

NC State Extension

# Managing Landscape Pests Through Better Plant Selection

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# What you choose to plant has many impacts . . .

- Seasonal appearance and maintenance
- Irrigation requirements
- Potential pest problems
- Pruning frequency
- Long-term success
- Habitat value for wildlife
- Forage value to pollinators



# Many factors affect plant selection . . .

- Availability of plant material
- Budget
- Purpose of planting
- Site conditions
- Personal preference of designer or client

**Typically have many options**



# Thoughtful selection can reduce pest problems

- Many pests and diseases are host-specific
- Only infest/infect a narrow range of closely related plants
- Avoiding or replacing pest prone plants results in less pest and disease issues

Bagworms:  
Pests of conifers



# Pest and disease problems can be:

- **Sporadic**

- Do not occur every year/season
- Usually only when environmental conditions perfect

- **Recurring**

- Predictably return every year/season



Powdery mildew is a recurring problem for some plants

# Pest and disease problems can be:

- **Cosmetic**
  - Affect appearance only, generally short-term
  - Causing no serious impact to plant health
- **Serious but treatable**
  - Potentially damaging if not treated/managed in timely manner
- **Serious but untreatable**
  - Result in plant death



Most leaf spot diseases are cosmetic, especially when they occur late in the season

# Avoid planting or replace plants . . .

- Prone to serious, untreatable pests/diseases
- With frequently recurring problems
- Susceptible to cosmetic problems if planted in high visibility locations



# Selecting Alternatives

**No plant is perfect or 100% problem free**

- Many problems are cultural
  - Wrong plant for site
  - Poor soil conditions - compaction
- Increase success – Improve soil:
  - Cultivate to alleviate compaction
  - Incorporate compost
- Adjust pH if needed
  - Typical Piedmont soil: pH 5.0
  - Most plants prefer: 6.0 – 6.5
  - Acid lovers prefer: 5.0 – 5.5



Most plants that fail within a year of planting die due to cultural problems



# Selecting Alternatives

## Stress increases problems – sources:

- Poorly adapted to climate (heat/cold)
  - Cold tolerance – low temps and fluctuations
  - Heat and humidity tolerance
- Water stress
  - Too little - drought
  - Too much – deluge or poor drainage
  - Incorporate compost – improves both!
- Poor nutrition
  - Soil test to determine pH
  - Adjust based on soil report recommendations
  - Incorporate lime and phosphorus



**Ponderosa Pine** – will not grow in NC, not adapted to climate

# Selecting Alternatives

## Select right plant for the site

- Local climate
- Sun/shade exposure
- Soil type and drainage

## DIVERSITY!

- Not seeking a single replacement for each pest prone plant
- Use a variety of plant species and cultivars



# Let's look at some commonly planted repeat offenders:

- Leland Cypress
- Roses
- Boxwood and Japanese Holly



# Leyland Cypress

× *Cuprocyparis leylandii*

- Upright evergreen conifer
- Fast growing
- Large: 50+ tall, 20+ wide
- Prefers sun, well drained soil
- Popular for screening and hedges



# Common Problems: Leyland Cypress

- Serious, treatable
  - Bagworms
- Serious, untreatable
  - Root rot
  - Seridium canker

Entire trees may rapidly die from root rot, especially during wet weather



# Pest Problems - Bagworms

- Most conifers are susceptible
- Larval stage (caterpillar) of a native moth
- Weaves protective bag out of plant debris while feeding
- Can defoliate conifers in a matter of weeks if large populations – trees will not recover



# Bagworms

- Hatch in May
- Treatable in early summer – many options including organics: neem oil, B.t., spinosad
- Pupate late summer (~August) – Pesticides are not effective after this happens!
- Bags are full of eggs all winter – waiting for spring to hatch



# Seiridium Canker

- Fungal disease
- Branches die individually, cankers on stems
- **No treatment**
- **Drought stressed trees more susceptible**







**Cankers ooze sap –  
this is diagnostic of  
Seridium canker**

# The next Leyland Cypress: Thuja 'Green Giant'

- Fast growing evergreen for screening
- Grows 40'+ tall, 10' wide
- Sun, moist but well drained soil
- Watch for bagworms
- Rapidly becoming overplanted – increases pest pressure



# 'Spartan' Juniper

*Juniperus chinensis*

- Grows 10'-15' x 3'- 4'
- Very drought tolerant
- Full sun, well drained soil
- Watch for bagworms!!!!



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# Better Options: Upright Hollies

- Not as fast growing but more successful in the long term
- Tolerate sun – part shade, moist or well drained soil
- Good drought tolerance
- Most are hybrids between native and Asian *Ilex* species

## Many cultivars:

- **Needlepoint**, 15' x 10'
- **Nellie Stevens**, 20' x 15'
- **Red Hollies** – 15'-20' x 10'
  - 'Oakleaf' - 'Cardinal'
  - 'Festive' - 'Robin'



**'Nellie Stevens'**



**'Oakleaf'**

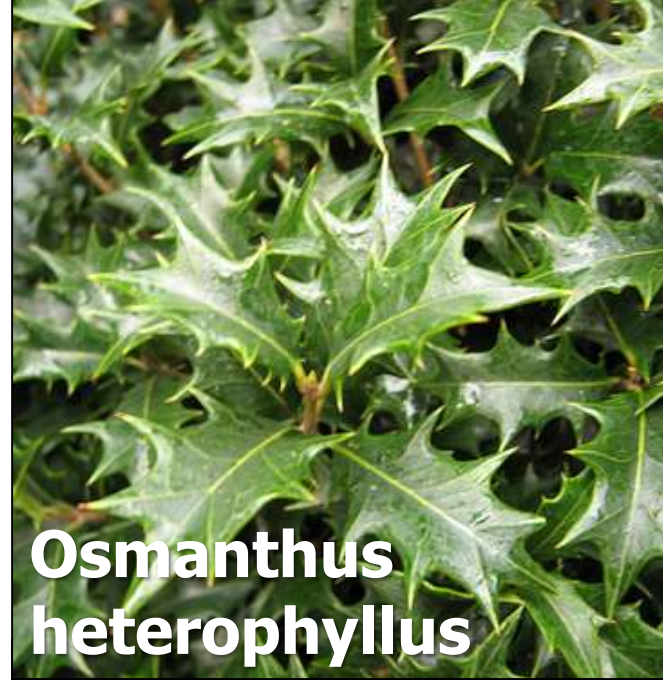
# Cleyera

- *Ternstroemia gymnanthera*
- Sun to full shade
- 8'+ tall x 6'+ wide
- Well drained soil
- Drought tolerant
- Tolerates heavy pruning but more attractive when grown natural
- Deer resistant



# Osmanthus

- Sun - part shade, well drained soil
- Fall flowers – extremely fragrant
- Deer resistant
- Tea Olive, *O. fragrans*
  - 10'-15', less hardy
- Holly Osmanthus, *O. heterophyllus*
  - 8'-10' depending on cultivar
  - Very prickly leaves!
- Fortune's Osmanthus, *O. x fortunei*
  - Hybrid between above 2



**Osmanthus  
heterophyllus**



# For part shade, moist acidic soil

## Florida Anise

*Illicium floridanum*

- 6' x 4'
- Red spring flowers
- **Anise Shrub** – *Illicium parviflorum* is larger



## Florida Leucothoe

*Agarista populifolia*

- 10'-12'
- Deer resistant



# Roses

- Deciduous shrub for seasonal color
- Newer varieties long blooming, spring – fall
- Some varieties fragrant
- Best in sun, well-drained soil
- Prune hard each winter





# Common Rose Problems

- Cosmetic, frequently recurring
  - Powdery mildew
  - Black spot
  - Japanese beetles
  - Rose slugs
- Serious, treatable
  - Canker – manage w/ pruning
- Serious, untreatable
  - Rose Rosette



# Black Spot – recurring fungal disease

Cosmetic or serious depending on cultivar. Some rose varieties more susceptible than others



# Rose Slug – Sawfly Larvae

- Active early summer
- Cosmetic damage to foliage
- Many options to treat, including organic, but B.t. not effective



# Rose Rosette

- Virus, systemic
- Fatal, no control
- All rose varieties susceptible
- Only roses are susceptible
- Spread by eriophyid mites
- Symptoms vary



# Symptom:

- **Discoloration of new growth**
- Usually dark red
- Persists through the season



# Symptom: Excessive thorniness



# Symptom:

## Witches broom

- Flowers and leaves small, distorted, discolored
- Leaves more susceptible to powdery mildew
- More sensitive to cold



# Rose Rosette

- Disease is systemic – whole plant infected
- Die within 1-2 years of first symptoms
- **Completely remove** infected plants ASAP – monitor for root sprouts
- Bag or burn plants
- Does not persist in soil or dead plant tissue





# Roses

## Alternatives

### Japanese Spirea

*Spiraea japonica*

- Sun, well drained soil
- Pink flowers, summer
- 4'-5' x 3'-4'
- Many varieties have yellow/lime foliage
- Bloom on new growth – prune hard in winter



**Neon Flash**



# Hardy Hydrangea

## *Hydrangea paniculata*

- Sun – part shade
- Well drained soil
- Many cultivars, range from 3' - 4' to 6' - 8'
- Blooms on new growth – prune hard in winter



# Mt. Airy Fothergilla

- *Fothergilla major* 'Mount Airy'
- Native
- 4'-5'x 4'-5'
- Sun to part shade
- Moist or well drained soil, acidic
- Honey scented spring blooms, beautiful fall color
- Deer Resistant



# Mt. Airy Fothergilla

Reliable,  
long-lasting  
fall color



# Sweet Pepperbush

*Clethra alnifolia*

- Native
- Sun – part shade, well drained or moist soil
- Dwarf cultivars grow 3'-4'
  - Hummingbird
  - Sixteen Candles
- Blooms in June-July, attracts butterflies and pollinators
- Very fragrant
- Deer resistant



# Sweet Pepperbush

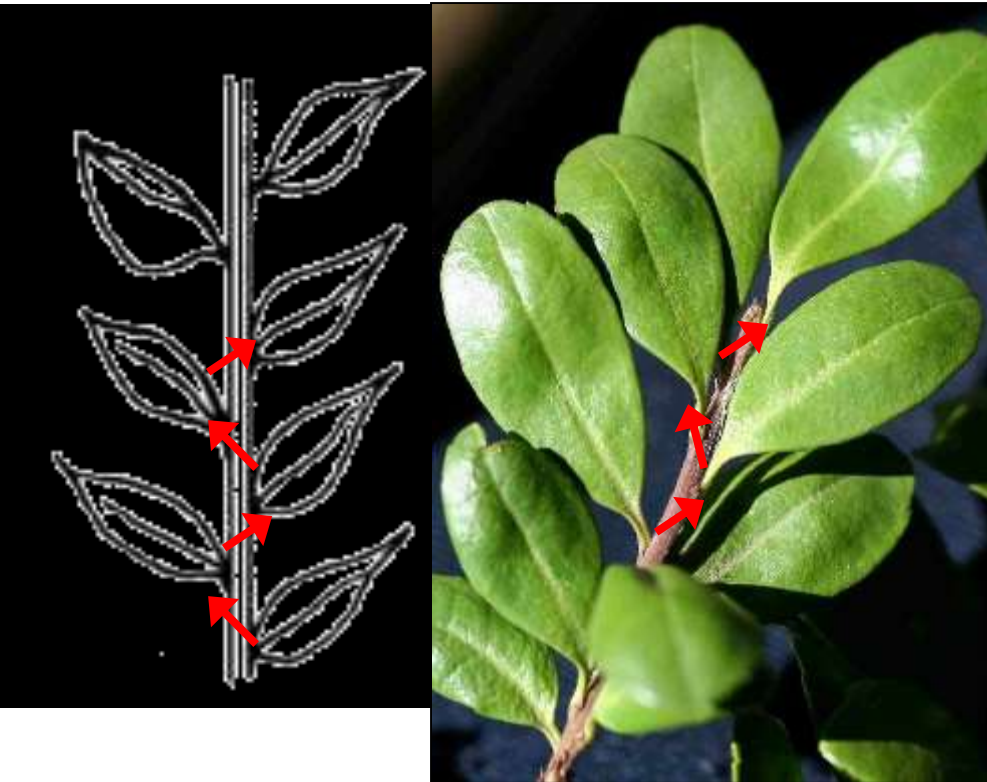
*Clethra alnifolia*

Reliable fall color  
even in shade.  
Gold to clear  
yellow



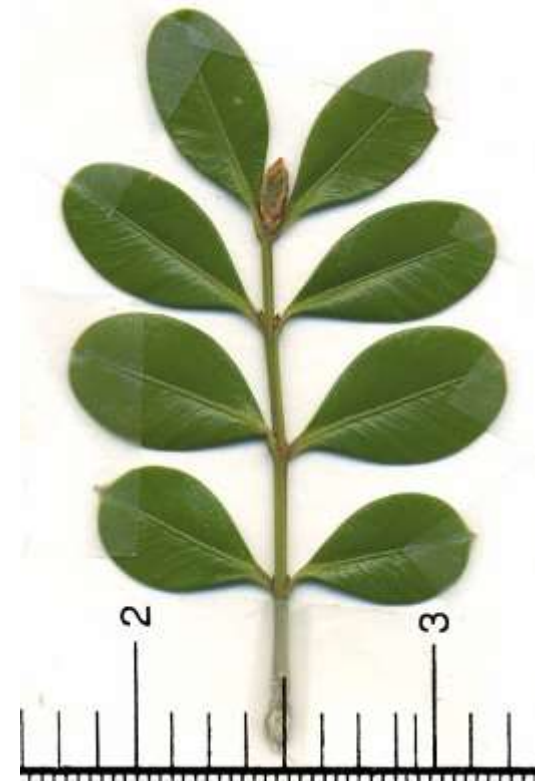
# Japanese Hollies and Littleleaf Boxwoods

**Japanese Holly,**  
*Ilex crenata*



**Alternate Leaves**

**Littleleaf Boxwood,**  
*Buxus microphylla*



**Opposite Leaves**

# Japanese Holly

- *Ilex crenata*, many cultivars
  - ‘Helleri’, ‘Soft Touch’, ‘Steeds’  
‘Compacta’, ‘Green Luster’ . . .
- Fine textured, small evergreen shrubs
  - 3’-5’ x 3’-5’ depending on variety
- Often used for foundation plantings
- Sun or shade, moist, well drained soil
- Live 15 – 20 years in South
- NOT drought tolerant!





# Littleleaf Boxwood

- Fine textured, evergreen – small, dark green leaves, often used for foundations or low, formal hedge
- Many cultivars: ‘Green Beauty’, ‘Wintergreen’, ‘Winter Gem’
- More adaptable than *Buxus sempervirens* (American/English Boxwood)
- Sun to part shade, moist well drained soil
- Shallow roots – Not drought tolerant



# Recurring Problems

- Cosmetic
  - Spider mites - both
  - Boxwood leafminer
- Serious, untreatable
  - Root Rot – both
  - Boxwood blight



# Black Root Rot - Japanese Holly

- *Thielaviopsis basicola*
- Soil borne, fungal root rot
- Serious, not treatable
- Long lived in soil  
Most active in cool weather, wet soil
- Effected plants are stunted, dieback, decline over long period – often die in drought



# Phytophthora Root Rot

- Soil borne fungal disease
- Plants appear stunted, off color, sections may die
- Roots are dark, outer covering slips off easily
- Active in wet soils in warm weather



# Boxwood Blight

- First found in US in 2011
- Fungal disease
- Plants defoliate, dark streaks on stems
- Most severe under warm, humid conditions, in shade
- Infected plants should be destroyed



# Boxwood Blight

Dark streaks on twigs and stems are a diagnostic symptom of this disease



# Japanese Holly and Boxwood Alternatives

## Dwarf Yaupon

*Ilex vomitoria*

- 3'-4' tall and wide
- Sun – part shade
- Drought tolerant
- Tolerates extreme pruning
- Cultivars: 'Shillings', 'Bordeaux', 'Nana'
- Most cvs. are male



# Carissa Holly

- *Ilex cornuta* 'Carissa'
- Sun – shade
- Very drought tolerant
- 3'-4' x 4'-6'
- Male - no berries
- Requires little pruning





# 'Duke Gardens' Japanese Plum Yew

- *Cephalotaxus harringtonia*
- Shade or sun
- Well drained soil
- 3'-4' x 4'-5'
- Deer resistant
- Slow to moderate growth rate



# 'Firepower' Nandina

- Sun to part shade
- Well drained soil
- One of the smallest shrubs
  - 2' x 2'
- Never blooms or produces berries – not invasive
- DEER may be a problem



*“Plan and plant for a  
better world”*

J.C. Raulston

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