

rees are extremely important in our cities, towns, and neighborhoods. They comprise our urban forest and offer Indiana residents a multitude of benefits.



Trees:

- Sequester carbon
- * Reduce energy consumption
- Reduce stormwater runoff ... making our water cleaner
- * Provide wildlife habitat
- Clean our air by absorbing pollutants
- Increase property values

Plan Before You Plant

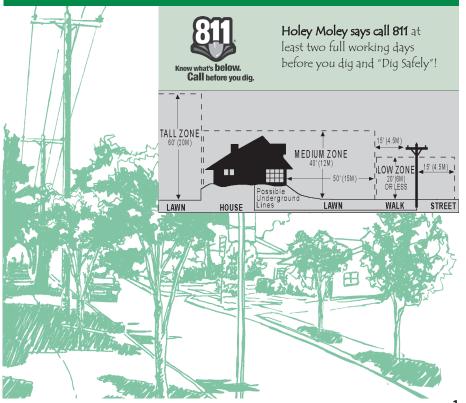
Before a tree is planted in the urban landscape, the project needs to be planned with care. Tree planters in cities and towns need to determine whether the planting site is on public property. (If it is, a permit may be needed to plant since a public tree ordinance may be in effect. A city forester may also be available to help select the right tree for the right place.)

Technical information is needed for cities, towns, non-profits, and tree boards to determine what tree is best suited for a particular site. This guide can help. While it is not an all inclusive list, it will help users. It will also help planters select the

right tree for the right place.

RIGHT TREE, RIGHT PLACE CONSIDERATIONS

- Dook up, down, all around, above and below ground! What utilities, structures, signs, and other infrastructure are present?
- How large is the planting area? What size tree will fit there...WHEN IT GROWS UP?
- Consider mature height and width.
- [2] If any utilities are present, consult the utility. What trees do they recommend for planting in the utility easement?
- 😰 Consider the trees' function. Is it for shade, screen or buffer
- What moisture, light, and air pollution issues are in the area?
- What is the soil like? Will it accommodate trees?



Users Guide

Definitions

Balled and Burlapped A tree dug out of the ground with

a ball of soil around the roots. The soil ball is usually covered with burlap and wrapped with string or

wire baskets for support.

Bare-root A tree dug out of a loose growing medium with

no soil around the roots. Some trees are sold as

bare-root.

Berry A fleshy fruit, with one to many seeds;

developed from a single ovary.

Characteristic Traits or qualities of a tree, such as

its leaf color, flowers, fruit, shape,

size, structure, etc.

City Forester This person employed by the community is also

called urban forester, city arborist, beautification manager etc. They are in charge of managing the trees in the community and implementing the urban forestry program usually with a volunteer, advisory committee called a tree board or

commission.

Clump Form A tree that has more than one

trunk.

Conifer A cone-bearing tree or shrub,

often evergreen, usually with

needle-like leaves.

Container-grown A tree raised in a pot that is removed before

planting. Many are sold by nurseries in this

(potted) form.

Cultivar A variety of plant that is grown for its specific

characteristics that may not be present with

the original species.

Easement A portion of land where utilities

are located that can be publicly

or privately owned.

Evergreen A tree that retains green leaves

throughout the year.

Exotic Species A tree species that has been

imported from another region and does

not grow naturally in the region it is being

planted.

Foliage The leaves of a tree.

Fruit The fully developed ovary of a flower containing

one or more seeds.

Habit The characteristic growth form or general

shape of a plant.

Hardiness Zone Used to indicate geographic limits of cold

hardiness, different species, subspecies, genera,

or clones.

Hybrid Deciduous The offspring of two parent trees belonging to

a tree that drops its leaves every year.



5A ___-15° to -20°

5B -10° to -15°

6 - 5° to -10°



Maturity The point of being fully grown and reaching the

potential height and width.

Native Species A tree species that grows naturally in the region

that it is being planted.

Nut A hard, bony, one-celled fruit that

does not split, such as an acorn.

Ordinance, Tree An enforceable tool for the city

that mandates proper tree care, gives force and direction to professional tree care performed by anyone in the community on public trees, and gives size and placement planting requirements for small, medium, and large trees to enhance, preserve, and protect the health of the urban

forest.

Public Right-of-Way Area between private property line and the street

owned by a town or city.

Root The underground portion of a tree that serves

to anchor and absorb water and minerals from

the soil.

Seed A fertilized, ripened ovule, almost

always covered with a protective

coating and contained in a fruit.

Semi-evergreen A plant that retains at least some green

foliage well into winter.

Shrub A woody, perennial plant, smaller

than a tree, usually with several stems

or trunks. Some can be grown as small trees if

pruned properly.

Site The location where the tree will be planted.

Species A population of plants or animals whose members

reproduce by breeding with each other.

Specimen A tree placed conspicuously alone in a prominent

place to show off its ornamental qualities.

Street Tree Trees growing in the public street right-of-way

that is usually owned by a town or city.

Structure

An item that could hinder the

proper growth of a tree such as a building, manholes, utility poles, utility meters, hydrants, catchbasins, stop signs etc.

Tree lawn

The space where street trees are planted, usually in the publicright-of-way and between the street and sidewalk.

Tree

A deciduous or coniferous woody plant that is characteristically more than 12 feet in height when it reaches maturity and has fewer than six

main stems and most often one

main stem.

Tree, large

A tree that can attain a mature height of over 40 feet at maturity.

Tree, medium

A tree that can attain a mature height of <u>25 to 40</u> feet at maturity.

Tree, small

A tree that can attain a mature height of less than 25 feet at maturity. Only small trees should be planted under power lines.

Utilities

A public service line such as gas, electric, sewer and phone. These lines can be above ground and/or below ground.

Variety

A population of trees differing slightly but consistently from the typical form of the species and occurring naturally. More loosely applied to forms produced in cultivation.

Woody Plants

Plants that have hard rather than fleshy stems and produce buds that survive above ground in winter.



LARGE



40 ft. and greater	Indiana C	Community Tre	ce Selection Guide	e	2	3	d 4	alding S	I toleral	ed like	8 18 16 16 16 16 16 16 16 16 16 16 16 16 16	Section 1	10	Showy 1
ARGE TREES	Genus	Species	Common name		2	3	4	5	0	1	0	9	110	1
And Ince		CONTROL CO.	BL -1 11-1		-		-			~~	-			-
(Acer	nigrum	Black Maple	Y	all	N	N	N	N	Y	N	Y	N	Y
MAPLE	Acer	rubrum	Red Maple	Υ	all	N	Υ	N	N	Υ	Υ	Υ	N	Y
	Acer	saccharum	Sugar Maple	Y	all	N	N	N	N	Υ	Y	Υ	N	Y
<u> </u>	Acer	x freemanii	Freeman Maple	N	all	Y	Y	Y	N	Y	Υ	Y	N	Υ
(Aesculus	hippocastanum	Horse Chestnut	Y	all	M	M	M	Y	M	Y	Y	Y	Y
CHESTNUT	Aesculus	glabra	Ohio Buckeye	Y	all	M	M	M	Y	M	Y	Y	Y	Y
	Aesculus	x carnea	Red Horse Chestnut	N	C/S	Y	Y	Y	Y	N	Y	Y	Y	Y
ALDER	Alnus	glutinosa	Black Alder	N	all	N	Y	N	Y	Y	Y	Y	N	N
BIRCH	Betula	nigra	River Birch	Y	all	N	Y	M	N	M	Y	Y	N	Y
1	Carya	cordiformis	Bitternut Hickory	Y	all	M	M	M	N	N	N	Y	N	Y
\	Carya	glabra	Pignut Hickory	Y	all	Y	M	M	N	N	N	Y	N	Y
HICKORY	Carya	laciniosa	Shellbark Hickory	Y	all	Y	Υ	M	N	N	N	Υ	N	Y
, mortoni	Carya	ovata	Shagbark Hickory	Y	all	Y	M	M	N	N	N	Y	N	Y
()	Carya	tomentosa	Mockernut Hickory	Ý	all	M	M	M	N	N	N	Y	N	Ÿ
2	Celtis	laevigata	Sugar Hackberry	N	C/S		Y	N	N	Y	Y	Y	N	Y
HACKBERRY	Celtis	occidentalis	Common Hackberry	Y	all	Y	Y	N	N	Ÿ	Y	Y	N	Y
Y	Fagus	grandifolia	American Beech	Y	all	N	N	N	N	N	N	Y	N	Y
BEECH	Fagus	sylvatica	European Beech	N	all	N	N	N	N	M	Y	Y	N	Y
8	Fraxinus	americana	White Ash	Y	-		M	Y	Y		Y	Y	N	Y
()	Fraxinus	excelsior	European Ash	N	all	Y		Y	Y	M				Y
ASH*					all	M	M			Y	Y	Y	N	
/	Fraxinus	pennsylvanica	Green Ash	Y	all	M	M	M	Y	Y	Y	Y	N	Y
	Fraxinus	quandrangulata	Blue Ash	Υ	all	M	M	M	Υ	Υ	N	Y	N	Υ
GINKGO**	Ginkgo	biloba	Ginkgo	N	all	Y	M	M	N	M	Y	Y-F		Y
HONEYLOCUST	Gleditsia	triacanthos	Honeylocust	Y	all	Y	Υ	Υ	Y	Y	Y	Υ	N	Y
NTUCKY COFFEE	Gymnocladus	dioicus	Kentucky Coffee Tree	Y	all	Y	M	M	N	M	N	Y-F		Y
SWEETGUM	Liquidambar	styraciflura	Sweetgum	Y	C/S		Υ	M	N	M	Y	Y	N	Y
(State tree) TULIP	Liriodendron	tulipifera	Tulip Tree	Y	all	M	M	N	Y	M	N	Y	Y	Y
REDWOOD	Metasequoia	glyptostroboides	Dawn Redwood	N	all	M	N	N	N	M	Y	Y	N	Y
BLACK GUM	Nyssa	sylvatica	Black Gum	Y	all	Y	Υ	Y	Y	N	N	Y	N	Y
SYCAMORE	Platanus	occidentalis	Sycamore	Y	all	Y	Y	Y	Y	Y	N	Y	N	Y
PLANETREE .	Platanus	x acerifolia	London Planetree	N	all	Y	Υ	Y	Y	Y	Y	Y	N	N
/	Quercus	alba	White Oak	Y	all	M	N	Y	N	M	N	Y	N	Y
()	Quercus	bicolor	Swamp White Oak	Y	all	M	Υ	M	N	M	N	Y	N	Y
1	Quercus	imbricaria	Shingle Oak	Y	all	Υ	Υ	М	M	M	N	Y	N	N
12/2016	Quercus	macrocarpa	Bur Oak	Y	all	Y	M	M	N	M	N	Y	N	N
	ALC: A COLOR	The state of the s			- 6411									
OAK	Quercus	robur	English Oak	N	all	M	M	V	N	M	Y	Y	N	N
OAK	Quercus Quercus	robur rubra (borealis)	English Oak Nothern Red Oak	N	all	M	M	Y	N	M	N	Y	N	N

Bald Cypress

Silver Linden

Littleleaf Linden

Crimean Linden

Japanese Zelkova

all

all

all M

all

N

N

M

M

M

M

M

N

N

Y

distichum

tomentosa

x euchiora

cordata

serrata

Taxodium

Tilia

Tilia

Tilia

Zelkova

CYPRESS

LINDEN

ZELKOVA

TABLE KEY: Y=yes N=no

M=Moderate tolerance All=all regions C/S=Central to South F=female

Large Tree Tips

- Grow to be over 40 feet at maturity.
- Recommended for streets with no overhead restrictions and with tree lawns 4-6 ft. or more in width.
- Recommended for large areas such as parks, school yards, homeowner yards.
- Plant at least 1/2 the mature height of the tree from structures.
- DO NOT PLANT UNDER OR NEAR POWER LINES.

N

N

N

Y

N

Due to Emerald Ash Borer threat, limit plantings.

^{**} Female fruits are messy/smells bad.

	Indiana Co	ommunity Tree	Selection Guide	1	alue les	MI BIO	OUTH OF	el ide el	I tolera	41 to	88 10 Hz	Minated .	diga co	TOWN HON	18/18/
25 - 40 ft.	Genus	Species	Common name	1	2	3	4	5	6	7	8	9	10	11	
MEDIUM TREES														20	
(Acer	campestre	Hedge Maple	N	all	Υ	M	Y	M	Y	Y	Y	N	Y	L
MAPLE	Acer	maximowiczianum	Nikko Maple	N	all	Υ	M	Y	N	Y	N	Y	N	Υ	L
(Acer	triflorum	Three-Flowered Maple	N	all	N	N	M	N	Y	N	Y	N	Y	ı
SERVICEBERRY	Amelanchier	species	Serviceberry	Y	all	N	M	N	Y	N	Y	Y	Y	Y	
	Carpinus	betulus	European Hornbeam	N	all	M	M	M	N	M	Y	Y	N	Y	۲
HORNBEAM	Carpinus	caroliniana	American Hornbeam	Y	all	N	Y	N	N	N	N	Y	N	Y	L
KATSURA	Cercidiphyllum	japonicum	Katsura Tree	N	all	N	Y	N	M	N	N	Y	N	Y	ь
YELLOWWOOD	Cladrastis	kentukea (lutea)	Yellowwood	Y	C/S	M	M	N	N	Y	N	Y	Y	Y	L
FILBERT	Corylus	colurna	Turkish Filbert	N	all	Y	M	N	N	N	N	Y	N	Y	ь
(Crataegus	crus-galli	Cockspur Hawthorn	Y	all	Y	N	N	Y	Y	Y	Y	Y	Y	П
HAWTHORN	Crataegus	phaenopyrum	Washington Hawthorn	Y	all	Y	M	N	Y	Y	Y	Y	Y	Y	ı
(Crataegus	viridis	Winter King Green Hawthorn	Y	all	Y	M	N	Y	Y	Y	Y	Y	Y	ь
RUBBER	Eucommia	ulmoides	Hardy Rubber Tree	N	C/S	Y	N	M	N	Y	N	N	N	N	L
MAACKIA	Maackia	amurensis	Amur Maackia	N	all	Y	N	N	N	Y	N	Y	N	Y	L
MAGNOLIA	Magnolia	species	Magnolia	N	all	M	M	N	M	M	Y	Υ	Y	Y	ı
HORNBEAM	Ostrya	virginiana	Hop Hornbeam	Y	all	Y	Y	N	N	N	N	Y	N	Y	ı
PEAR	Pyrus	calleryana	Callery Pear	N	all	Y	N	M	M	Y	Y	Y	Y	Y	L
LOCUST	Robinia	x ambigua	Purple Robe Locust	N	all	M	N	Y	Y	Y	Y	Y	Y	Y	Г

TABLE KEY:
Y=yes
N=no
M=Moderate tolerance
All=all regions
C/S=Central to South

Medium Tree Tips

F=female

- Grow to be a 25-40 foot tree at maturity.
- Check for mature size before planting near utility lines.
- Recommended for areas around the home, yard and with tree lawns that are 4 ft or greater.
- Plant at least 25-35 feet from structures.

	Indiana	Community Tre	e Selection Guid	e	ine Je	and land	CUTHIO!	atani atani	A Identify	STATE OF	25 10 10 to	SCHOOL STREET	Parie iles	TOWN ROW	del
25 ft. or less	Genus	Species	Common name	1	2	3	4	5	6	7	8	9	10	11	
IALL TREES															
(Acer	ginnala	Amur Maple	N	all	Y	N	Y	N	Y	Y	Y	Y	Y	
MAPLE	Acer	griseum	Paperbark Maple	N	all	Y	M	Υ	M	N	N	Y	N	Υ	
	Acer	tartaricum	Tartarian Maple	N	all	Y	M	Y	M	M	N	Y	Y	Y	
REDBUD	Cercis	canadensis	Eastern Redbud	Y	all	Y	N	N	M	Y	Y	Y	Y	Y	Small Tree Tips
DOCWOOD	Cornus	alterniflia	Pagoda Dogwood	Y	all	Y	Y	Y	M	Y	N	Y	Y	Y	Generally can be
DOGWOOD	Cornus	kousa	Kousa Dogwood	N	all	N	N	Y	M	Y	Y	Y	Y	Y	planted under and
CHERRY	Cornus	mas	Cornelian Cherry	N	all	N	Y	N	Y	Y	Υ	Y	Y	Y	near power lines.
CRABAPPLE	Malus	species	Crabapples	N	all	V	V	V	V	V	Y	Y	Y	Y	Check mature height
CHERRIES	Prunus	species	Cherries	N	all	V	V	V	V	V	Y	Y	Y	Y	and spread before
LILAC	Syringa	reticulata	Japanese Tree Lilac	N	all	Y	N	Y	N	Y	Y	Y	Y	Y	planting.
()	Viburnum	lantana	Wayfaring Tree	Y	all	Y	Y	N	Y	N	Y	Y	Y	Y	Recommended for
VIBURNUM	Viburnum	lentago	Nannyberry Viburnum	Y	all	Y	Y	N	M	Y	N	Y	Y	Y	lawn widths 3 ft. o
VIBURINUM	Vibumum	plicatum tomentosum	Doublefile Viburnum	N	all	Y	M	N	Y	Y	Y	Y	Y	Y	
	Viburnum	prunifolium	Blackhaw Viburnum	Y	all	Y	Y	M	Y	Y	N	Y	Y	Y	greater.

Tree Characteristics

All trees have certain characteristics that enable them to thrive in the right site. The following characteristics are listed in the key and the user can determine what tree will fit into the chosen site based on these characteristics.

Native

A tree species that grows naturally in the region that it is being planted.

Useful range

When selecting a tree to plant, consider the different climates in Indiana. Northern regions normally have colder winters than southern regions which can affect tree survival. Certain trees may be better suited for planting in one climate over another. The State of Indiana has been divided into three regions: North, Central, and South.

Drought tolerant

A drought tolerant selection may need to be considered when a site lacks sufficient water where heat stress may occur. Examples would be an open sunny location, parking lot or a street.

Wet tolerant

A wet tolerant tree selection may need to be considered when a site will have excessive moisture present. An example would be an area that floods or holds excessive soil moisture. A site with high clay soil may retain excessive water.

Salt tolerant

Salt tolerant trees may be needed when planted in locations where there is exposure to road salt spray or run off. Examples include areas along major thoroughfares, along salted sidewalks, and in parking lots.

Insect and disease prone

Insects and diseases can affect almost every tree.

Most trees have specific problems, however, these may vary across different regions of the state. Severity of problems may change greatly from year to year. Tree selection should be made from disease resistant species in your area.

Easy to transplant

Certain species are easier to transplant than others. Transplanting time can also affect tree survival. Certain trees are best transplanted in spring because of slow recovery time after planting. The majority of the trees are best planted in the fall.

Cultivars

A named plant selection from which identical or nearly identical plants can be produced through vegetative reproduction or cloning. They are often superior in quality.

Fruit or Seed

Tree fruiting may be considered a positive or negative. Positives can be fruit shape and color and the attraction of birds and other wildlife. Negatives are large falling fruit that causes excessive ground litter.



Showy flowers

All trees flower, however, some are more conspicuous than others. Typically, ornamental trees are selected for their showy flowers. Most ornamental trees are in bloom for one to three weeks starting in early spring while others begin blooming in early summer.

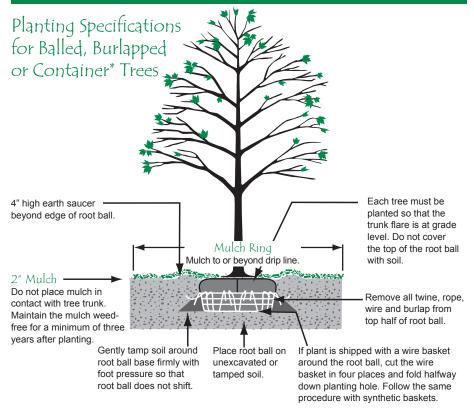
Site

The location where the tree will be planted.

Fall color

Fall leaf color can create interesting views. Different types of trees can create a color collage of yellow, red, orange, and purple. This may be a consideration in the design of a landscape.

Tree Planting Guidelines



- o Dig planting hole 2X the width of the root ball.
- o Limit pruning at time of planting.
- o Prune only crossover limbs, co-dominant leaders, and broken or dead branches.
- o Stake trees only if in a windy site.
- o Wrap tree trunks only if it is a thin bark species.
- o Remove wraps at end of winter.
- o If possible, mark the north side of the tree in the nursery, and rotate tree to face north at the site.
- o In wet or slowly draining areas, position the (flare) 1-2 inches above grade.

^{*} For container trees: remove from container and follow the above procedures.

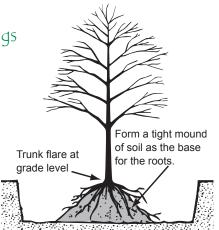
Planting Specfications for Bare Root Trees— including Seedlings

The Planting Hole:

- o The planting hole should be dug wide and deep enough to accommodate roots without bending them or screwing them into the hole. Do not cut roots in order to fit them into the planting hole.
- o Do not make the hole too deep.
- o Create a mound of firmly packed soil in the center of the planting hole for the root mass to sit upon at the correct depth.

Placing the tree in the hole:

- o Spread out roots of bare root trees over the mound in the center of the hole before backfilling.
- o Position the top-most root where it meets the trunk just at the soil surface. This is called 'planting at grade level' and it is the correct depth for most tree plantings.
- o Be sure there are no kinks, folds or circling roots.
- o Roots should be positioned more-or-less straight out from the trunk and over the mound.
- o Firm soil while filling in hole. Be sure that any air pockets are filled in.
- o When the hole is about three-fourths filled with soil, gently begin adding water to settle soil as you continue to fill in hole. Press gently on the soil to minimize air pockets. Do not pound or stomp.
- o Be careful not to injure roots with the shovel used for backfilling. If practical, use your hands to backfill to avoid skinning the bark.
- O Any broken roots need to be cut cleanly with a sharp pruning tool. Pruning roots indiscriminately at planting will not stimulate root regeneration, will not help in overcoming transplant shock, and is not recommended. Only adequate irrigation and air management can help overcome transplant shock.
- o Finally, place 2-4 inches of mulch out to the drip line; make a well with the mulch to retain moisture.



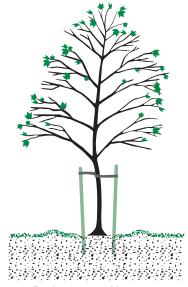
Planting Specfications for Bare Root Trees that need to be Staked

Stake if ...

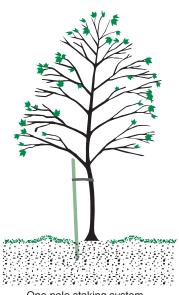
- o the tree or trees are in very open sites and exposed to high winds. This would include the wind produced from passing vehicular traffic.
- o the soil is sandy or loose.
- o people are inexperienced in bare root plantings and may not have back filled the hole correctly.
- o trees are overly tall.
- o poorly formed tree needs correction

Tree staking tips:

- The stakes generally need to be removed after one growing season (a year).
- Some materials will cut into the tree. Garden hose, ropes etc. are not recommended.
- o A properly designed staking system that allows some movement of the tree is important.
- Staking systems that branch out in various directions can be a tripping and mowing hazard.
- Single or dual poled stakes work best in high pedestrian and high mow care areas.
- Tree quards may be needed around seedling and bare root trees to protect them from wildlife browse, mower, and weed whip damage.



Dual support staking system



One pole staking system

References & Recommended Publications

Several references were used in compiling this guide. They are excellent tools for anyone who wants to plant trees. They are available in most bookstores and from the International Society of Arboriculture website.

101 Trees of Indiana: A Field Guide - Marion Jackson

<u>Landscape Tree Factsheets, Including Evergreens for Screens</u> – Gerhold, Lacasse, Wandell

Manual of Woody Landscape Plants - Michael Dirr

Plants for North America - Harrison Flint

<u>Trees & Shrub Handbook, Selection-Care-Pests-Diseases</u> – Morton Arboretum

Trees for Urban and Suburban Landscapes – Edward Gilman

Trees of Indiana - Charles Deam

Websites

The Division of Forestry website can guide users to a variety of sites that offer tips on tree selection, identification, urban forestry planning and management. Find the links at Indiana DNR, Division of Forestry;

www.IN.gov/dnr/forestry

This guide was made possible by funding provided by the USDA Forest Service, Northeast Area, IDNR, and the Division of Forestry-Community & Urban Forestry.

Technical Support Contacts

- IDNR, Community & Urban Forestry, 317-915-9390; urbanforestry@dnr.IN.40v
- City Forester may be available in your community. Contact your municipality to check.
 - Indiana Urban Forest Council, 317-489-8775
- Purdue University Cooperative Extension Service in your county, www.ces.purdue.edu; 1-888-398-4636
- Soil and Water Conservation District (SWCD) in your county
- Electric Utility Indiana's major utilities have foresters who can advise regarding tree planting under power lines.

Indiana City Foresters

Anderson	765-648-6853	LaPorte	219-362-8220
Bloomington	812-349-3716	Madison	812-265-8308
Carmel	317-571-2478	Michigan City	219-873-1400
Columbus	812-375-2742	Mishawaka	574-258-1664
Decatur	260-724-2520	Muncie	765-747-4847
Elkhart	574-295-7517	New Albany	812-948-5333
Evansville	812-475-1426	Noblesville	317-776-6348
Ft. Wayne	260-427-6403	South Bend	574-299-4783
Goshen	574-534-2901	Syracuse	574-457-3440
Indianapolis	317-327-7094	Terre Haute	812-232-2727
Lafayette	765-807-1383	W. Lafayette	765-775-5110

For additional information;

Indiana Department of Natural Resources - Community & Urban Forestry 317-915-9390 urbanforestry@dnr.IN.gov

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