NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE GENERAL SPECIFICATIONS

RIPARIAN FOREST BUFFER

(Acre)
CODE 391

GENERAL SPECIFICATIONS

Procedures, technical details and other information listed below provide additional guidance for carrying out selected components of the named practice. This material is referenced from the conservation practice standard for the named practice and supplements the requirements and considerations listed therein.

PLANTING DENSITIES

Initial plant-to-plant densities for trees and shrubs will depend on their potential height at 20 years of age. Heights may be estimated based on: 1) performance of the individual species (or comparable species) in nearby areas on similar sites, or 2) predetermined and documented heights using Conservation Tree/Shrub Suitability Groups, Section II of the Field Office Technical Guide. Planting density specifications are:

Plant Types/Heights:	Plant-to-Plant Spacing in feet:
• Shrubs less than 10 feet in height	3 to 6
• Shrubs and trees from 10 to 25 feet in height (includes columnar trees)	5 to 8
• Trees greater than 25 feet in height	8 to 15

PLANT LIST

Table 1 lists woody plant species (trees and shrubs) commonly associated with and suited to riparian areas. Key attributes are listed for each plant to assist with the design process for establishing new buffers.

Where equipment access corridors are necessary adjacent to stream channels, recommended low shrub species include but are not limited to: red-osier dogwood (Cornus stolonifera), gray dogwood (C. racemosa), buttonbush (Cephalanthus occidentalis), arrow-wood (Viburnum recognitum), swamp privet (Forestiera acuminata), and winterberry (Ilex verticillata). If herbaceous cover is chosen refer to Filter Strip standard, 393, for guidance.

After establishment of low shrubs or herbaceous plants, periodic use of equipment is permitted for channel bed and bank maintenance. Deposition of spoil on the established plantings will require revegetation.

CARE, HANDLING, SIZE AND PLANTING REQUIREMENTS FOR WOODY PLANTING STOCK

For use of bare root stock refer to Tree/Shrub Establishment (Tree Planting), standard 612. If seed will be used to establish the buffer refer to Woodland Direct Seeding, standard 652.

PREPARATION OF PLANTING SITES

Refer to Tree/Shrub Establishment (Tree Planting), standard 612 or Woodland Direct Seeding standard 652.

Use of Root Pruned Potted Stock for Difficult Sites

Conservation practice general specifications are reviewed periodically, and updated if needed. To obtain the current version, contact the Natural Resources Conservation Service.

Sites that have a history of being wet or flooded in spring may be fall planted at 40 foot X 40 foot spacing (approximately 27 trees per acre) using seedlings produced by a root pruning method and supplied in containers no less than 2 gallons in size. (These seedlings tend to be large, with thick, fibrous roots and capable of beginning nut or acorn production as early as 5 years after planting.) Seedlings will be at least 3 feet tall with at least 1/2 inch caliper. Seedlings will be planted by hand or using an auger at least 12 inches in diameter. Best results have been obtained when ridges or raised beds at least 12 inches high have been created and seedlings planted into these slightly raised sites. Soil will be firmly packed around seedling roots. Weed barrier fabric squares will effectively control weed competition. Squares must be at least 4 feet by 4 feet, anchored with at least 9 wire staples at least 6 inches long. Planting will occur between October 1 and November 1 in Plant Suitability Zones I and II and between October 1 and November 15 in Zone III. Planting may continue in early spring as soon as the ground can be worked but no later than April 25 in all areas.

It is assumed that natural regeneration of light seeded species such as green ash, silver maple and cottonwood will occur to fill in gaps. If for any reason this is not likely to occur this method should not be used. Thinning to control fast growing woody competition may be necessary during the first 5-10 years. This method must have the concurrence of the Illinois DNR District Forester and be part of a detailed tree planting plan.

Conservation Cover

The need for establishment of herbaceous cover should be determined on a site-by-site basis. Many riparian sites will not need treatment, especially if tree planting will begin in less than one year. If tree planting and/or natural regeneration are not expected to occupy the site promptly, a non-competitive seeding mix may be used. Refer to Conservation Cover, standard 327.

Table 1. Plant List for Riparian Forest Buffers

Species	(Common/Scientific)	pH Range	Flooding Tolerance	Large Debris	Shade Value	Wildlife Merit	Height (feet)	IL Plant Suitability Zone
arrow-wood	Viburnum recognitum	5.1-6.5	H	L	L	H	8	All
ash, green	Fraxinus pennsylvanica	6.1-7.5	M	M	H	M	60	All
ash, white	Fraxinus americana	6.1-7.5	L	M	H	M	70	All
baldcypress	Taxodium distichum	6.1-6.5	VH	M	M	M	80	II, III
birch, river	Betula nigra	4.0-6.5	M	H	M	M	50	All
buttonbush	Cephalanthus occidentalis	6.1-6.5	VH	L	L	L	10	All
cottonwood	Populus deltoides	6.6-7.5	H	H	M	H	90	All
dogwood, gray	Cornus racemosa	6.1-8.5	H	L	L	H	8	All
dogwood, red-osier	Cornus stolonifera	6.1-8.5	H	L	L	H	12	All
hackberry	Celtis occidentalis	6.6-8.5	M-L	M	M	M	60	All
*hickory, shellbark	Carya laciniosa		M	M	H	H	70	All
hickory, water	Carya aquatica		VH	M	M	H	70	III
holly, swamp	Ilex decidua	4.0-8.5	VH	L	L	M	16	All
holly, winterberry	Ilex verticillata	4.5-8.0	VH	L	L	M	20	II, III
locust, honey	Gleditsia triacanthos	6.1-7.5		H	H	M	L	70
locust, water	Gleditsia aquatica		VH	M	M	L	60	III
maple, boxelder	Acer nagundo	5.1-7.5		M	H	M	M	40
maple, silver	Acer saccharinum	5.5-7.5	M	H	H	M	80	All
maple, red	Acer rubrum	4.5-6.5	M	M	H	M	70	All
*oak, bur	Quercus macrocarpa	4.0-8.5	H	M	H	H	80	All
oak, pin	Quercus palustris	5.5-6.5	M-L	H	M	H	75	All
oak, willow	Quercus phellos		M	M	H	H	70	III
oak, shingle	Quercus imbricaria		M	M	M	H	65	All
oak, overcup	Quercus lyrata		VH	M	H	H	70	II, III
oak, swamp white	Quercus bicolor	6.6-7.5	M-H	M	H	H	70	All
oak, cherrybark	Quercus pagodafolia		M	M	H	H	75	III
oak, swamp chestnut	Quercus michauxii		M-H	M	H	H	75	III
oak, shumard	Quercus shumardii		M-L	M	H	H	80	II, III
*pawpaw	Asimina triloba		M	L	L	H	25	All
*pecan	Carya illinoensis	6.6-7.5	M	M	H	H	80	All
*persimmon	Diospyros virginiana	6.1-6.5	M	M	M	H	50	II, III
privet, swamp	Forestiera acuminata		VH	L	L	L	14	All
sugarberry	Celtis laevigata		M-L	M	M	H	80	II, III
sweetgum	Liquidambar styraciflua		M	H	H	H	90	III
sycamore	Platanus occidentalis	6.6-8.5	H	H	M	H	90	All
water tupelo	Nyssa aquatica		VH	H	H	H	90	III
*walnut, black	Juglans nigra	6.6-8.5	M-L	M	M	H	80	All
willow, black	Salix nigra	6.6-7.5	H	H	L	M	60	All
willow, sandbar	Salix exigua (interior)		VH	L	L	L	6	All
willow, peachleaf	Salix amygdaloides	6.6-7.5	H	L	L	L	30	All
willow, pussy	Salix discolor	6.6-7.5	H	L	L	L	20	I

*Heavy seeded species preferred for seeding and planting to increase species diversity.

VH = very high; H = high; M = medium; L = low

pH Range: from Hightshoe, G.L., 1988, Native Trees, Shrubs and Vines for Urban and Rural America

Flooding Tolerance. General capacity of the plant to withstand standing water. VH = able to survive deep, prolonged flooding for more than one year; H = able to survive deep flooding for one growing season, with mortality occurring if flooding is repeated the following year; M = able to survive flooding or saturated soils for 30 consecutive days during the growing season; L = unable to survive more than a few days of flooding during the growing season without mortality.

Large Debris. Potential for the plant to produce debris larger than ten inches in diameter before senescence. H = large debris likely within life span of the plant; M = large debris possible within life span of the plant; L = large debris unlikely within life span of the plant.

Shade Value. The density or fullness of shade provided by an individual plant's crown in full leaf out condition. H = large crown providing full shade; M = partially open or medium sized crown that provides patchy or incomplete shade; L = very open or small crown that provides minimal shade.

Wildlife Merit. The potential for the plant to provide useful cavity sites and/or quality fruit production for wildlife. H = excellent large cavity potential and/or high quality fleshy fruit or nut production; M = moderate cavity potential or fruit production; L = low cavity potential and dry, non-nut fruit production.

Height. Potential height at physical maturity.

Illinois Plant Suitability Zones. See Illinois NRCS Field Office Technical Guide, Section II - Climatic Data.