



Plant These Instead: Alternatives to Invasive Woody Plants



NC State Extension Master GardenerSM Program

A network of trained volunteers and Extension educators

working in N.C. Cooperative Extension county centers

across our state . . .





We connect people with the benefits of sustainable gardening



Better nutrition & food security

Improved physical & mental health

Pollinators & wildlife habitat

Cleaner air & water, stormwater infiltration

Livable cities & healthier communities

through research-based information, educational programming and community outreach.

Learn more: emgv.ces.ncsu.edu





Plant These Instead

- What are invasive exotic woody plants?
- What you can do
- Common invasive woody plants and some landscape alternatives



Review these slides:

go.ncsu.edu/invasives-pti





What are exotic invasive woody plants?

- Woody = trees, shrubs, vines having permanent, bark-covered above ground structures
- Exotic = not naturally occurring in this region (NC Piedmont)
- Invasive = capable of causing economic or environmental harm, or harm to human health



NC STATE EXTENSION

Why do some exotics become invasive?

- Well adapted to our climate from similar climates
- Pests and pathogens found in native climate not found here
- Reproduce and spread rapidly by roots or seeds
- Adaptable and competitive Take advantage of disturbed environments



Chinese Privet, Ligustrum sinense

Weedy vs. Invasive

- A. Weeds Persist or spread in human maintained sites only
- **B. Invasives** Spread into native areas. Impacts:
 - Displace native species, reduce biodiversity
 - Some are able to create monocultures that alter species composition, change ecosystem function

Henbit is a common winter lawn and field weed that does not spread into native areas



Change Ecosystem Function

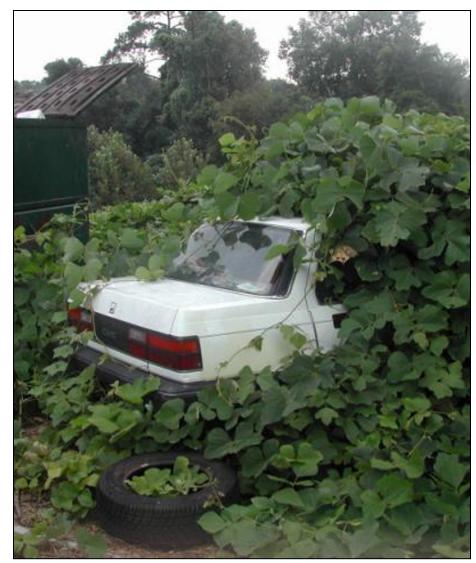


Invasive species are one of the greatest threats to biodiversity

How do they get here?

- Intentionally brought in as ornamentals, animal feed, or for stabilization
- Accidentally introduced in packing materials, ballast, crop seed...

Kudzu was first introduced as an ornamental in 1876, then promoted for cattle forage and soil stabilization.



How do they spread?

By seeds and plant or root fragments

- Carried by birds and mammals, especially berries
- **By water** rivers, streams, surface flooding
- **By soil** bought any "topsoil" lately?
- On equipment boats, mowing equipment, trains, vehicles
- In the rootball of shared plants
- In pots you take home from the garden center!



What can you do?

- Become familiar with species invasive to your region
- Identify and remove invasives on your property and in your community
 - Simply cutting them down is not enough!
 - Dig and remove roots, or
 - Treat with herbicide Contact Extension for recommendations
 - Monitor 1-2 years for seedlings or root sprouts



What can you do?

Don't introduce new invasives

- Plants classified as *noxious* weeds cannot be sold in NC
 - Regulated by <u>NC Department of</u> <u>Agriculture & Consumer Services</u> <u>NC Noxious Weed List</u> – Other than beach vitex, none have ever been used as landscape plants
- NC laws do not prevent invasive species from being grown, sold or planted





Beach vitex was planted for erosion control in the 1980s Photo credit: Forest & Kim Starr (top), Starr Environmental (bottom), Bugwood.org, USDA

What can you do?

Select plants thoughtfully Consider:

- Suitability to site conditions
 sun, soil, drainage, deer
- Landscape need screening, seasonal interest, low maintenance
- Environmental impacts benefits to wildlife and pollinators, invasive potential



Japanese privet, *Ligustrum japonicum*, may become invasive

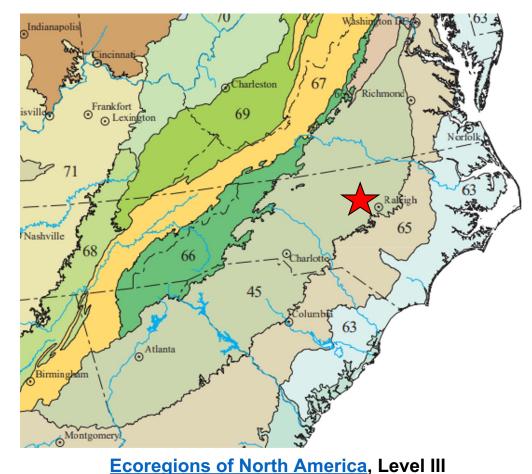
Select Plants Thoughtfully

For new plantings:

- Plants native to your region
- Non-natives with no known invasive potential

Natives only? Consider:

 Proximity to natural areas, woodlands, and nature preserves

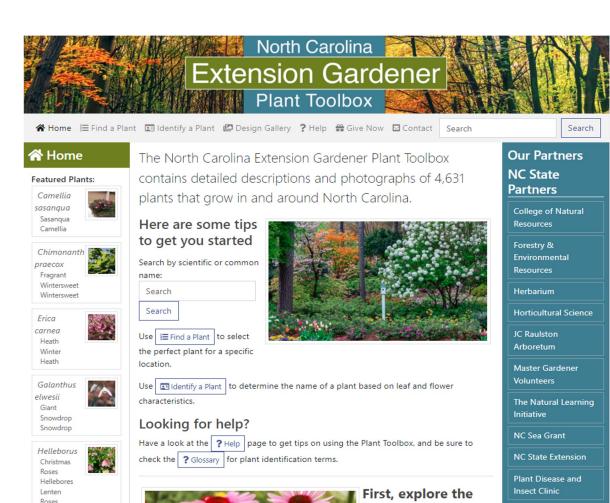


We are Ecoregion 45, Piedmont – extends from northern VA to central AL

NC STATE EXTENSION

Plant Toolbox plants.ces.ncsu.edu

- 4,695 plants and counting
- 96 data points/plant
- More than 24,000 images
- Latin name pronunciation
- Videos





Find a Plant

Extension Gardener

Plant Toolbox

North Carolina

🔚 Find a Plant 🗖 Identify a Plant 🖆 Design Gallery 🤶 Help 🛱 Give Now 🖾 Contact 🖀 Home

🖀 Home

Featured Plants:

Camellia sasangua Sasangua Camellia

Chimonanthus praecox Fragrant Wintersweet

Wintersweet Erica carnea

Alpine Alpine Heath Heath

Giant Snowdrop

Snowdrop



Helleborus Christmas Roses Hellebores Lenten Roses



The North Carolina Extension Gardener Plant Toolbox contains detailed descriptions and photographs of 4,632 plants that grow in and around North Carolina.

Here are some tips to get you started





Use Identify a Plant to determine the name of a plant based on leaf and flower characteristics.



Looking for help?



Have a look at the ? Help page to get tips on using the Plant Toolbox, and be sure to check the ? Glossary for plant



Horticultural Science JC Raulston Arboretum Master Gardener Volunteers The Natural Learning Initiative NC Sea Grant

Resources

Herbarium

Our Partners

NC State Partners

College of Natural Resources

Forestry & Environmental

Search

NC State Extension

Plant Disease and Insect Clinic

Search



Braham Arboretum



First, explore the toolbox on a computer to learn how to navigate and use the search features





Find a Plant

Extension Gardener

Plant Toolbox



E Find a Plant

Cultural Conditions

C Light

A Ho

- Soil Texture
- Soil pH
- Soil Drainage
- Available Space To Plant
- NC Region
- USDA Plant Hardiness Zone

Landscape

- Landscape Location
- Landscape Theme
- Design Feature
- Attracts
- Resistance To Challenges
- Problems to exclude

Whole Plant Traits

- Plant Type
- Annual 478
- Bulb 217

plants/abies-alba/common-name/european-silver-fir/

4632 plants by	Scientifi
----------------	-----------

Abeliophyllum distichum

Korean Abelia, Korean abelialeaf, Korean abeliophyllum, Miseonnamu, White Forsythia



Abies balsamea var. phanerolepis Canaan Fir, West Virginia

Balsam Fir



Abelmoschus

Common Name

esculentus

Bentwood, Bindwood, Common Ivy, Gobbo, Gumbo, Ivy, Ivy Gum Plant, Ladies' Fingers, Love United, Ochro, Okra, Okro



Abies cephalonica Black Mountain Fir.

Grecian fir, Greek Fir



2 Cultivars/Varieties

Abelmoschus manihot

Abies cilicica

Taurus Fir

Cilicica Fir, Syrian Fir,

Hibiscus Manihot, Muskmallow, Sunset Huskmallow, Tropic Jewel Hibiscus

North Carolina



< 1 2 3 4 ... 97 >

Abies alba

Common Silver Fir, European Silver Fir, Silver



4 Cultivars/Varieties

Abies concolor

100110-000

Abeto Del Colorado, Balsam Fir, Colorado Fir, Colorado White Fir. Concolor Fir, Pino Real Blanco, Rocky Mountain White Fir, Western White Fir, White Balsam, White Fir

Abies concolor 'Compacta'

Compact White Fir

Abies firma

Japanese Fir, Momi F



Abies amabilis

Amabilis fir, Cascades fir, Pacific silver fir, Red Fir, White fir



Search

	8.0

Abies balsame

Balm of Gilead, Balsa

Se

Display:

2 Cultivars/Varieties

Find a Plant

Cultural Conditions

EXTENSION

🛇 Light

NC STATE

Soil Texture

🛇 Soil pH

Soil Drainage

Savailable Space To Plant

NC Region

🛇 USDA Plant Hardiness Zone

Landscape

Candscape Location

Landscape Theme

Design Feature

Attracts

Resistance To Challenges

Problems to exclude

S Woody Plant Leaf Characteristics

S Habit/Form

Growth Rate

Maintenance

Texture

Flowers

S Flower Color

Flower Value To Gardener

S Flower Bloom Time

Leaves

Leaf Color

🛇 Leaf Feel

Leaf Value To Gardener

Deciduous Leaf Fall Color

Whole Plant Traits

Plant Type

Annual 478

Bulb 217

Carnivorous 25

Cool Season Vegetable 38

Edible 451

Epiphyte 50

🗆 Fern 91

Ground Cover 461

Herb 300

Herbaceous Perennial 727

Houseplant 283

Mushroom 17

Native Plant 1032

- Ornamental Grasses and Sedges 184
- Perennial 1215
- Poisonous 648

Rose 219

Problems to Exclude

•

s/Varieties

; concolor

Abeto Del Colorado, Balsam Fir,



E Find a Home Plant

.=

E Find a Plant

Landscape

- Landscape Location
- Landscape Theme
- Oesign Feature
- Attracts
- Resistance To Challenges
- Problems to exclude

Whole Plant Traits

- Plant Type
- **Woody Plant Leaf** Characteristics
- ♥ Habit/Form

Problems to exclude

- Allelopathic 13
- Contact Dermatitis 197
 - **Frequent Disease** Problems 61
 - **Frequent Insect Problems** 53
 - Invasive Species 132
 - Malodorous 48
- Messy 115
- Poisonous to Humans 509
- Problem for Cats 554
- Problem for Children 126
- Problem for Dogs 551
- Problem for Horses 613
- Short-lived 47
- Spines/Thorns 143
- Weak Wood 26
- Weedy 559
- Cilicica Fir. Syrian Fir. Taurus Fir.



Frequent Insect Problems





Abies concolor

'Compacta



2 Cultivars/Varieties

Abies firma

Japanese Fir, Momi Fir



Plant These Instead:

Alternatives to Invasive Woody Species Commonly Planted in Piedmont Landscapes



Invasive Trees

Callery Pear

Pyrus calleryana

- Cultivars include: Bradford, Aristocrat, Capital, Chanticleer, Cleveland Select
- Widely planted since the 1960s
- Cultivars cross-pollinate, develop fruits with viable seed

Learn more



Dan Tenaglia, Missouriplants.com, Bugwood.org <u>CC BY-NC 3.0 US</u>



Not Recommended!



Only last 10-20 years; Dense branching structure results in trees that selfdestruct with age, wind, and ice David J. Moorhead, University of Georgia, Bugwood.org CC BY-NC 3.0 US Invasive throughout the eastern US

James H. Miller, USDA Forest Service, Bugwood.org CC BY 3.0 US

> Learn more: <u>National Park Service – Callery Pear,</u> <u>UGA Invasive Plant Atlas,</u> <u>NC State Going Native</u>

NC STATE EXTENSION

Plant These Instead

Choose the right plant for the site | Plant diversity



Okame Cherry Prunus 'Okame' Famartin, <u>CC BY-SA 4.0</u> Spring Glow Cornelian Cherry

Cornus mas 'Spring Glow' Image by Charlotte Glen <u>Trident Maple</u> Acer buergerianum Jim Robbins, <u>CC BY-NC-ND 4.0</u> **NC STATE** EXTENSION

Native Flowering Trees

Redbud

Cercis canadensis

- Early blooms great for pollinators
- Leaf-cutter bees often collect nesting material from foliage
- Protect from deer when young
- Hardy zones 4-9

Images: Tree, Jim Robbins, <u>CC BY-NC-ND 4.0</u> Flowers, Fredlyfish4, <u>CC BY-SA 4.0</u> Leaf cutter bee damage, Marisa Back, <u>CC BY</u> <u>2.0</u> '<u>Flame Thrower</u>,' C. Glen, NC State



Serviceberry

Amelanchier arborea Amelanchier x grandiflora

- Deciduous small tree for moist, well-drained soil
- 15'-25' tall, often with multiple trunks
- Blooms early spring, nectar source for pollinators
- Early fruit source for birds



NC STATE EXTENSION



🖀 Home 🔚 Find a Plant 📠 Identify a Plant 🖾 Design Gallery ? Help 🛱 Give Now 🖾 Contact

\Xi Find a Plant

Cultural Conditions

C Light

Soil Texture

🛇 Soil pH

- Soil Drainage
- Available Space To Plant
- NC Region
- 🛇 USDA Plant Hardiness Zone

Landscape

- Candscape Location
- Candscape Theme
- Design Feature
- Attracts
- Resistance To Challenges
- Problems to exclude

Whole Plant Traits

Plant Type
 Woody Plant Loaf Characteristics

Explore More Plants!

Landscape > Design Feature >

- Small Tree
- Flowering Tree

Whole Plant Traits >

- Plant Type >
- Native Plant

Narrow your search:

- NC region
- Light
- Soil conditions
- Native
- Wildlife attracted
- Resistance to challenges
- And many more attributes!

View search results (24 plants)

Invasive Evergreen Shrubs

Privet, Ligustrum

Hardy, medium to large, evergreen shrubs often planted for screening that are <u>invasive</u> throughout the Southeast

Explore Ligustrum species

Most commonly planted:

- Chinese Ligustrum, *Ligustrum*, *sinense* especially variegated forms
- Japanese Ligustrum, Ligustrum japonicum

1 This plant is an invasive species in North Carolina



ID tip: Ligustrum species have opposite leaves

Image credit: Troy Evans, Great Smoky Mountains National Park, Bugwood.org, <u>CC BY-NC 3.0 US</u>

Both produce abundant panicles of small white flowers in spring, followed by black berries that ripen in fall



Chinese Privet, Ligustrum sinense

Smaller leaves

Image by James H. Miller & Ted Bodner, Southern Weed Science Society, <u>Bugwood.org</u>, <u>CC BY-NC 3.0 US</u>



Japanese Privet, Ligustrum japonicum Larger, glossy leaves

Images by - Right: Nancy Loewenstein, Auburn University, <u>Bugwood.org</u>, <u>CC BY-NC 3.0 US</u>; *Left:* James H. Miller, USDA Forest Service, <u>Bugwood.org</u>, <u>CC BY-NC 3.0 US</u>

Control options: <u>Alabama Extension</u> | <u>NC Forest Service</u> | <u>SE Invasive Plant Council</u>



Plant These Instead: Alternatives for Shady Locations



Cleyera

Ternstroemia gymnanthera Sun or shade, drought tolerant and deer resistant! Images by Jim Robbins, <u>CC BY-NC-ND 4.0</u>



LinebackerTM Distylium

Distylium 'PIIDIST-IV' Best in part shade, well-drained soil Image source: <u>First Editions Plants</u>

Evergreen Hollies

- Sun to part shade
- Drought tolerant when established
- Moderate growth rate, long-lived
- Ilex cornuta cultivars & hybrids
 - <u>Nellie R. Stevens</u>
 - <u>Needlepoint</u>
 - Dwarf Burford Holly
 - Emily Brunner
 - <u>Mary Nell</u>
 - <u>Oakleaf</u>



Nellie Stevens hollies – Not sheared Image by Charlotte Glen

SE Native Alternatives to Ligustrum



NC STATE

EXTENSION

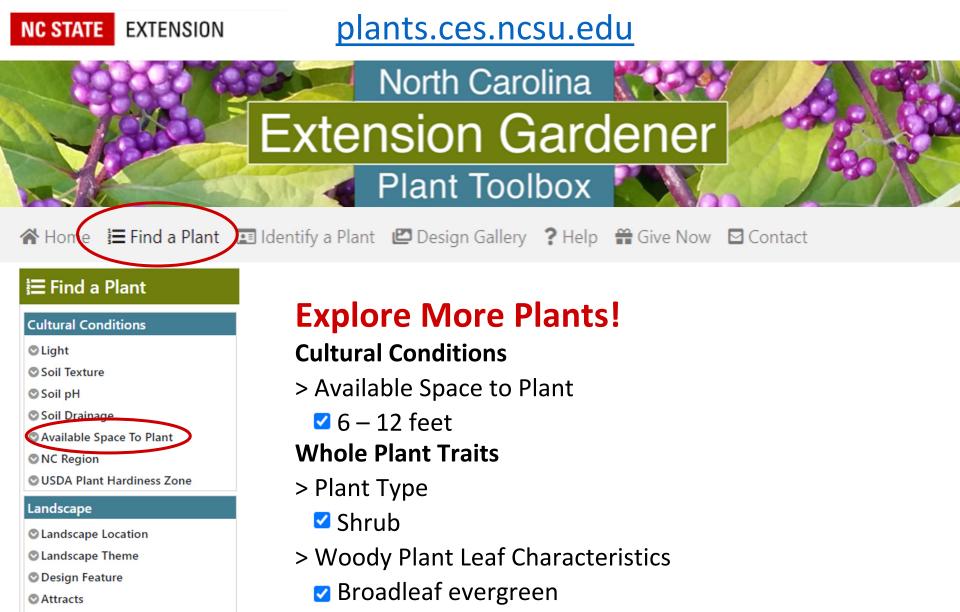


<u>'Savannah'</u> Image: Jim Robbins, <u>CC BY-NC-ND 4.0</u> **<u>'Fosters'</u>** Image: Jim Robbins, <u>CC BY-NC-ND 4.0</u>

Florida Anise Tree

Illicium floridanum

Best in shade, moist acidic soil. Image left: David Stang, <u>CC BY-SA 4.0</u> Image right: Scott Zona, <u>CC BY-NC 2.0</u> *llex x attenuata* Naturally occurring and controlled crosses between *I. cassine* and *I. opaca,* <u>American holly</u>



Resistance To Challenges

Problems to exclude

Whole Plant Traits

Plant Type

Woody Plant Leaf Characteristics

View these search results (147 plants)

If also select Plant Type > Native, reduces to <u>21 results</u>

Invasive Evergreen Shrubs

Nandina

Nandina domestica

Aka: Heavenly Bamboo

- Upright, evergreen shrub with bi- to tri-pinnately compound leaves
- Grows in sun or shade
- Grown for foliage texture and berries
- Berries contain cyanide

Recent study linked overconsumption of the berries by Cedar Waxwings to their death via cyanide toxicity

This plant is an invasive species in North Carolina





Flower Buds (Wake County,NC) - Early May. Cathy Dewitt, <u>CC BY 4.0</u> Related Invasive Shrubs in the Barberry Family (Berberidaceae)



NC STATE

EXTENSION



Leatherleaf Mahonia

Berberis bealei

Jim the Photographer, CC BY 2.0

Barberry Berberis thunbergii

Alpsdake, <u>CC BY-SA 3.0</u>

1 This plant is an invasive species in North Carolina

Plant These Instead **Sterile Nandina Varieties**

Dwarf, wide leaf varieties that do not fruit

EXTENSION

Firepower

NC STATE

Pink Blush[™]

Narrow-leaf dwarf varieties reported to be sterile (?)

Left to right:

- Flirt
- Obsession
- Lemon-Lime



Firepower in summer



Firepower in winter



For colorful berries: American Beautyberry

Callicarpa americana Native to eastern NC & SE US Deciduous leaves, cut back in winter







NOTE: Make sure you have the right species. Asian Callicarpa species have been reported invasive in other SE states

- Callicarpa japonica
- <u>Callicarpa dichotoma</u>

Possumhaw Viburnum Viburnum nudum

- Native to the eastern U.S. and throughout NC
- Grows 6–10' tall and wide
- Tolerates flooding, sun or part shade
- Deciduous shrub, reddish-purple fall color
- Spring flowers followed by fruits that ripen in later summer and fall, turning from pink to blue and eaten by songbirds



Plant These Instead

Inkberry, Ilex glabra

Native NC coastal plain & piedmont; Deer resistant Most cultivars are female but will only set fruit if male plants are nearby



'Shamrock' Jim Robbins, <u>CC BY-NC-ND 4.0</u>

'Nigra' is a similar commercially available, compact cultivar



Flowers - Mary Keim, <u>CC BY-NC-SA 2.0</u>



Fruits occur on female plants -John Brandauer, <u>CC BY-NC-ND 2.0</u>



New dwarf, compact, varieties: Strongbox[®] Gem Box[®] 2-3' x 2-3'

Images courtesy of Proven Winners - www.provenwinners.com

Invasive Deciduous Shrubs

Burning Bush, Euonymus alatus

- Native to eastern Russia, Japan, China, Korea
- Able to establish in forests, fields, roadsides
- Birds and wildlife eat and disperse seeds

Butterfly Bush, Buddleja davidii

- Grown for fragrant summer flowers that attract butterflies
- Native to Asia
- More common in NC mountains and western Piedmont

This plant is an invasive species in North Carolina





Buddlejah davidii Jim Lawerence, <u>CC BY-NC-ND 4.0</u>

Plant These Instead

Native Shrubs for Fragrance

Carolina Allspice, Sweet Betsy Calycanthus floridus Flowers in spring, pt shade



Sweet Pepperbush Clethra alnifolia Flowers in summer, sun-pt shade





Clethra in bloom: Rachel Foyst, <u>CC BY-SA 2.0</u> Flower with bee: John D., <u>CC BY-NC-ND 2.0</u>

Flower and leaves, Randy Harter, <u>CC BY 4.0</u>



Southeastern Native Shrubs for Fall Color

Oakleaf Hydrangea, <u>Hydrangea quercifolia</u>



Part shade, moist but well drained soil, showy summer flowers

'Mt. Airy' Fothergilla, <u>Fothergilla</u> 'Mt. Airy'



Sun to part shade, average soil, fragrant spring flowers, deer resistant Virginia Sweetspire, <u>Itea virginica</u>



Sun to part shade, wet to average soil, fragrant spring flowers, deer like it

Image by K M, <u>CC BY 2.0</u>

Image by Jim Robbins, <u>CC BY-NC-ND 4.0</u> Image by Jim Robbins, <u>CC BY-NC-ND 4.0</u>

Blueberries!

Vaccinium species

At least 17 species native to NC, all require acidic soil and produce edible fruit

<u>Rabbiteye varieties</u> (Vaccinium virgatum)

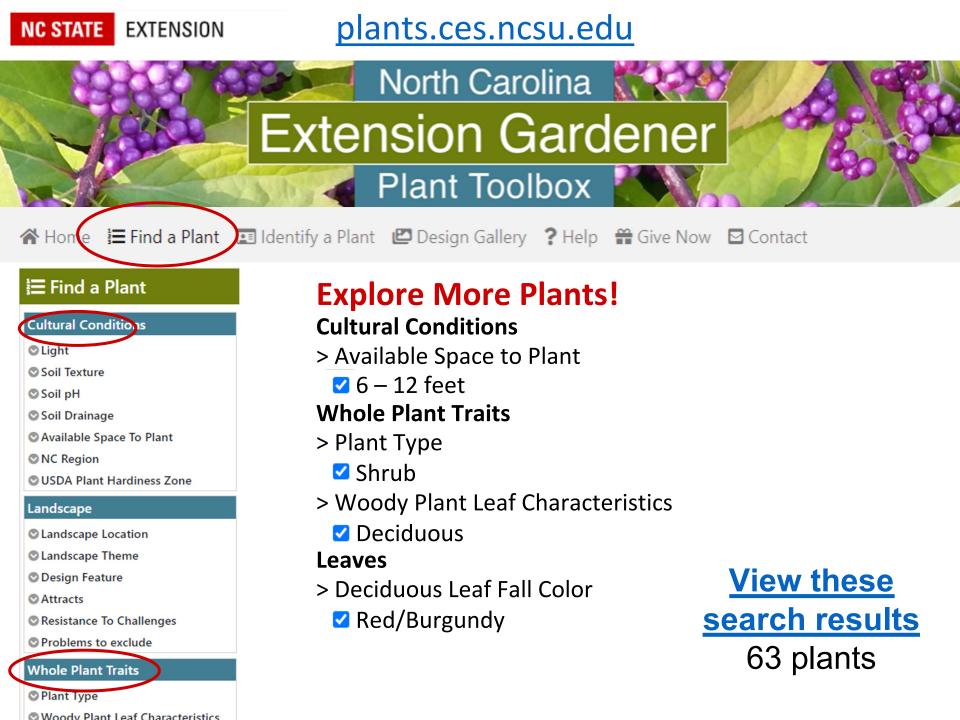
are the most adaptable

Recommended varieties for NC (for fruit production plant 2 different cultivars):

- Early: Premier (self-fruitful), Climax
- Mid: Tifblue
- Late: Powderblue, Onslow

Learn more about growing blueberries in NC





Invasive Vines

<u>Japanese honeysuckle</u>, *Lonicera japonica*

- Fragrant, late spring flowering vine
- Common throughout SE, woodland edge and low areas
- Will spread along the ground until it finds trees, shrubs to climb



Japanese Honeysuckle

This plant is an invasive species in North Carolina

Image by Chris Evans, University of Illinois, Bugwood.org, <u>CC BY-NC 3.0 US</u>





<u>Chinese Wisteria</u>, Wisteria sinensis Japanese Wisteria, Wisteria floribunda

NC STATE

EXTENSION

Image by Chris Evans, University of Illinois, Bugwood.org, <u>CC BY-NC 3.0 US</u>

Sweet Autumn Clematis/ Japanese Clematis Clematis terniflora

Image by Leslie J. Mehrhoff, University of Connecticut, Bugwood.org, <u>CC BY-NC 3.0 US</u>

<u>English Ivy</u>, Hedera helix

Image by Chuck Bargeron, University of Georgia, Bugwood.org, <u>CC BY-NC 3.0 US</u>



NC STATE

EXTENSION



Coral Honeysuckle, Lonicera sempervirens

Native | Spring flowering | Semi-evergreen | Sun-part shade | Climbs 10'+ Not fragrant but hummingbirds love it! Images by Charlotte Glen



Vines for Sun | More Natives



Carolina Jessamine, Gelsemium sempervirens Image by Jim Robbins, CC BY-NC-ND 4.0

<u>Crossvine</u>, Bignonia capreolata This is the cultivar 'Tangerine Beauty' Image by Charlotte Glen

Plant These Instead! Vines for Full Shade

Climbing Hydrangea,

Hydrangea barbara - native

Japanese Hydrangea Vine Hydrangea hydrangeoides



Both are deciduous and tolerate full shade but will produce more blooms in dappled or part-shade

North Carolina North Carolina Extension Gardener

Plant Toolbox

🖀 Home 🔚 Find a Plant 🔃 Identify a Plant 🔛 Design Gallery ? Help 🏶 Give Now 🖾 Contact

\Xi Find a Plant

Cultural Conditions

C Light

Soil Texture

🛇 Soil pH

Soil Drainage

Available Space To Plant

NC Region

SUSDA Plant Hardiness Zone

Landscape

Candscape Location

Landscape Theme

Design Feature

Attracts

Resistance To Challenges

Problems to exclude

Whole Plant Traits

🛇 Plant Type

Woody Plant Leaf Characteristics

Explore More Vines!

Cultural Conditions

> USDA Plant Hardiness Zone

🗹 7a

Landscape

> Problems to exclude

✓ Weedy

Invasive species

Whole Plant Traits

> Plant Type

🗹 Vine

View these search results 93 plants

Become Familiar with Invasives

There is not a unified list of invasive plants for NC. **Resources include:**

- Extension Gardener Plant Toolbox invasive plant profiles
- Plant These Instead archive alternatives to invasive plants
- <u>NC Invasive Plant Council</u> lists species by NC region
- NC Native Plant Society, <u>Invasive Exotic Species List</u> species ranked by threat level
- USDA Forest Service <u>Nonnative Invasive Plants of Southern</u> <u>Forests</u>
- Invasive Plant Atlas partners include USDA and National Park Service
- EDDMaps (UGA) tracks new and emerging invasive species





Review these slides:

go.ncsu.edu/invasives-pti



Learn more about the <u>NC State Extension Master Gardener program</u>



Support our work!

Learn more: <u>go.ncsu.edu/ncemg-endowment</u> **Donate online:** <u>go.ncsu.edu/support-ncemgv</u>

Thanks & More Information

Charlotte Glen, NC State EMG Program Manager

Debbie Dillion, NC State Extension Horticulture Agent, Union County

NC State Extension Master Gardener Program of Union County Growline: 704-283-3822; ucmgwebsite@gmail.com



Support our work!

Learn more: <u>go.ncsu.edu/ncemg-endowment</u> **Donate online:** <u>go.ncsu.edu/support-ncemgv</u>