Diagnosing Tree Problems that Don’t Have 6 Legs or Spores

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2012
Most Tree/Shrub Problems?

- Biotic?
- Abiotic?
Biotic Problems

- More Obvious, More Evident
Biotic Problems: Primary

- Fungal
- Insects
- Mites
- Critters

*Ganoderma* wood rot on hackberry (fungal)
Biotic Problems: Secondary

- Bacterial
- Mycoplasma-Like-Organisms
- Phytoplasmas

Ash Yellows: Phytoplasma
Biotic Problems: Secondary

- Bacterial
- Mycoplasma-Like-Organisms
- Phytoplasmas

Bacterial Leaf Scorch on Oak

Photo Credit: nicolewarduk.blogspot.com
Abiotic Problems:

- Weather
- Soil
- Chemicals
- Injuries
Abiotic Weather Problems

- Temperatures
- Drought
- Wind
- Hail
- Snow/Ice Loading
- Lightning

Hail Damage
Abiotic Weather Problems

- Temperatures
- Drought
- Wind
- Hail
- Snow/Ice Loading
- Lightning

Frost Damage to Forsythia Flower Buds
Abiotic Soil Problems

- pH
- Drainage
- Organic Matter
Abiotic Soil Problems

- pH
- Drainage
- Organic Matter

Amur Maple and Droughty Alkaline Soil
Abiotic Chemical Problems

- Chemical Drift (pollution)
- Deicing Salt
Abiotic Chemical Problems

- Chemical Drift (pollution)
- Deicing Salt

Imprelis® Damage on Ginkgo

Photo Credit: Purdue University TurfTips®
By-The-Way: Imprelis® Susceptible Trees

**Conifers**
- Arborvitae*
- Bird’s nest Spruce*
- Bald cypress*
- Colorado blue spruce*
- Concolor fir
- Dawn redwood
- Douglas fir
- Eastern white pine*
- Fraser fir
- Juniper
- Norway spruce*
- Yew

**Deciduous trees**
- Alder
- Amelanchier
- Boxwood
- Callery Pear
- Cottonwood
- Ginkgo*
- Honeylocust*
- Lilacs
- Maple*
- Mulberry
- Redbud
- River birch
- Sycamore
- Tulip Poplar
- Willow

Imprelis Damage on Honeylocust
Abiotic Injury Problems

- Lightning
- String Trimmer
- Lawn Mower
- Over Pruning
- Construction

String Trimmer Damage
Abiotic Injury Problems

- Lightning
- String Trimmer
- Lawn Mower
- Over Pruning
- Construction

Lightning Damage

Photo: John Forsberg
Abiotic Injury Problems

- Lightning
- String Trimmer
- Lawn Mower
- Over Pruning
- Construction

Photo: M. Lerman
Problem? Or Just an Incidence?

- Problem: An abnormality that causes a plant to exceed an acceptable threshold.
Exceeds an Acceptable Threshold

- Health
- Appearance
- Production
Problem? Or Just an Incidence?

- Incidence: An abnormality that causes an interruption but doesn’t exceed thresholds.

Spruce Gall Adelgid

Seasonal Drought
Health Decline: An Energy Spiral

- Predisposing Factors
- Inciting Factors or Agents
- Contributing Agents

Tired Tree
Predisposing Factors: Primary

- Chronic Drought Stress
- Chronic Defoliation
Predisposing Factors: Other

- Wind Storm Damage
- Soil Problems:
  - pH
  - Compaction
  - Drainage
- Zone 6 Plants in Zone 3
- Lawn Chemicals
- Over-Pruning
Predisposing Factors: Other

- Wind Storm Damage
Inciting Factors or Events

- Predisposing…Long-Term
- Inciting…Short-Term
  - Hail
  - Chemical Drift
  - Unseasonable Temperatures
  - Lawnmower Damage*
  - Construction Damage*

*Can Become Predisposing
Inciting Factors or Events

- Inciting...Short-Term
  - Construction Damage*

*Can Become Predisposing
Contributing Agents

- Predisposing…Long Term
- Inciting…Short Term
- Contributing…Opportunistic
  - Many Scale Insects
  - Bronze Birch Borer
  - 2-Lined Chestnut Borer
  - Armillaria Root Rot
  - Fungal Stem Cankers
Common Contributors
Symptomology...Confusing at Best

- Wilt
- Leaf Drop
- Leaf Color
- Leaf Spots
- Stunt: Leaves, twigs, plant
- Leaf Death
- Leaf Deformations
Symptomology…Confusing at Best

- Die-Back
- Stag-Heading
- Twig/Stem Deformations
- Cambial Loss (Bark Loss)

Photo: Jeff Hahn
Symptomology…Confusing at Best

- Flowering
- Fruit Set
- Seed Viability
- Flower/Fruit Deformations
Symptomology...Confusing at Best

- Instability

Photos by Kameron Kytonen
So, How Do You Know?

Sometimes, You Won’t Figure it Out.
Look for Patterns

- One Plant or All Plants?
- One Location or All Locations?
- One Side or All Sides?
- Seasonal? Every Year?
Take A Lesson From History

- Soil Moisture Last Autumn?
- Amount of Snow Last Winter?
- Last Frost this Spring?
- Herbicides Applied Last Year? This Year?
- Any Construction Activities within 4 Years?
- Maintenance Records?
'Closest Station' Climate Data Retrieval

The data matching your request is at the bottom of this page or should appear there within one minute.

Target location is  Lat: 44.95923 Lon: 93.08106

set location

retrieved only this station: 217377 SAINT PAUL

years: 2011 to 2011

number of missing days allowed per month: 3

retrieve data from the following data sources:

- [ ] Precipitation from High Density Network
- [ ] Precipitation from National Weather Service
- [x] Temperature from National Weather Service
- [ ] Snow from National Weather Service

get monthly  get daily

useDNRhid: False|True

Target: lat 44.95923 lon 93.08106
mon dy, year Tmx Tmn cc tttN rrW ss nnnn ooooooo pre aaaaaa Tmx Tmn aaaaaa sno SnD dis
Jan 1, 2011 23 0 218450 16.6 2.4 5 mi.
Jan 2, 2011  7 -2
Jan 3, 2011 14 -2
Jan 4, 2011 18 -5
Jan 5, 2011 12 -6
Jan 6, 2011 23  6
Jan 7, 2011 16  6
Law of Unintended Consequences

- Option One: As Predicted
- Option Two: Exceeded Expectations
- Option Three: Disastrous Endings
Law of Unintended Consequences

- Option One: As Predicted
Law of Unintended Consequences

- Option Two: Exceeded Expectations
Law of Unintended Consequences

- Option Two: Exceeded Expectations

Millenium Park, Chicago
Law of Unintended Consequences

- Option Three: Disastrous Endings

A Toledo street before and after EAB

Don’t worry, green ash survives everything!
Key Plants: Key Problems

- What are Most Important Trees/Shrubs?
- What are Major Problems?
- Which are Predisposing?
- Which are Inciting?
- Do Symptoms Match?
Key Plant: Littleleaf Linden

- Key Problems:
  - Stem Girdling Roots
  - Japanese Beetles

Yes, I know this isn’t littleleaf linden!
Symptomology

- Early Leaf Drop
- Stunted Growth
- Abnormal Lean
- No Trunk Taper
- Scorched Leaf Margins
Play “21 Questions”

- Any Construction Activities within 4 Years?
Play “21 Questions”

- Any Herbicides Used?

Imprelis and Dicamba Cause Foliar Damage
Play “21 Questions”

- What’s the Soil Like?
What’s Wrong With Me?

• Drought?
• Deicing Salt?
• Winter Hardiness Issue?
• Imprelis?
• Construction Damage?
• Poor Drainage?
What’s Wrong With Me?

• Construction Damage: Three-sided root loss to this mature Catalpa.
What’s Wrong with Me?

• Construction Damage?
• Deicing Salt?
• Drought-Like Conditions?
• Limited Root Volume?
• Winter-Cold Damage?
• Emerald Ash Borer?
• Asian Long-horned Beetle?
What’s Wrong with Me?

Ash Decline due to all of the Following:

• Deicing Salt?
• Drought-Like Conditions?
• Limited Root Volume?
• Winter-Cold Damage?
What’s Wrong with Me?

- Oak Wilt?
- Drought?
- Construction?
- Imprelis?
What’s Wrong with Me?
What’s Wrong with Us?

• Seasonal Drought?
• Imprelis?
• Verticillium Wilt?
What’s Wrong with Us?

- Seasonal Drought, Compounded by a Sandy Soil.
Want Some More? Okay, But No Multiple Choice This Time!
What’s Wrong with Us?

White spruce
What’s Wrong With Me?
What’s Wrong With Me & My Relatives?

Freeman Maples
What’s Wrong With Me & My Relatives...But Not All of Them?

Norway Maples
Parting Question:

Are You a Member of AAA?
AAA - Acer Abstinence Alliance

Remember: It Costs Nothing to Join!
What’s Wrong With Me?

Colorado Spruce
Hybrid Elms
Boxelder
River Birch
What’s Wrong With Me, But Not the Others?
What’s Wrong With Me?

Hint: It’s the middle of the summer and these are apple trees.
What’s Wrong With Me?

American elm, 39” d.b.h.
What’s Wrong With Me?
What’s Wrong With Us?

Freeman Maple

Red Oak

Photo Credits: Mark Vitosh
What’s Wrong With Us?

Photo Credit: Mark Vitosh
What’s Wrong With Us?
What’s Wrong With Us?
What’s Wrong With Me?

Tree Lilac
What’s Wrong With Me?