

## **Recreation Area Improvement (acre)**

### **Definition**

Establishing grasses, legumes, vines, shrubs, trees, or other plants or selectively reducing stand density and trimming woody plants to improve an area for recreation.

### **Purpose**

To increase the attractiveness and usefulness of recreation areas and to protect the soil and plant resources.

### **Conditions where practice applies**

On any area planned for recreation use.

### **Planning considerations**

#### **Water Quantity**

1. Effects on the water budget, especially on volumes and rates of runoff, infiltration, and transpiration.

#### **Water Quality**

1. Effects of erosion and the movement of sediment, pathogens, and soluble and sediment-attached substances that could be carried by runoff. Important factors are short-term changes caused by construction (sediments, fuels, oils, and other chemicals) compared to long-term changes caused by the same substances resulting from recreation activities.

2. Effects of changes in ground water from infiltrating soluble substances associated with vegetation management and recreation activities.

#### **Specifications guide**

Treatments, plant materials, and maintenance measures for each type of recreation area.

RECREATION AREA IMPROVEMENT (Acre)

Specifications Guide

I. Establishing Grasses and Legumes

- A. Species Selection and Planting Rates and Dates: Select a grass or legume, or a combination of plants, which is adapted to the climate and site conditions and which will meet the objectives of the planting. See Table No. 1 for use and suitability of plants. See Table No. 2 for planting rates and dates.
- B. Site Preparation and Soil Treatment: Prepare a suitable seedbed. Apply lime and fertilizer in accordance with soil test recommendations. In the absence of a soil test, apply 1 to 2 tons of lime and 500 to 1,000 pounds of 2-12-12 for legumes and 10-10-10 for grasses per acre. Where vegetation is established by seeding, apply mulch in accordance with the specifications given for "Mulching" Section IV of the Technical Guide (Code 484).
- C. Planting Methods: See Plant Information Sheets and references for the plants used.
- D. Protection: Protect seeded or planted areas from traffic until vegetation is well established. Thereafter, regulate traffic to maintain a ground cover which will control erosion.

II. Establishing Trees and Shrubs

- A. Species Selection: Select a species or a combination of species which is adapted to the site and will meet the need for the planting.

Special consideration should be given to the selection of an assortment of species which will serve multiple purposes. Consult Table 3 of these specifications for information on the suitability of trees. A summary of shrubs, vines, and forbs for various situations is included below.

### Low Evergreen Ground Cover

Wintercreeper, Euonymus and English Ivy do well and cling to walls. Common Periwinkle, Large Periwinkle (V. Major), Pachysandra, and Lilyturf (Mondo grass) do best in shade. Honeysuckle, Thrift, and Creeping Juniper do well on dry sites over most of the state.

### Perennial Plants for Eroded Sites

Everlasting Pea, Honeysuckle, Trumpet Creeper, Crownvetch (mountains), Shrub Lespedeza, Sericea Lespedeza, Virgata Lespedeza, Moss Pink, Witchuria Rose, Scotch Broom, Japanese Knotweed, Forsythia, Daylily, Creeping Juniper, Autumn Olive, and Virginia Creeper - most of the plants are adapted to western North Carolina. (See Standard and Specifications for Critical Area Planting - Code 342).

### Evergreen Hedges

(3' to 6' with some pruning)

Dwarf Abelia, Glossy Abelia, Camellia Sasanqua (1) Wintergreen Barberry, American Boxwood, Euonymus (shrub types), Pittosporum, Amur Privet, Japanese Privet, Glossy Privet, Wax Myrtle (1) Bayberry (1), Firethorn (Pyracantha sp.), Pfitzers Juniper, Yaupon Holly (1), Bufords Holly, Japanese Holly, Japanese Yew (2), Hemlock (2), Elaeagnus.

- (1) Eastern North Carolina
- (2) Western North Carolina

### Spiney Shrubs for Fencing

Bufords Holly, Firethorn (Pyracantha), Rose species, Flowering Quince, Wintergreen Barberry, Thunburg Barberry, Autumn Olive, Summer Elaeagnus (E. Parvifolia), Trifoliate Orange.

### Evergreen Shrubs for Screens and Sound Barriers (With little to no pruning)

Glossy Privet, Japanese Privet, Amur Privet, Wax Myrtle (1), Bayberry (1), Elaeagnus, Yaupon Holly (1) (Bamboo).

- (1) Eastern North Carolina  
(See Table No. 3 for evergreen trees for screens, etc.)

Shrubs and Vines With Berries for  
Song Birds and Other Wildlife

Shrubs

(Summer ripening): Summer Elaeagnus (E. parvifolia or multiflora), Blackberry, Huckleberry, Serviceberry.

(Fall ripening): Autumn Olive, Firethorn (Pyracantha), Elderberry, Nandina, Thunberg, Barberry, Highbush Cranberry (2), Black Haw, Arrowwood (2), Nannyberry, Smooth Sumac, Winged Sumac, Deciduous Holly (1), Gallberry, Wax Myrtle (1), Bayberry (1), Photinia, Privets, Bush Honeysuckle.

- (1) Eastern North Carolina
- (2) Western North Carolina

Vines

(Fall ripening): Virginia Creeper, Wild Grape, Smilax, Honeysuckle.

- B. Time of Planting - Plant bare-rooted stock during the dormant season in late fall or winter -- November to March. Do not plant later than May 1 unless irrigation is provided. Plant only when the soil is workable, that is, when it is neither too dry nor too wet or frozen. Balled and burlapped and container-grown stock may be planted during any season provided the plants are watered during dry periods.
- C. Site Preparation (Trees):

Open Fields: For site preparation for planting trees in open fields, consult standard and specifications for Tree Planting, Section IV of the Technical Guide (Code 612).

Existing Woodlands or Brushlands: For site preparation in cut-over woodlands or brushlands where desirable trees and shrubs are not present, or are inadequate, consult the specifications for Woodland Site Preparation, Section IV of the Technical Guide (Code 490).

D. Spacing: Space trees and shrubs according to the purpose for which they are planted:

1. Trees:

<u>Purpose</u>	<u>Spacing</u>
Ornamentation	According to landscape and kind of recreational use.
Shade	30' x 40'
Screen, Sound Barrier or Windbreak	2 to 4 rows of trees, rows 7' apart; trees staggered 7 to 8 feet apart in rows. White pine - 10' x 10'; Loblolly Pine - 8' x 10' For other species, see Tree Planting (Code 612), Section IV of the Technical Guide.
Soil Stabilization (Critical Area Treatment)	Seeding and mulching should be used until trees are established.
Multiple Use Recreation, Wood Production, Wildlife	Conifers: White Pine - 10' x 10' Loblolly Pine - 8' x 10' Broadleaved trees 10'x10' For other species, see Tree Planting (Code 612), Section IV of the Technical Guide.

2. Shrubs:

<u>Purpose</u>	<u>Spacing</u>
Hedgerow Planting and Field Border Planting	See Hedgerow Planting (Code 422), Section IV of the Technical Guide.
Screen or Sound Barrier	1 to 4 rows with plants 3' to 5' apart.
Ornamental Hedges	1 row with plants 3' to 6' apart.
Landscaping	Space according to landscape plan.

- E. Planting Methods: Bare-rooted seedlings may be hand or machine planted with any tool which will give satisfactory results. Mechanical planters are satisfactory on open areas where the steepness of slope does not prohibit their operation. Planting bars, irons or dibbles are effective on most soils. Mattocks are usually required on severely eroded or stony soils. Seedlings require special care in handling and planting. For further details, see Specifications for Tree Planting (Code 612), Section IV of the Technical Guide.

When ball and burlapped or container-grown shrubs are planted, dig individual holes at least 12 inches wider on all sides and 6 inches deeper than necessary to accommodate the ball of the soil or root system. Mix about a half pound of 8-8-8 or 10-10-10 fertilizer with the soil in the bottom of the hole and cover with some topsoil. Remove plants from containers, but leave burlap on when plants are so wrapped. Set the plant in the hole so that it will stand at the same depth or slightly (1 inch) deeper than it grew in the nursery bed or container. Fill in and pack soil under and around the plant so that it will not settle. Use topsoil for this whenever available. Water thoroughly. A ring of soil 2 to 3 inches high should be placed around the plant to hold water when it is added in the future.

For further details on establishment and management, see Plant Information Sheet for the plant in question.

- F. Protection: Protect plantings from all forms of traffic until the plants are well established. All plantings must be protected from fire and grazing.

Table 1. Suitability of Perennial Grasses and Legumes for Various Site Conditions and Uses\*

Grasses and Legumes	1/ Region of Adaptation	Tolerance To			Uses			
		Shade	Water	Low Fertility	Wildlife Food or Cover	Ornamental	Soil Stabilization	Heavy Traffic Areas
1. Annual Lespedeza	All	F	P	VG	VG	P	F	P
2. Bahiagrass (Pensacola)	CP	F	F	G	F	F	VG	G
3. Bahiagrass (Wilmington)	CP, P	F	F	G	F	F	VG	VG
4. Bamboo	CP, P	F	F	F	P	VG	P	P
5. Bentgrass	P, M	F	VG	F	P	G	G	F
6. Bermudagrass	All	P	F	G	P	G	VG	VG
7. Carpetgrass	CP	F	G	F	P	G	VG	G
8. Centipedegrass	CP, P	G	F	G	P	G	VG	G
9. Crown Vetch	P, M	P	F	F	F	VG	G	P
10. Kentucky Bluegrass	P, M	VG	P	P	F	G	G	F
11. Lovegrass	All	P	P	VG	G	G	F	P
12. Maidencane	CP	F	VG	F	P	G	F	P
13. Orchardgrass	P, M	G	P	P	F	F	F	P
14. Reed Canarygrass	P, M	F	VG	F	F	F	G	P
15. Red Fescue	All	VG	F	F	F	G	F	F
16. Rice Cutgrass	All	F	VG	F	VG	G	G	P
17. Sericea Lespedeza	All	F	P	VG	VG	F	G	P
18. St. Augustine Grass	CP	G	F	P	P	G	G	G
19. Switchgrass	All	F	VG	G	G	F	G	P
20. Tall Fescue	All	VG	G	F	G	G	G	F
21. White Clover	All	G	F	P	G	F	F	P
22. Zoyzia	CP, P	F	P	P	P	VG	VG	G

1/ Physiographic Region                      VG - Very Good  
 CP - Coastal Plain                            G - Good  
 P - Piedmont                                    F - Fair  
 M - Mountains                                 P - Poor

Notes: Nos. 5, 13, 15, 17, 20--good for streambank and shoreline protection. No. 17 at water edge only, and is a good duck food.

No. 4--excellent for screening. Propagated by rootstocks laid end to end in row.

\* For other grasses and legumes used primarily for wildlife food, see Technical Guides and Plant Reference Sheets.

Table 2. Grass and Legume Planting Rates and Dates

Grasses & Legumes	Rates Per Acre	Dates of Planting		
		Coastal Plain	Piedmont	Mountains
Annual Lespedezas--Rowan, Climax, Korean(drilled)	20-30 lbs.	Feb.-March	Feb.-March	April
Bahia(Pensacola)--Alone	25-30 lbs.	Mar.15-May 15	Not Rec.	Not Rec.
Mixtures	15-20 lbs.			
Bahia(Wilmington)--Alone	30-40 lbs.	Mar.15-June 1	April 1 to May 15	Not Rec.
Mixtures	20-30 lbs.			
Bamboo (roots)	End to end in row	Late Winter	Late Winter	Not Rec.
1/ Ben grass	8-10 lbs.	Not Rec.	Late Aug. or March	Late July or April
2/ Bermudagrass (Common)				
Seed (Hulled)	8-10 lbs.	Mar.15-July 1	April 15-June 15	
Sprigs in Rows	20-50 bu.	Early Spring	Early Spring	Not Rec. above 2,000'
Sprigs Broadcast	50-60 bu.	" "	" "	
Carpetgrass	15-20 lbs.	March to July 1	Not Rec.	Not Rec.
Centipedegrass	11-15 lbs.	March to	Limited	Not Rec.
Sprigs	20-25 bu.	July 1		
3/ Crown Vetch	15-20 lbs.	Not Rec.	Feb.20-Mar.20 Aug.20-Sept.20	Mar.15-Apr.15 Late July-Aug. July 15-Sept.1 Mar. 1-Apr. 30
Kentucky Bluegrass	40-80 lbs.	Not Rec.	Limited	
Lovegrass--Alone	4-6 lbs.	Mar. 15 to	April 15 to	
Mixtures	2-4 lbs.	July 1	June 15	May
Orchardgrass--Alone	40-50 lbs.		Aug.20-Oct.10	July 15-Sept.1
Mixtures	20-25 lbs.	Not Rec.	Feb.15-Apr.15	Mar. 1-Apr. 30
Reed Canary--Alone	10-15 lbs.		Aug.20-Oct.10	July 20-Sept.1
Mixtures	8-10 lbs.	Not Rec.	Feb.15-Apr.15	March & April
4/ Red Fescue--Mixtures	10-15 lbs.	Sept.1-Oct.15 Feb.1-Apr. 1	Aug.20-Oct.10 Feb.15-Apr.15	July 15-Sept. 1 Mar. 1-Apr.30
Rice Cutgrass	Native Root Stock	March to Sept.	March to Sept.	April to Aug.
Sericea(Scarified)--Alone	40-50 lbs.	March 1 to	March 15 to	
Mixtures	25-35 lbs.	April 15	May 1	April and May
(Clean Unscar.)--Alone	50-60 lbs.	Nov. 1 to	Nov. 1 to	Nov. 1 to
Mixtures	30-40 lbs.	Feb. 15	March 1	March 15
(In the Hull)--Alone	70-80 lbs.	July 15 to	July 8 to	July 1 to
Mixtures	40-50 lbs.	Dec. 1	Dec. 15	Dec. 30
5/ St. Augustine Grass				
Sprigs	25-35 bu.	Mar. 1-July 1	Not Rec.	Not Rec.
Switchgrass--Alone	20 lbs.	Feb. & March	Feb.15-April 1	Mar.-April 15
Mixture (w/Sericea)	10-15 lbs.			
4/ Tall Fescue--Alone	80-120 lbs.	Sept.1-Oct.15	Aug.20-Oct.10	July 15-Sept. 1
Mixtures	30-40 lbs.	Feb. 1-Apr. 1	Feb.15-Apr.15	Mar. 1-Apr. 30
White Clover--Alone	8-10 lbs.	As Above	As Above	As Above
Mixtures	4-5 lbs.			
Zoyzia Sprigs	25-30 bu.	Mar.-July 1	Mar.15-July 1	Not Rec.

1/ Best in Mountains and foothills area on damp to wet sites.

2/ Or cover area 2 to 3 inches deep with soil filled with Bermuda roots, or plant clumps 2 to 3' apart.

3/ Does best in Mountains. Not adapted to Coastal Plain.

4/ Spring seeding of fescue grass is seldom as successful in the Coastal Plain and lower Piedmont as fall seeding. Lawn seeding rates listed.

5/ Adapted to the lower Coastal Plain.

Table 3 - Suitability of Trees for Various Regions, Sites, Conditions and Recreational Uses

Species	1/ Region of Adaptation	Tolerance To:				4/ Growth Rate	Uses For:				
		2/ Shade	2/ Water	2/ Low Fertility	3/ Size		5/ Ornamental	5/ Shade	5/ Screen & Sound Barrier	5/ Windbreaks	5/ Wildlife Food & Cover
<u>Coniferous Trees</u>											
Cypress											
Arizona	CP, P	M	L	H	S-M	MR	G	F	G	G	F
Bald (Southern)	CP, P	M	H	L	L	MR	G	G	F	F	F
Cedar											
Atlantic-White (Juniper)	CP	M	M	M	M	M	E	F	G	F	G
Cedar-of-Lebanon	CP, P	L	M	M	L	M	E	G	G	F	F
Deodar	CP, P	L	M	M	L	M	E	F	G	F	F
Eastern Red	All	L	H	H	M	S	E	G	E	E	E
North-White (Arborvitae)	P, M	M	M	M	M	S	E	F	G	F	F
Fir											
Balsam	M	H	M	L	S-M	S	G	F	G	F	F
Fraser	M	H	M	L	S-M	S	G	F	G	F	F
Hemlock											
Carolina & Eastern	P, M	H	H	H	L	M	E	G	E	G	G
Pine											
Loblolly	CP, P	L	H	H	L	R	G	G	G	E	G
Longleaf	CP, P	L	M	H	L	R	E	F	G	E	G
Pitch	M	L	H	H	M-L	R	G	F	G	G	G
Pond	CP	L	H	H	L	R	G	F	G	G	G
Red (Norway)	M	L	M	H	L	R	G	G	G	G	G
Scotch	P, M	L	M	H	M-L	R	G	F	G	G	G
Shortleaf	All	L	L	H	L	MR	G	F	G	G	G
Slash	CP, P	L	H	H	L	R	G	F	G	E	G
Virginia	P, M	L	L	H	M	R	G	F	G	F	G
White	All	M	M	H	L	R	E	E	E	E	G
Spruce											
Norway	P, M	L	M	M	L	M	G	F	G	G	F
Red	M	L	M	M	M-L	M	G	F	G	G	F
White	M	L	M	M	M	M	G	F	G	G	F
Colorado Blue	All	L	M	M	M	M	E	F	G	G	F
<u>Broadleaved Trees</u>											
Ash											
Carolina (Water)	CP	H	H	L	S	R	G	G	P	X	F
Green	All	M	H	L	M-L	R	G	G	P	F	F
Pumpkin	CP, P	M	H	L	L	R	G	G	P	F	F
White	All	M	M	L	L	R	G	G	P	F	F

Table 3, Cont'd.

Species	1/ Region of Adaptation	Tolerance To:			3/ Size	4/ Growth Rate	Uses For:					
		2/ Shade	2/ Water	2/ Low Fertility			5/ Ornamental	5/ Shade	5/ Screen & Sound Barrier	5/ Windbreaks	5/ Wildlife Food & Cover	
Basswood												
American	P, M	M	M	L	L	MR	E	E	P	X	P	
European Linden	All	M	M	L	L	MR	E	E	P	X	P	
White	All	M	M	L	M	MR	E	E	P	X	P	
Beech												
American	All	H	M	L	L	S	F	E	P	X	G	
European	All	H	M	L	M-L	S	E	E	P	X	G	
Birch												
Black (sweet)	P, M	M	M	L	M-L	MR	G	G	P	X	G	
River (Red)	All	H	M	M	M-L	MR	G	G	P	X	F	
Yellow	M	M	M	L	L	MR	G	G	P	X	G	
Catalpa	All	L	M	L	S-M	R	G	G	P	F	P	
Chestnut												
Asiatic	All	L	M	M	S	M	G	G	F	F	E	
Crape-Myrtle	All	L	M	M	S	S	E	F	P	X	P	
Cherry												
*Black (Wild)	All	L	M	L	M-L	R	G	G	P	X	E	
Carolina Laurel	CP, P	L	M	H	S	R	E	G	E	G	G	
*Choke	P	L	M	H	S	R	F	F	P	P	E	
*Fire (Pin)	M	L	M	H	S	R	E	F	P	X	E	
Crabapple	All	M	M	M	S	R	E	F	P	X	E	
Dogwood	All	H	M	M	S	S	E	F	P	X	E	
Elm												
American	CP, P	M	M	M	L	MR	G	G	P	F	F	
Chinese	All	M	M	M	S	R	G	G	P	F	F	
English	CP, P	M	M	M	L	R	G	G	P	F	F	
Scotch	All	M	M	M	L	MR	G	G	P	F	F	
Siberian	All	M	M	H	S-M	R	G	G	P	F	F	
Slippery (Red)	All	M	H	M	M-L	M	G	G	P	F	F	
Winged	All	M	M	H	M	MR	G	G	P	F	F	
Gum												
Sweet (Red)	CP, P	M	H	M	L	R	G	G	P	X	G	
Black	All	M	H	H	L	MR	G	E	P	X	E	
Swamp Black	CP, P	M	H	M	L	MR	G	G	P	X	E	
Water Tupelo	CP	L	H	M	L	MR	F	G	P	X	E	
Hackberry	All	M	H	H	L	M	G	G	P	F	E	
Hickories	All	M	M	M	L	S	E	G	P	X	E	

Table 3, Cont'd.

Species	1/ Region of Adaptation	Tolerance To:			3/ Size	4/ Growth Rate	Uses For:					
		2/ Shade	2/ Water	2/ Low Fertility			5/ Ornamental	5/ Shade	5/ Screen & Sound Barrier	5/ Windbreaks	5/ Wildlife Food & Cover	
Holly <u>6/</u>												
American	All	H	H	H	M-L	S	E	F	G	P	E	
English	All	H	H	H	S-M	S	E	F	G	P	E	
Hop-Hornbeam (Ironwood)	All	H	M	M	S-M	S	G	G	P	X	F	
Hornbeam (Blue Beech)	All	H	H	H	S	S	G	G	P	X	F	
Locust												
Black	All	L	M	M	M	R	G	G	P	P	P	
Honey (Thornless)	All	L	H	M	L	R	G	G	P	P	P	
Magnolia												
Cucumber Tree	P,M	M	M	L	M-L	MR	G	G	P	X	F	
Southern <u>6/</u>	CP,P	M	M	L	M-L	M	E	E	G	F	F	
Sweet Bay <u>6/</u>	CP,P	H	H	M	S-M	M	E	G	F	X	F	
Maple												
Boxelder	All	H	H	H	M	R	F	G	P	P	G	
Norway	All	M	M	L	M-L	R	E	G	P	F	G	
Red	All	H	H	H	L	R	E	E	P	F	G	
Silver	All	H	H	M	L	R	E	E	P	F	G	
Sugar	P,M	H	M	L	L	S	E	E	P	F	G	
Sycamore (Planetree)	All	M	M	L	L	R	E	E	P	F	G	
Mimosa (Silktree) <u>7/</u>	CP,P	L	M	H	S	R	E	F	P	X	P	
Mountain Ash	M,P	M	M	H	S	S	G	G	P	X	E	
Mulberry												
Red	All	M	M	M	S-M	MR	G	G	P	F	E	
White	All	M	M	M	S	MR	G	G	P	F	E	
Oaks												
Black	All	M	M	H	L	MR	G	G	P	F	E	
Cherrybark	CP,P	L	M	M	L	R	E	E	P	F	E	
Chestnut (Rock)	P,M	M	M	H	S-M	S	E	E	P	F	E	
Laurel	CP,P	M	M	M	M	MR	E	E	F	F	E	
Live <u>6/</u>	CP,P	M	M	H	M	MR	E	E	G	F	E	
Northern Red	All	M	M	M	M-L	MR	E	E	P	F	E	
Pin	P,M	L	H	M	M-L	R	E	E	P	F	E	
Scarlet	P,M	M	M	H	M-L	R	E	E	P	F	E	
Shingle	P,M	M	M	M	M	MR	E	E	P	F	E	
Shumard	CP,P	L	M	H	L	R	E	E	P	F	E	
Southern Red	All	L	M	H	M-L	MR	E	E	P	F	E	
Swamp Chestnut	CP,P	M	M	M	M-L	MR	E	E	P	F	E	
Water	All	H	H	M	M-L	R	E	E	F	F	E	
White	All	M	M	H	L	S	E	E	P	F	E	
Willow	All	H	H	M	M-L	R	E	E	P	F	E	

Table 3, Cont'd.

Species	1/ Region of Adaptation	Tolerance To:			3/ Size	4/ Growth Rate	Uses For:				
		2/ Shade	2/ Water	2/ Low Fertility			5/ Ornamental	5/ Shade	5/ Screen & Sound Barrier	5/ Windbreaks	5/ Wildlife Food & Cover
Pecan	CP, P	L	M	L	L	S	E	G	P	F	E
Persimmon <sup>8/</sup>	All	L	M	M	M	S	G	G	P	F	E
Plane Tree											
American (Sycamore)	All	L	H	M	L	R	G	E	P	P	P
London & Oriental	All	L	H	M	M-L	R	G	E	P	G	E
Poplar											
Balsam	M	L	H	L	M	R	G	F	P	P	F
Carolina	All	L	H	L	M	R	G	G	P	P	F
Cottonwood	All	L	H	L	M-L	R	G	G	P	P	F
Lombardy	CP, P	L	H	L	M	R	G	F	G	F	F
Swamp Cottonwood	CP	L	H	L	M	R	G	G	P	P	F
White	All	L	H	L	L	R	G	G	P	P	F
Redbud	All	H	M	H	S	S	G	F	P	F	F
Sassafras	All	M	M	H	M	M	G	G	P	F	F
Serviceberry (Shadblow)	All	H	M	H	S	M	G	P	P	X	E
Sourwood (Lilly of the valley)	All	H	M	M	S-M	S	G	F	P	P	P
Sugarberry	All	M	H	H	L	M	G	G	P	F	E
Walnut											
Black	All	L	L	L	M-L	MR	G	F	P	F	E
White (Butternut)	All	L	M	M	M-L	MR	G	F	P	F	E
Willow											
Black	All	L	H	L	S-M	R	G	G	P	F	F
Weeping	All	L	H	L	S	R	E	G	P	F	F
Yellow-Poplar (Tulip Tree)	All	L	M	L	L	R	E	E	P	F	E

1/ Region of Adaptation

- CP - Coastal Plain
- P - Piedmont
- M - Mountains

- 2/ H - High (Tolerant)  
 M - Medium (Intermediate Tolerance)  
 L - Low (Intolerant)

- 3/ S - Small  
 M - Medium  
 L - Large

- 4/ S - Slow  
 M - Moderate  
 R - Rapid

- 5/ E - Excellent  
 G - Good  
 F - Fair  
 P - Poor  
 X - Unsuitable

- 6/ Evergreen  
 7/ Subject to wilt disease  
 8/ Dropping fruit is a nuisance for foot traffic

\* Leaves poisonous to livestock.

### III. Selectively Reducing Stand Density and Trimming Woody Plants

Recreational areas may be developed under a wide range of conditions, including natural forest stands and plantations. The kind and amount of vegetation, the type and planned intensity of recreation use will vary.

The location of all picnic areas, playgrounds, campgrounds, parking areas, roads, paths, or other recreational facilities should be designated on the conservation plan map prior to pruning or thinning.

#### A. Improvement Pruning

1. Dead, dying, broken and diseased limbs and branches should be removed from trees and shrubs annually.
2. Lower tree limbs should be removed to the trunk height necessary to facilitate the movement of people, vehicles, horseback riders, etc.
3. Tree limbs should be removed where necessary to improve the view. Shrubs should be pruned where it will improve their appearance and utility. However, trees and shrubs should be left in as natural a condition as possible. Formal or "hedge" trimming of shrubs should be avoided.
4. Removal of tree limbs should be done with saw. An undercut should be made before cutting through the limb. The cut should be made as close to the trunk as possible, but care should be exercised to avoid cutting into the bark of the trunk.
5. The major portion of the pruning should be done during the dormant season; however, additional shaping and "touch-up" pruning may be done on broad leaved plants when they are fully leaved. Limbs should be removed from pines and other conifers during the winter months only.

#### B. Improvement Thinning

1. The most desirable tree species and specimens should be favored. Trees to be removed should be marked before cutting.

2. Leave trees should be spaced to provide optimum shade and density while allowing free movement for the kind of recreational activity planned. Stands should be thinned lightly to improve scenic views for camping and picnic areas. Enough shrubs should be removed to provide adequate air circulation.
3. Dead, defective, damaged, insect-infested, diseased, or poorly-formed trees and shrubs should be removed, except those trees which are suitable and planned for dens or nesting for wildlife.
4. All trees which may be a safety hazard should be removed.
5. Trees and shrubs should be left in irregularly-spaced clumps to provide openings which appear as natural as possible.
6. Damage to remaining trees and shrubs should be avoided when removing undesired vegetation. Tree stumps should be cut to ground level. Undesired shrubs and vines should be removed. Where necessary, stumps should be treated with a silvicide or herbicide to prevent resprouting. For methods and chemicals to use, see the specifications for Woodland Improvement (Code 666) in Section IV of the Technical Guide.
7. Where supplemental ornamental plantings are desired, unwanted existing trees and shrubs should be removed at the time of thinning.
8. Residual stands and clumps of trees should be protected from livestock traffic injury, insects and diseases, wildlife and other destructive agents.

C. General

1. Usable woody material should be salvaged for firewood and other uses.
2. Limbs, branches, litter, and other debris should be removed from the area. If burning is done, damage to vegetation and the creation of blackened, dusty areas will result.
3. To improve the appearance of the area and reduce the fire hazard, dead or dying trees and shrubs should be removed within a 150-foot radius outside the external boundary of the intensively improved area.

References:

1. USDA-SCS, North Carolina "Recreation Ready Reference" material and references frequently used in recreation planning.
2. "Carolina Lawns," North Carolina Extension Service, #AG-69.
3. "Landscaping and Living Space," by Ken Powell, North Carolina State University, #A6-77, Extension Service.
4. "Recreation Facilities Design," U.S. Army Corps of Engineers.
5. "Handbook of Landscape Architectural Construction," J. D. Carpenter.
6. "Park Practice - Design," Park Service, U.S.D.I.