NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

Field Border

(Acre)

Code 386

DEFINITION

A strip of permanent vegetation established at the edge of or around the perimeter of a field.

PURPOSES

- Reduce erosion from wind and water
- Soil and water quality protection
- Management of harmful insect populations
- Provide wildlife food and cover
- Increase carbon storage in biomass and soils
- Improve air quality

CONDITIONS WHERE PRACTICE APPLIES

At the edges of cropland fields and to connect other buffer practices within the field. May also apply to recreation land or other land uses where agronomic crops are grown.

CRITERIA

General Criteria Applicable to All Purposes

Field borders will be designed and installed to comply with all federal, state and local laws and regulations.

Minimum field border widths shall be fifteen (15) wide unless specified wider in criteria for a specific purpose.

The field borders shall be established to adapted species of permanent grass, legumes and/or shrubs.

Field borders shall be established around the field edges to the extent needed to meet the resource needs and producer objectives.

Plant materials, seedbed preparation, seeding rates, dates, depths, and planting methods will be consistent with approved local criteria.

Ephemeral gullies and rills present in the planned border area will be smoothed as part of seedbed preparation.

Additional Criteria to Reduce Erosion from Wind and Water

Wind Erosion Reduction. Locate borders around the entire perimeter of the field, or as a minimum, a stable area will be provided on the upwind edge of the field as determined by prevailing wind direction data.

Stiff-stemmed, upright grasses to trap wind blown soil particles will be used.

Minimum height of grass shall be one foot during the critical erosion period.

Conservation practice standards are reviewed periodically, and updated if needed. To obtain the current version of this standard, contact the Natural Resources Conservation Service State Office, or download it from the electronic Field Office Technical Guide for your state.

Water Erosion Reduction. Borders will be located around entire perimeter of the field, or as a minimum, install borders to eliminate sloping end rows, headlands, and other areas where concentrated water flows will enter or exit the field.

Additional Criteria to Protect Soil and Water Quality

Reducing Runoff and Increasing Infiltration. Borders will be located around entire perimeter of the field, or as a minimum, install borders to eliminate sloping end rows, headlands and other areas where concentrated water flows will enter or exit the field.

Maintaining Field Setback Distances for Manure and Chemical Applications. Border widths will be designed to conform to minimum field application setback widths established by state or local regulations

Sediment Trapping. Borders will be located around the entire perimeter of the field, or as a minimum, in areas where runoff enters or leaves the field.

Reducing Soil Compaction from Equipment Parking and Traffic. Border widths will be designed to accommodate equipment parking, loading/unloading equipment, grain harvest operations, etc.

Additional Criteria for Management Of Harmful Insect Populations.

Provide a Harbor for Beneficial Insects. Herbaceous plants will be used that attract beneficial insects. See planning considerations for including shrubs.

Mowing, harvesting and pesticide applications will be scheduled to accommodate life cycle requirements of the beneficial insects.

or

Provide a Habitat to Cause Pest Insects to Congregate. Plants for the field border that attract pest insects will be used.

Mechanical, cultural and/or chemical techniques will be used to reduce pest populations when and where they congregate in the field border.

Additional Criteria to Provide Wildlife Food and Cover

Plant species that provide wildlife food and cover for the target wildlife species will be used.

Management practices will not be used during the primary nesting period for grassland species (April 1 through August 1). No more than 1/3 of the grassland acreage will be disturbed during any one growing season.

Minimum width will be thirty (30) feet wide.

Additional Criteria to Improve Air Quality

Plant species with foliar and structural characteristics that optimize interception, adsorption and absorption of airborne particulates will be used.

Shrub rows will be oriented as closely as possible to perpendicular to the prevailing wind direction during the period of concern.

Additional Criteria to Increase Carbon Storage in Biomass and Sequestration in the Soil

Plant species that will produce the greatest above and below ground biomass for the site will be used.

CONSIDERATIONS

Field borders are more effective and provide more environmental benefits when planted around the entire field.

Field borders enhance the aesthetics and provide stability around the field edge. They also provide turn and travel areas for equipment and reduce airborne dust

To increase trapping efficiency, consider establishing a narrow strip of stiff-stemmed upright grass at the crop/field border interface.

Field borders can be used to comply with required field setback distances applicable to manure and chemical applications.

Wildlife enhancement and other benefits of native plants should be discussed during planning.

Native species should be used when feasible and meet producer objectives.

It is highly recommended that disturbance be delayed until after August 15, to reduce the chance of harming fledgling birds and other young wildlife.

Consider inter-seeding the border with legumes for plant diversity and wildlife benefits. See Natural Resources Conservation Service (NRCS) Field Office Technical Guide (FOTG) Standard (647) Early Successional Habitat Development/Management for additional guidance.

Schedule mowing, harvesting and weed control to accommodate wildlife nesting needs and other special requirements or purposes, normally after August 1th or before April 1st.

Waterbars or berms may be needed to breakup or redirect concentrated water flows within the borders.

If bank stabilization is a concern, select fibrous deep-rooted plants.

Consider plants tolerant to sediment deposition and chemicals planned for application.

Rows of shrubs adjacent to field borders will often enhance field borders ability to harbor beneficial insects, and may also provide additional wildlife benefits. See NRCS FOTG Standard (380) Windbreak/Shelterbelt for more details.

Consider using plant species that enhance the biomass collection opportunities.

Consider increasing the width of the field border will increase the potential for carbon sequestration.

PLANS AND SPECIFICATIONS

Plans and specifications are to be prepared for the practice site. The following items should be specified:

- Location within the field or farm boundary Vegetation to be used.
- Site preparation.
- Planting method.
- Liming or fertilizer requirements.
- Target species if wildlife is a primary purpose
- Operation and maintenance .requirements.

OPERATION AND MAINTENANCE

Field borders require careful management and maintenance for performance and longevity.

The following O&M activities will be planned and applied as needed:

- Storm damage repair.
- Sediment removal - when 6 inches of sediment have accumulated at the field border/cropland interface.
- Shut off sprayers and raise tillage equipment to avoid damage to field borders.
- Shape and reseeding border areas damaged by chemicals, tillage or equipment traffic.
- Fertilize, mow, harvest, and control noxious weeds to maintain plant vigor.
- Ephemeral gullies and rills that develop in the border will be filled and reseeded.

- Maintain herbaceous vegetation so that it provides at least 80% ground cover throughout the year.

Table 1 - Seeding Mixtures for Warm Season Grasses

Seeding Mixtures	Application Rate (lbs./ac of PLS[1])		Soil Moisture Tolerance
	Wildlife	Erosive Areas	
Big Bluestem *(Andropogon gerardii)*	0.75	1	PD - ED
Indiangrass *(Sorghastrum nutans)*	0.75	1	SPD - ED
Little Bluestem *(Schizachyrium scoparium)*	1.75	2.5	MWD - ED
Sideoats Grama *(Bouteloua curtipendula)*	1	1.5	MWD - ED
or Canada wildrye *(Elymus canadensis)*	1	2	MWD - ED
Common, Kobe, or Marion Lespedeza[2] *(Kummerowia striata)* **or** a forb mix[4]	2	2	MWD - ED
[5]Little Bluestem *(Schizachyrium scoparium)*	2.5	4	MWD - ED
Indiangrass *(Sorghastrum nutans)*	0.75	1	SPD - ED
Sideoats Grama *(Bouteloua curtipendula)*	0.75	1	MWD - ED
or Canada wildrye *(Elymus canadensis)*	1	2	MWD - ED
Common, Kobe, or Marion Lespedeza[2] *(Kummerowia striata)* **or** a forb mix[4]	2	2	MWD - ED
[3]Switchgrass *(Panicum virgatum)*	1.75	2	PD - ED
or Switchgrass *(Panicum virgatum)* **and**	0.5	1	PD - ED
Virginia wildrye *(Elymus virginicus)*	1	2	PD - WD
Big Bluestem (*Andropogon gerardii)*	1	2	PD - ED
Indiangrass *(Sorghastrum nutans)*	0.5	1	SPD - ED
Common, Kobe, or Marion Lespedeza[2] *(Kummerowia striata)* **or** a forb mix[4]	2	2	MWD - ED
Big Bluestem *(Andropogon gerardii)*	1	1.5	PD - ED
Indiangrass *(Sorghastrum nutans)*	1.5	2	SPD - ED
Little Bluestem *(Schizachyrium scoparium)*	1	1.0	MWD - ED
Sideoats Grama *(Bouteloua curtipendula)*	0.5	1.0	MWD - ED
or Canada wildrye *(Elymus canadensis)*	1	1	MWD - ED
Common, Kobe, or Marion Lespedeza[2] *(Kummerowia striata)* **or** a forb mix[4]	2	2	MWD - ED

[1] Pure Live Seed

[2] Substitutes for *Lespedezas* must be used on sites north of Interstate 70.

[3] This seeding mixture can be used on wet sites.

[4] Use ¼ to ½ lb. of a perennial forb mix, with a minimum of 5 species (see Table 3) in approximately equal proportions.

[5] Recommended for quail.

Conservation practice standards are reviewed periodically, and updated if needed. To obtain the current version of this standard, contact the Natural Resources Conservation Service State Office, or download it from the electronic Field Office Technical Guide for your state.

Table 2 - Seeding Mixtures for Cool Season Grasses

Seeding Mixtures	Application Rate (lbs./ac of PLS)		Soil Moisture Tolerance
	Wildlife	Erosive Areas	
[1,2] Orchardgrass *(Dactylis glomerata)*	2	6	MWD - ED
Timothy *(Phleum pratense)*	1	2	PD - WD
Common, Kobe, or Marion Lespedeza *(Kummerowia striata)*[5], **or** a forb mix[6]	2	4	MWD - ED
Ladino Clover *(Trifolium repens)*	¼	¼	PD - WD
[1] Redtop *(Agrostis gigantea)*	1	2	PD - WD
Orchardgrass *(Dactylis glomerata)*	2	6	MWD - ED
Common, Kobe, or Marion Lespedeza *(Kummerowia striata)*[5], **or** a forb mix[6]	2	4	MWD - ED
Ladino Clover *(Trifolium repens)*	¼	¼	PD - WD
[1] Redtop *(Agrostis gigantea)*	1	2	PD - WD
Timothy *(Phleum pretense)*	1	2	PD - WD
Red Clover *(Trifolium pretense)*	1	2	MWD - ED
Common, Kobe, or Marion Lespedeza *(Kummerowia striata)*[5], **or** a forb mix[6]	2	4	MWD - ED
Orchardgrass *(Dactylis glomerata)*	2	6	MWD - ED
Timothy *(Phleum pratense)*	1	2	PD - WD
Alfalfa *(Medicago sativa)*	3	6	MWD - ED
Ladino Clover *(Trifolium repens)*	¼	¼	PD - WD
[3] Smooth Bromegrass *(Bromus inermis)*	5	10	MWD - ED
Alfalfa *(Medicago sativa)*	3	6	MWD - ED
Ladino Clover *(Trifolium repens)*	¼	¼	PD - WD
Birdsfoot Trefoil *(Lotus corniculatus)*	2	4	PD - WD
[4] Timothy *(Phleum pratense)*	1	2	PD - WD
Smooth Bromegrass *(Bromus inermis)*	5	10	MWD - ED
Alsike Clover *(Trifoliium hybridum)*	½	1	PD - WD
Birdsfoot Trefoil *(Lotus corniculatus)*	2	4	PD - WD
[1] Timothy *(Phleum pratense)*	1	2	PD - WD
Kentucky Bluegrass *(Poa pratensis)*	1	3	PD - WD
Common, Kobe, or Marion Lespedeza *(Kummerowia striata)*[5], **or** a forb mix[6]	2	4	MWD - ED
Birdsfoot Trefoil *(Lotus corniculatus)*	2	4	PD - WD
[4] Redtop *(Agrostis gigantea)*	1	2	PD - WD
Timothy *(Phleum pratense)*	1	2	PD - WD
Alsike Clover *(Trifolium hybridum)*	1	2	PD - WD
Birdsfoot Trefoil *(Lotus corniculatus)*	2	4	PD - WD

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Table 2 - Seeding Mixtures for Cool Season Grasses (continued)

Seeding Mixtures	Application Rate (lbs./ac of PLS)		Soil Moisture Tolerance
	Wildlife	Erosive Areas	
[1] Redtop *(Agrostis gigantea)*	1	2	PD - WD
Kentucky Bluegrass *(Poa pratensis)*	1	3	PD - WD
Common, Kobe, or Marion Lespedeza *(Kummerowia striata)*[5], **or** a forb mix[6]	2	4	MWD - ED
Ladino Clover *(Trifolium repens)*	¼	¼	PD - WD
[1] Orchardgrass *(Dactylis glomerata)*	1	6	MWD - ED
Timothy *(Phleum pretense)*	1	2	PD - WD
Red Clover *(Trifolium pratense)*	1	2	MWD - ED
Ladino Clover *(Trifolium repens)*	¼	¼	PD - WD
Common, Kobe, or Marion Lespedeza *(Kummerowia striata)*[5], **or** a Forb mix[6]	2	4	MWD - ED
[1] Timothy *(Phleum pratense)*	1	2	PD - WD
Kentucky Bluegrass *(Poa pratensis)*	1	3	PD - WD
Common, Kobe, or Marion Lespedeza *(Kummerowia striata)*[5], **or** a Forb mix[6]	2	4	MWD - ED
Red Clover *(Trifolium pratense)*	1	2	MWD - ED
Orchardgrass *(Dactylis glomerata)*	2	6	MWD - ED
Timothy *(Phleum pratense)*	1	2	PD - WD
Ladino Clover *(Trifolium repens)*	¼	¼	PD - WD
Birdsfoot Trefoil *(Lotus corniculatus)*	2	4	PD - WD
Note: The following species can be substituted for mixtures containing both Timothy and Orchardgrass:			
Canada wildrye *(Elymus canadensis)*	2	3	MWD - WD
Virginia wildrye*(Elymus virginicus)*	1	2	PD - WD

[1] Mix better suited for sites **south** of Interstate 70.

[2] Mix can be used on droughty sites.

[3] Mix better suited for sites **north** of Interstate 70.

[4] Mix can be used on wet sites.

[5] Substitutes for *Lespedezas* must be used on sites north of Interstate 70.

[6] Use ¼ to ½ lb. of a perennial forb mix, with a minimum of 5 species (see Table 3) in approximately equal proportions.

Guidance for when to use *Wildlife* or *Erosive Area* seeding rates

	Wildlife Rate	Erosive Area Rate
Northern Indiana	LS =< 0.39	LS => 0.40
Southern Indiana	LS =< 0.79	LS => 0.80

The **Wildlife Rates** are to be used for the flatter portions of fields that are less erosive. The **Erosive Area Rates** are for the slopes, drainage ways, and other more erosive areas of the field. Planners should look at LS values to help determine the break between the Erosive Areas rates and Wildlife rates. Adapt application rates in Tables 4 and 5 to meet local conditions. (For more information on LS values refer to USDA Agricultural Handbook 703).

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Table 3 – Forb List

Species	Soil Moisture Tolerance
Alfalfa (CSL) (*Medicagosativa*)	MWD – ED
Aster, Flat Topped (*Aster umbellatus*)	PD – SPD
Aster, New England (*Aster novaeangliae*)	PD – WD
Aster, Sky Blue (*Aster azureus*)	MWD - ED
Aster, Swamp (*Aster puniceus*)	PD – SPD
Blackeyed Susan (*Rudbeckia hirta*)	MWD-ED
Sweet Black-eyed Susan (*Rudbeckia subtomentosa*)	MWD - WD
Blazing Star, Button (*Liatris aspera*)	MWD – ED
Blazing Star, Dense (*Liatris spicata*)	PD – WD
Blazing Star, Prairie (*Liatris pycnostachya*)	PD - MWD
Blazing Star, Rough (*Liatris aspera*)	MWD - ED
Butterfly Weed (*Asclepias tuberose*)	MWD – ED
Cardinal Flower (*Lobelia cardinalis*)	PD – SPD
Clover, Alsike (CSL) (*Trifoliium hybridum*)	PD – WD
Clover, Ladino (CSL) (*Trifoliium repens*)	PD – WD
Clover, Red (CSL) (*Trifoliium pretense*)	MWD – WD
Clover, White (CSL) (*Trifoliium repens*)	PD – WD
Coneflower, Gray-Headed (*Ratibida pinnata*)	MWD – ED
Coneflower, Pale Purple (*Echinacea pallida*)	MWD - ED
Coneflower, Purple (*Echinacea purpurea*)	MWD - ED
Coneflower, Yellow (*Ratibida pinnata*)	MWD - ED
Cup Plant (*Silphium perfoliatum*)	PD - MWD
Entire-Leaf Rosinweed (*Silphium integrifolium*)	MWD – ED
Foxglove Beardtongue (*Penstemon digitalis*)	SPD - MWD
Golden Alexander (*Zizia aurea*)	PD - MWD
Goldenrod, Riddell's (*Solidago riddelli*)	SPD – ED
Goldenrod, Rigid (*Solidago rigida*)	SPD - ED
Hoary Tick Trefoil (*Desmodium canescens*) (WSL)	MWD – ED
Illinois Bundleflower (*Desmanthus Illinoensis*)	MWD - ED
Indigo, White Wild (*Baptisia leucantha*) (L)	MWD – ED
Indigo, Cream White (a.k.a. False White) (*Baptisia lactea*)	SPD - WD
Ironweed (*Vernonia fasciculata*)	PD - MWD
Lead Plant (*Amorpha canescens*)	WD – ED
Common, Kobe, or Marion Lespedeza (*Kummerowia striata*) (CSL)[1]	WD – ED
Lespedeza, Roundheaded (a.k.a. Bush Clover) (*Lespedeza Capitata*) (WSL)	MWD – ED
Lespedeza, Slender (*Lespedeza Virginica)* (WSL)	MWD – ED
Milkweed, Butterfly (*Asclepias tuberosa*)	MWD - ED
Milkweed, Swamp (*Asclepias incarnata*)	PD – SPD
Milkvetch, Canada (*Astragalus canadensis*)	SPD – WD
New Jersey Tea (*Ceanothus Americanus)*	MWD – ED
Nodding Bur Marigold (*Bidens cernua*)	PD – SPD
Obedient Plant (*Physostegia virginiana*)	PD – SPD
Ohio Spiderwort (*Tradescantia ohiensis*)	SPD – WD

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Table 3 – Forb List (continued)

Species	Soil Moisture Tolerance
Partridge Pea (*Cassia fasciculata*) (WSL)	MWD – ED
Prairie Clover, Purple (*Petalostemum purpureum*)	MWD - ED
Prairie Clover, White (*Petalostemum candidum*)	MWD - ED
Prairie Dock (*Silphium terebinthinaceum*)	SPD – ED
Rattlesnake Master (*Eryngium yuccifolium*)	MWD - WD
Sneezeweed (*Helenium autumnale*)	PD – SPD
Spotted Joe Pye Weed (*Eupatorium maculatum*)	PD – SPD
Starry Solomon's Seal (*Smilacina stellata*)	PD – ED
Sunflower, False (*Heliopsis helianthoides*)	MWD – ED
Sunflower, Sawtooth (*Helianthus grosseserratus*)	PD – WD
Tall Coreopsis (*Coreopsis tripteris*)	SPD – ED
Trefoil, Birdsfoot (CSL) (*Lotus corniculatus*)	MWD – WD
Tick Trefoil, Illinois (*Desmodium illinoense*)	WD - ED
Tick Trefoil, Showy (a.k.a. Canada) (*Desmodium canadense*)	SPD – WD
Vervain, Blue (*Verbena hastata*)	VPD - SPD
Vervain, Hoary (*Verbena stricta*)	MWD - ED
Virginia Blue Flag (*Iris virginica var. shrevei*)	PD – SPD
Virginia Mountain Mint (*Pycnanthemum virginica*)	SPD – WD
Wild Bergamot (*Monarda fistulosa*)	SPD – WD
Wild Quinine (*Parthenium integrifolium*)	MWD – ED
Wild Senna (*Cassia hebecarpa*) (WSL)	PD – WD

(WSL) = Warm Season Legume
(CSL) =
Cool Season Legume

[1]Substitutes for (CSL) *Lespedeza* must be used on sites north of Interstate 70.

Table 4. Seeding Dates Criteria for all vegetative plantings

Species/Mix	IN seeding Dates*	Dormant seeding dates**
Cool Season grasses	3/1-5/15 or 8/1-9/15	12/1-3/1
Legumes	3/1-5/15 or 8/1-9/15	12/1-3/1
Warm season grasses	4/1-6/15	12/1-4/1
Forbs	4/1-6/15	12/1-4/1

* Seeding which includes Tall Fescue and/or Perennial Ryegrass and a mulch cover may extend to 9/30 for fall seeding due to the reduced time for germination and range of cold tolerance.

**Increase seeding rates by 25% when dormant seeding. Broadcasting of warm season grasses should only be done into a prepared seedbed with protection from erosion as a consideration.

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Table 5. Shrub List

Common Name Scientific Name	Soil Moisture Tolerance [1]	Average Mature Height (ft.)	Wildlife Information	General Comments
Alternate Leaf Dogwood *Cornus alternifolia*	SPD – WD	18	Fruit eaten by birds. Twigs browsed by deer and rabbits.	Blue-black fruit with red stems. Leaves not opposite.
American Plum *Prunus americana*	MWD – ED	30	Fruit eaten by songbirds. Recommended for quail.	Reddish drupe.
Arrowwood *Vibrunum dentatum*	MWD - WD	9	Fruit eaten by songbirds.	Drupe ¼" long, bluish-black.
Black Chokeberry *Aronia melanocarpa*	SPD – WD	10	Fruit eaten by songbirds.	Fruit 1/3" long, dark-purple.
Blackhaw *Viburnum prunifolium*	MWD - WD	20	Fruit eaten by song birds, quail, and fox.	Drupe ½ " long.
Bladdernut *Staphylea trifolia*	SPD – WD	10		3 lobed balloon like capsule.
Buttonbush *Cephalanthus occidentalis*	VPD – SPD	5	Seeds consumed by many bird species.	Nutlets, best on wet sites. Wilted leaves may be toxic to livestock.
Buttonbush *Cephalanthus occidentalis*	VPD – SPD	5	Seeds consumed by many bird species.	Nutlets, best on wet sites. Wilted leaves may be toxic to livestock.
Chokecherry *Aronia virginiana*	SPD – WD	18	Fruit eaten by songbirds.	Grows in wide variety of sites. Fruit 1/3" long, dark-purple.
Coralberry *Symphoricarpos orbiculatus*	MWD - WD	5	Fruit eaten by songbirds, quail, and ruffed grouse.	Fruits coral to purple.
Devils Walking Stick *Aralia spinosa*	SPD - MWD	20	Fruit eaten by birds.	Stout stem with spines, showy white flowers that produce a black drupe.
Eastern Wahoo *Euonymus atropurpureus*	SPD – WD	12	Fruit eaten by birds.	4 lobed red capsule, sometimes winged stem.
Elderberry *Sambucus canadensis*	VPD – WD	9	Fruit eaten by many birds including pheasant, dove and turkey. Plant contains hydrocyanic acid. Recommended for quail.	Purple-black drupe used for jams, jellies, pies, and wine..
Flowering Dogwood *Cornus florida*	MWD - WD	30	Recommended for quail.	Showy flowers, glossy red drupe.

Gray Dogwood *Cornus racemosa*	SPD – WD	8	Fruit eaten by pheasant and grouse.	Red pedicles in winter, white drupe.
Hazel Alder *Alnus serrulata*	VPD – WD	18	Deer browse on the twigs.	Prefers wet to moist soils. Long lenticles on the stem.
Hazelnut *Corylus americana*	MWD - WD	15	Small nut eaten by squirrels, deer, jays, grouse, quail and pheasant. Recommended for quail.	Often forms large colonies.
Highbush Cranberry *Viburnum trilobum*	VPD – WD	9	Fruit eaten by grouse, pheasant and songbirds.	Tart red fruits. Showy.
Indigobush *Amorpha fruticosa*	VPD – WD	6		Small pods, flowers purplish spikes.
Leadplant *Amorpha canescens*	WD – ED	3		Small erect prairie shrub with purple flowers.
Nannyberry *Viburnum lentago*	SPD – WD	18	Fruit eaten by songbirds.	Blue-black fruits similar to raisins.
New Jersey Tea *Ceanothus americanus*	WD - ED	3	Quail and wild turkey eat the three celled capsule that matures in fall.	Prairie plant with white flower in dense heads.
Ninebark *Physocarpus opulifolius*	VPD – WD	10	Fruit are small dry bladders lasting through winter.	White to pinkish flowers.
Pawpaw *Asimina triloba*	SPD – WD	20	Fruit eaten by opossum, squirrels, raccoon and fox.	Large leaves, likes deep moist soils.
Prairie Crab *Malus ioensis*	PD – WD	30	Fruit eaten by opossum, squirrels, raccoon and fox.	Small fruit, showy flowers.
Prickly Ash *Xanthoxylum americanum*	SPD – WD	9		A thicket forming shrub with prickly leafstalks. Fruits are a small reddish-brown pod.
Red Osier Dogwood *Cornus stolonifera*	VPD – WD	10	Fruit eaten by songbirds, grouse, quail. Twigs browsed by deer, rabbits.	Reddish stem, white drupe, good winter color.
Redbud *Cercis canadensis*	MWD – WD	30	Seeds eaten by a few songbirds.	A legume, pod 2-3" long, reddish-purple flowers, heart shaped leaves.
Rough Leaved Dogwood *Cornus drummondii*	PD – WD	18	Fruit eaten by songbirds, grouse, quail, turkey and pheasant. Browsed some by rabbits and deer.	White drupes.

Shining Sumac *Rhus copallina*	MWD – ED	8	Fruit eaten by some songbirds, quail, dove, pheasant. Twigs sometimes browsed.	Reddish fruit. Tolerates dry, infertile soils.
Shrubby St. Johnswort *Hypericum prolificum*	SPD – WD	6		Bright yellow flowers, 3-valved capsule.
Silky Dogwood *Cornus amomum*	VPD – WD	10	Sometimes browsed by rabbits and deer.	Bluish fruit, likes moist soils and partial shade.
Smooth Sumac *Rhus glabra*	MWD – ED	12	Twigs and fruit sometimes eaten by songbirds, quail, dove, and pheasant. Recommended for quail.	Often forms large colonies. Reddish fruit.
Spicebush *Lindera benzoin*	VPD – WD	9	Twigs and fruit eaten by songbirds, deer, rabbit, opossum, quail and grouse.	Small red drupe.
Spirea *Spiraea alba* *Spirea tomentosa*	VPD – WD	4	Spirea buds eaten by ruffed grouse and twigs browsed by deer and rabbits.	Pink flowers. Also called Meadowsweet or Hardack.
Staghorn Sumac *Rhus typhina*	MWD – ED	15	Fruit sometimes eaten by songbirds, quail, dove, pheasant. Twigs sometimes browsed by rabbits and deer.	Tolerates dry, infertile soils. Reddish fruit.
Wild Blackberry *Rubus allegheniensis*	MWD – ED	5	Provides cover and food for birds and mammals. Recommended for quail.	Upright arching shrub with stout prickles.
Wild Raspberry *Rubus occidentalis*	MWD – WD	5	Provides cover and food for birds and mammals. Recommended for quail.	Arching shrub with strong hooked prickles.
Wild Sweet Crabapple *Malus coronaria*	SPD – ED	30	Recommended for quail.	Yellow-green edible fruit with highly fragrant flowers.
Winterberry *Ilex verticillata*	VPD – SPD	10	Red fruits used as an emergency food source for wildlife.	Erect shrub with small greenish white flowers and bright red berries that persist through winter. Must have male and female plants for pollination.
Witch-hazel *Hamamelis virginiana*	SPD – WD	18	Seeds, buds and twigs eaten by deer, rabbit, quail and pheasant.	Pale yellow flowers that produce pods with seeds.

[1] Key to Soil Moisture Tolerance Ratings

ED = Excessively Drained
WD = Well Drained
MWD = Moderately Well Drained
SPD = Somewhat Poorly Drained
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(Source: USDA Handbook No. 18, Soil Survey Manual, October 1993.)

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Table 5. Tree List

Common Name Scientific Name	Soil Moisture Tolerance [1]	Average Mature Height (ft.)	Wildlife Information	General Comments
American Hornbeam *Carpinus caroliniana*	SPD - ED	20	Seeds and catkins consumed by songbirds and squirrels.	Shrub or small tree in the birch family. Also called muscle wood due to the smooth gray, striated bark. Common in floodplains.
American Sycamore *Platanus occidentalis*	PD - WD	90	Sycamore does not have much food value to wildlife, however, this species forms an important structural component of bottomlands and floodplains.	The sycamore is on of our largest trees capable of obtaining heights of over 100 feet. Attractive multicolored bark.
Common Name **Scientific Name**	**Soil Moisture Tolerance [1]**	**Average Mature Height (ft.)**	**Wildlife Information**	**General Comments**
Ash, Green *Fraxinus pennsylvanica*	VPD - WD	60	Seeds eaten by squirrels, quail, and songbirds.	Medium sized tree, which is a common component of swamps and floodplains.
Ash, White *Fraxinus americana*	MWD - WD	70		Common tree of upland forests. Forms a large straight bole with interlacing bark with age.
Baldcypress *Taxodium distichum*	VPD - WD	80	Waterfowl occasionally consume seeds. Trees also serve as perching areas for song and wading birds.	The baldcypress is one of two deciduous conifer trees native to Indiana. Perhaps the most flood tolerant of our trees. Often forms attractive elliptical crowns.
Beech, American *Fagus grandifolia*	MWD-WD	75	Nuts consumed by turkeys, deer, and squirrels.	Extremely shade tolerant species with decorative smooth gray bark.
Birch, River *Betula nigra*	VPD - WD	50	Stands of birch serve as important cover for riparian dwelling animals.	Small to medium sized tree of floodplains. Attractive cinnamon colored, exfoliating bark.

Black Gum *Nyssa sylvatica*	PD – WD	60	Fruits consumed by songbirds, turkeys and pileated woodpeckers.	Medium sized tree, which thrives in both upland and wetland conditions. Foliage turns an attractive red color in fall.
Black Cherry *Prunus serotina*	MWD – WD	70	Familiar fruits eaten by many species of songbirds, ruffed grouse and pheasant.	Tall tree of well drained soils. Valuable timber species which produces attractive white blossoms and edible fruits.
Black Walnut *Juglans nigra*	MWD – WD	80	Nuts consumed by squirrels.	Medium sized tree typical of central hardwood forests. Valuable timber species due to its long, straight boles. Bark chocolate colored and blocky with age.
Buckeye, Ohio *Aesculus glabra*	SPD-WD	60	Nuts sparingly consumed by eastern fox squirrels.	Fast growing species. Twigs poisonous to livestock.
Butternut *Juglans cinerea*	MWD – WD	50	Nuts consumed by squirrels.	A rare, medium sized tree with gray interlacing bark. Produces an oblong fruit like that of a black walnut.
Catalpa *Catalpa speciosa*	PD – WD	50	Trees provide cover for a variety of wildlife.	Medium sized tree with large heart shaped leaves and cigar like fruits.
Cedar, Eastern Red *Juniperus virginiana*	SPD-ED	45	Berries consumed by songbirds.	Small coniferous tree tolerant of dry, sterile soils.
Common Name **Scientific Name**	**Soil Moisture Tolerance [1]**	**Average Mature Height (ft.)**	**Wildlife Information**	**General Comments**
Cottonwood, Eastern *Populus deltoides*	ED – PD	90	Twigs and bark consumed by deer and beavers. Buds and catkins eaten by ruffed grouse.	Large tree typical of riverbanks. The triangle shaped (deltoid) leaves, which flutter in breeze, give this tree its specific name.
Hackberry *Celtis occidentalis*	SPD – WD	50	Fruits are sparingly consumed by songbirds, including cedar waxwings, mockingbirds, and robins, throughout winter.	Small to medium sized tree of calcareous soils and floodplains. The taste of the fruits may be likened to dates, but contain a large seed.

Common Name Scientific Name	Soil Moisture Tolerance [1]	Average Mature Height (ft.)	Wildlife Information	General Comments
Hawthorn, Cockspur *Crataegus crus-galli*	ED – SPD	30	Fruits make up an important winter food source for many species of songbirds including ruffed grouse. Fruit eaten by deer, fox, rabbit, grouse and pheasant. Excellent nesting habitat for songbirds.	Large shrubs or small trees that usually bear stout spines. Attractive white flowers yield small, apple like fruits. Common in disturbed woodlands that had previously been pasture.
Hawthorn, Washington *Crataegus phaenopyrum*	ED – SPD	30		
Hawthorn, Green *Crataegus virdis*	ED – SPD	30		
Hickory, Bitternut *Carya cordiformis*	SPD – WD	50	The nuts of these species constitute an important food source for squirrels. Wood ducks and wild turkeys also consume a significant quantity of these nuts.	Medium sized tree of moist woodlands. Winter buds are sulfur-yellow. The common name is derived from the bitter taste of the nut.
Hickory, Mockernut *Carya tomentosa*	ED – MWD	50		Small to medium sized hickory whose name is derived from the small size of the sweet kernel, relative to the overall size of the nut.
Hickory, Pignut *Carya glabra*	WD – ED	50		Medium sized tree of well-drained soils.
Hickory, Shagbark *Carya ovata*	MWD – WD	70	The loose shaggy bark of shellbark and shagbark hickories makes excellent roosting sites for bats.	Medium sized tree typical of well-drained soils throughout Indiana.
Hickory, Shellbark *Carya laciniosa*	VPD – WD	70		Much like shagbark hickory, but more frequent in poorly drained soils.
Kentucky Coffeetree *Gymnocladus dioicus*	SPD – WD	50	Fruits relished by squirrels, opossum, raccoon and songbirds.	Uncommon, medium sized tree with gray, scaly bark. Fruit a thick, brown pod.
Maple, Black *Acer nigrum*	MWD – WD	70	Samaras are widely consumed by birds and squirrels. Browsed by deer.	Medium sized tree very similar to sugar maple, but usually found in more moist soil conditions. The leaves tend to be mostly 3-lobed.

Maple, Red *Acer rubrum*	VPD – WD	70		Characteristic medium sized tree of swampy areas, but also found in upland conditions. Leaves turn an attractive scarlet red in fall.
Maple, Silver *Acer saccharinum*	VPD – WD	80		Exceptionally fast growing medium sized tree of floodplains and poorly drained soils. Small yellow (female) and reddish (male) flowers appear very early in the spring.
Maple, Sugar *Acer saccharum*	MWD – WD	70		One of the most common medium sized trees of well-drained woodlands. Five-lobed leaves turn a brilliant yellow-orange in fall.
Mulberry, Red *Morus rubra*	SPD-WD	40	Purplish fruits preferred food source of birds and small mammals.	Small tree. Fruits edible and used in jellies, jams, and pies.
Northern White-Cedar *Thuja occidentalis*	PD – WD	40	Foliage often browsed by deer in late winter as an emergency food source.	This medium sized evergreen was once common in northern Indiana bogs. Attains best form on calcareous soils. Commonly planted ornamental.
Oak, Black *Quercus velutina*	MWD – ED	60	Acorns of these species constitute perhaps the most important food source for a variety of wildlife including turkeys, woodpeckers, squirrels, and deer.	Medium sized tree of well drained to dry soils. Bark is black and blocky.
Oak, Bur *Quercus macrocarpa*	PD – ED	80		Medium to large sized tree, which grows most typically in mesic woodlands and along floodplains, but is also very drought and fire tolerant. Large acorns with fringed caps.
Common Name **Scientific Name**	**Soil Moisture Tolerance [1]**	**Average Mature Height (ft.)**	**Wildlife Information**	**General Comments**
oak, cherrybark *Quercus pagoda*	SPD – WD	75		Large tree of bottomlands and well-drained soils. In Indiana, found only in the extreme southwestern part of the state.

Oak, Chinquapin *Quercus muhlenbergii*	MWD – ED	60		Small to medium sized tree of calcareous soils and well-drained bottomlands. Bark is scaly with a yellowish cast.
Oak, Pin *Quercus palustris*	VPD – WD	75	The smaller pin oak acorns are particularly favored by wood ducks.	Common medium sized oak of poorly drained soils and floodplains. Dead branches are seldom shed from the trunk of this species giving it a characteristic appearance.
Oak, Red *Quercus rubra*	MWD – WD	80		Common medium to large sized tree of mesic woodlands. Bark is blocky at the base of old trees while the upper portion of the trunk resembles "ski tracks".
Oak, Scarlet *Quercus coccinea*	MWD – ED	70		Medium sized tree of dry ridges. Leaves turn a brilliant scarlet in autumn.
Oak, Shingle *Quercus imbricaria*	SPD – WD	50		Small to medium sized tree of mesic woodlands. Leaves remain on tree through winter, but unlike other oaks, the leaves of this species are unlobed.
Oak, Shumard *Quercus shumardii*	SPD – WD	75		Large sized tree of well-drained soils and bottomlands. Closely resembles red oak, but usually occurs in a lower position on the landscape.
Oak, Swamp Chestnut *Quercus michauxii*	SPD – WD	70		Medium to large sized tree of poorly-drained soils. Bark may be confused with that of white oak, but the coarsely serrate margined leaves distinguish this species.
Oak, Swamp White *Quercus bicolor*	VPD – WD	70		Medium sized tree of poorly-drained soils. The specific name, bicolor, refers to the two toned leaves which are dark and shiny above, and dull and white below.
Oak, White *Quercus alba*	MWD-WD	90		Handsome tree with scaly, silvery bark.
Pecan *Carya illinoensis*	SPD-WD	120	Ellipsoid nuts readily consumed by a variety of wildlife.	Large tree with sweet edible nuts.
Persimmon *Diospyros virginiana*	MWD – WD	50	Large berries are readily consumed by raccoons as well as some songbirds.	Small tree found in bottomlands and old fields. Fruit, a large berry, is edible when ripe.

Pine, Eastern White *Pinus strobus*	MWD – WD	90	Pines make excellent roosting trees for many species of birds. Seeds eaten by a wide variety of birds, squirrels, and mice.	Large tree capable of attaining heights of over 200 feet under ideal conditions. Bluish-green needles grow in groups of five. In Indiana, native only in a few spots in the west-central portion of the state.
Pine, Virginia *Pinus virginiana*	MWD – ED	40		Small sized tree with needles in groups of two. Cones bear sharp prickles.
Serviceberry *Amelanchier arborea*	MWD – WD	30	Purplish fruits rapidly consumed by birds.	Small, uncommon tree of well drained woodlands. Bark is smooth gray. Flowers are white and appear in April. This tree is also known as Juneberry because the fruit usually ripens in early summer.
Sweetgum *Liquidambar styraciflua*	PD – WD	85	Seeds consumed by "northern" finches in winter.	Large tree common in bottomlands of southern Indiana. Leaves are palmately five-lobed. Fruit is a prickly ball with multiple capsules.
Tamarack *Larix laricina*	VPD – SPD	60	Seeds consumed by "northern" finches in winter.	Small to medium sized tree found in northern Indiana bogs and swamps. The only deciduous member of the pine family found in Indiana. Small cones grow upright along twigs.
Tuliptree *Liriodendron tulipifera*	MWD – WD	90	Seeds eaten by songbirds, quail, and turkeys.	Common, large sized tree is a member of the magnolia family. Boles are typically straight and free of branches for two thirds the height of the tree. Fruits are upright, aggregates of samaras, which remain on the twigs through winter.

[1] Key to Soil Moisture Tolerance Ratings

ED = Excessively Drained
WD = Well Drained
MWD = Moderately Well Drained
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