2008 Annual Convention
Utah Pest and Lawn Care Association
Tree Diseases
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Did You Or Your Trees Survive The Long Hot Summer Of 2007?
What Damaged my Trees in 2007?
What Damaged my Trees in 2007?

• 1. Heat
• 2. Drought
• 3. Chemical Toxicity
• 4. Improper Planting
• 5. String Trimmers and other Mechanical Damage
What Damaged my Trees in 2007?

- 6. Poor Soil
- 7. Iron Chlorosis
- 8. Root Rot
- 9. Salt Damage
- 10. People
Management Of Abiotic Diseases Of Trees And Shrubs
Abiotic Diseases Include Environmental Problems, Nutritional Problems And Many Other Nonpathogenic Maladies
Cultural methods of controlling plant diseases

- Select tolerant or resistant varieties
- Establish plants property
- Avoid plant stresses
- Maintain landscapes with appropriate water, fertilization, pruning, and cleanup
Plant Pathology Basics

• Disease
  - Anything that interferes with normal plant function
Plant Pathology Basics

- Biotic
  - Caused by living organism (pathogen)
Plant Pathology Basics

- Abiotic
  - Caused by non-living factor
Non-Infectious Diseases

• Also known as abiotic or nonpathogenic diseases
Non-Infectious Diseases

- Caused by such things as:
  - Unfavorable weather
  - Mechanical damage
  - Nutrient deficiency
  - Excess salts
  - Chemical toxicity
  - Water excesses or deficiencies
Non-Infectious Diseases

Unfavorable weather
Non-Infectious Diseases

Mechanical damage
Non-Infectious Diseases

Excess salts
Non-Infectious Diseases
Chemical toxicity
Non-Infectious Diseases

Water excesses or deficiencies
Non-Infectious Diseases

Nutrient deficiency
Most Diseases are Non-Infectious
Non-Infectious Diseases

• There are no chemical controls for noninfectious diseases
Drought Damage

• Host
  - Many Plants

• Symptoms
  - Scorched leaf edges
  - Needle burn and drop in conifers
Drought Damage

• Notes
  - Dramatically affected by temperature and watering practices

• Control
  - Choose species that are drought tolerant
  - Water correctly, time and amount
  - Avoid excessive fertilization and salts
  - Avoid sensitive species in windy areas
Summer Leaf Scorch

• Host
  – All species

• Symptoms
  – Drying and death of leaf margins and interveinal areas
Summer Leaf Scorch

• Control
  - Deep irrigation
  - Selective pruning
  - Treat for iron chlorosis on susceptible species
  - Avoid stress or mechanical damage to plants
Glyphosate Damage

• Host
  - All plants

• Symptoms
  - Yellowing foliage; small ribbon-like leaves; dieback of foliage and branches
Glyphosate Damage

• Control
  – Avoid getting glyphosate (Roundup) on any green foliage or bark; avoid high pressure spraying or spraying when windy
Phenoxy Herbicide Damage

• Host
  – All broad-leaved plants
• Symptoms
  – Damage is variable depending on the chemicals
  – Severe on young, foliage
Phenoxy Herbicide Damage

• Other Symptoms
  - 2-4,D causes curled leaves or long ribbon-like leaves with parallel veins
  - Dicamba causes cupping of the leaves and a white or light colored rim around the leaf edge
Phenoxy Herbicide Damage

• Control
  - Avoid spraying around sensitive plants, under the dripline of trees, or when temperatures exceed 85°F
  - Use same precautions with weed and feed materials
Sterilant Damage

• Host
  - All

• Symptoms
  - Marginal chlorosis and necrosis similar to iron chlorosis except vein bands are wide
Sterilant Damage

• Control
  - Avoid using soil sterilants (triazine herbicides) around trees
  - Activated charcoal, soil removed or barriers may reduce damage on existing trees
Faciation

• Host
  - Birch, maples, many others

• Symptoms
  - Abnormally flatter and wider stems develop
Faciation

- Control
  - Prune out damaged tissue
  - Avoid mechanical damage to the tree
  - Many suspected causes including genetics, diseases, mites, and chemicals
Transplant Shock

• Host
  - All Plants

• Symptoms
  - Scorched leaf edges
  - Needle burn and drop in conifers
  - Plant death usually within three years
Transplant Shock

• Notes
  - Dramatically affected by temperature and watering

• Control
  - Choose quality plants from good suppliers
  - Handle plants correctly
  - Water correctly, time and amount
  - Avoid excessive fertilization and salts
  - Avoid sensitive species in windy areas
Mechanical Damage

• Host
  - All plants

• Symptoms
  - Bark is removed at tree base or large wounds are seen on trunk
  - This causes leaf drop and dieback in the treetops
Mechanical Damage

• Keep all mechanized equipment away from tree trunks
• Use tree rings, mulches, or appropriate herbicides to keep grass away from trees
Iron Chlorosis

• Host
  - All species; silver maple, pin oak, vine maple are very sensitive

• Symptoms
  - Green veins, yellow interveinal areas, dead leaf margins, dieback
Iron Chlorosis

• Control
  - Choose species that are resistant
  - Avoid over-watering
  - Apply foliar sprays of iron chelates and be sure to include surfactant
  - Apply soil chelate (Sequestrene 138 or Miller Ferriplus Iron)
Needle Drop

• Host
  - Needle-type evergreens

• Symptoms
  - Early drop of needles
  - Needles usually turn yellow or brown prior to dropping off
  - This usually occurs gradually but may occur suddenly
Needle Drop

• Control
  - No problem if there is no drop of new or healthy needles
  - Water trees adequately but do not overwater
  - Evergreens may need water in late fall or winter during dry years
Root Rot

- Host
  - Many species

- Symptoms
  - Poor growth
  - Small leaves and fruit
  - Rotted roots and tree
  - Death
Root Rot

• Control
  - Avoid planting sensitive species on wet or poorly drained sites
  - Cut back on water
  - Improve soil drainage
Trunk Rot

• Host
  - All woody plants; soft wood species are more susceptible

• Symptoms
  - Rotted wood; fruiting bodies can be hard conks or soft fungal growth
Trunk Rot

• Control
  - No control possible once infection starts
  - Avoid pruning large branches and avoid trunk injury
  - Remove decayed trees that present hazards
Salt Damage

• Host
  - Many Plants

• Symptoms
  - Scorched leaf edges
  - Needle burn in conifers
  - Usually most severe in older needles
Salt Damage

• Control
  - Choose species that are not sensitive to salt
  - Select salt free areas, soils, and amendments
  - Avoid over-fertilization
  - Avoid de-icing salts
What People do to Their Trees
What People do to Their Trees

• Host
  - Any tree they can find

• Symptoms
  - Almost anything
What People do to Their Trees

• Control
  – Don’t let irresponsible people have trees!
Southwest Winter Injury

• Host
  - Many trees but more severe on trees with thin bark including *prunus* species, linden, and maple

• Symptoms
  - Cracking, peeling bark on the southwest side of the tree
Southwest Winter Injury

• Control
  - Wrap young trees with white tree wrap in the winter
  - Paint trunks with white latex paint
  - Shade trunks during winter
Winter Injury

- **Host**
  - Many plants

- **Symptoms**
  - Dried foliage on broad-leaved evergreens
  - Dead branches
  - Cracking and peeling bark
Winter Injury

• Control
  - Choose adapted species
  - Avoid fertilizing trees in late summer because it may stimulate vegetative growth
  - Prune out dead tissue
Infectious Diseases

• Also known as biotic or pathogenic diseases
Infectious Diseases

- Pathogens grow within plant tissue and disrupt function
Infectious Diseases

- May spread to new plants
Stages of Development

- **Inoculation**: arrival of fungus spore bacteric nematode egg or virus
- **Incubation**: multiplication of pest tissue
- **Infection**: entrance into plant by the disease causing organism
Plant Disease Development

All three factors must exist for disease to occur
Infectious Agents in Plants

• Classes of infectious agents
  - Fungi
  - Bacteria
  - Viruses
  - Phytoplasmas
  - Nematodes
  - Parasitic seed plants
Fungi

- Lack chlorophyll
- 100,000 species
- Reproduce by spores
- Saprophytes decompose dead organic matter
- Parasites attack other organisms
Coryneum Blight
Bacteria

• Small one celled organism
• Divide very rapidly
• Causes relatively few tree diseases
• Chemical control requires bactericides
Fireblight on crabapple
Viruses

- Must reproduce in living cells
- Must be transmitted mechanically by insects propagation or handling
- Only visible with electron microscopes
- No practical chemical controls
Virus on Lilac
Phytoplasmas

• Discovered relatively recently
• Diseases previously were thought to be caused by viruses
• Organisms like a bacteria without a cell wall
Western X of Cherry
Nematodes

• Small eel-shaped worms
• Usually problems in warmer areas
• Most feed on roots
• Attack many plants
• Not all nematodes attack plants
Root Knot Nematode Lesions
Parasitic seed plants

- Vascular seed producing plants that attack other plants
- Mistletoes and dwarf mistletoes attack woody plants
- Dodder attacks herbaceous plants
Dwarf Mistletoe
Mistletoe
Leaf Tatter

- Host
  - Maple, many others

- Symptoms
  - Numerous holes
  - Tattered foliage appearance
Leaf Tatter

• Control
  - Cause of this disease is often uncertain; suspected causes include frost, viruses or genetic causes
  - Often caused by early season insect feeding before the buds unfold
Sycamore Plant Bug
Coryneum Blight
Thanks For Coming