD PS	30	9-11	Large leaves, likes deep moist soils. Edible fruit. Eaten by opossum, squirrels, raccoon and fox.
Pecan, sweet *Carya illinoinensis*	PD - MWD FS	80	9-11	Nuts used by wood duck, squirrels, deer, turkey and small mammals.
Persimmon *Diospyros virginiana*	MWD-SPD	50	9-11	Fruit is eaten by deer, raccoon, foxes, and to a lesser extent songbirds.
Plum, American *Prunus americana*	MWD – ED FS	20	8-10	Reddish edible drupe recommended for quail, and mammals.
Raspberry, wild *Rubus strigosus*	MWD –WD FS - PS	5	7-9	Arching shrub with strong hooked prickles. Provides cover and food for birds and mammals.
Redbud, Eastern *Cercis canadensis*	MW – WD FS – PS	30	9-10	A legume, pod 2-3” long, reddish-purple flowers, heart shaped leaves. Seeds eaten by a few songbirds.
Redcedar, Eastern *Juniperus virginiana*	SPD – ED FS	45	9-3	Fruit used by songbirds. Provides cover. Red Cedar should not be planted within 1/2 mile of apple orchards to avoid cedar-apple rust disease.
Serviceberry or shadbush *Amelanchier arborea*	MW – WD FS	30	6 - 8	Berry like pome, green turning red to black eaten by birds and small mammals.
Spicebush *Lindera benzoin*	VPD – WD FS - PS	9	7- 8	Small red drupe that is edible. Twigs and fruit eaten by songbirds, deer, rabbit, opossum, quail and grouse.
Sumac, smooth *Rhus glabra*	MWD – ED FS	12	8-9	Often forms large colonies. Reddish fruit eaten by some songbirds, quail, dove, and pheasant. Twigs sometimes browsed by rabbits and deer.
Sumac, staghorn *Rhus hirta*	MWD – ED FS	15	8-9	Tolerates dry, infertile soils. Reddish fruit eaten by some songbirds, quail, dove, pheasant. Twigs sometimes browsed by rabbits and deer.
Tea, New Jersey *Ceanothus americanus*	WD – ED FS	3	9	Prairie plant with white flower in dense heads. Quail and wild turkey eat the three-celled capsule.
Witchhazel, American *Hamamelis virginiana*	SPD – WD FS - PS	18	9-11	Pale yellow flowers that produce pods with seeds. Seeds, buds and twigs eaten by deer, rabbit, quail and pheasant.

Grasses	SITE ADAPTATION*	HEIGHT (feet)	COMMENTS
Big bluestem, *Andropogon gerardii*	SPD - ED	3-9	Native warm season grasses are used by birds and mammals for nesting and escape cover. Grazed by deer and the seeds eaten by birds and small mammals. Most beneficial to wildlife when seeded in mixtures with forbs. See Conservation Cover (327) for seeding recommendations.
Indiangrass, *Sorghastrum nutans*	PD - ED	3-5	
Switchgrass, *Panicum virgatum*	VPD - WD	3-6	
Eastern Gamagrass, *Tripsacum dactyloides*	VPD - WD	3-8	

Site Adaptation Key:
ED= Excessively Drained
WD = Well Drained
MWD = Moderately Well Drained
SPD = Somewhat Poorly Drained
PD = Poorly Drained
VPD = Very Poorly Drained
FS = Full Sun
PS = Partial Shade

NRCS, ILLINOIS

June 2002

Conservation practice standards are reviewed periodically, and updated if needed. To obtain the current version of this standard, contact the Natural Resources Conservation Service.