

Top Ten Abiotic Diseases

Circling/Girdling Roots

Symptoms

- Overlapping roots visible
- Progressive thinning of tree canopy
- Branch die-back
- Early tree death

Causes

- Root circling induced by containers
- Width of planting hole – too narrow
- Root bound nursery stock

Remedies

- Purchase healthy nursery stock
 - * Not root bound
 - * Less than 2 years in original container
- Scoring or "teasing" roots apart is typically not recommended with woody plants
- Dig planting hole 2-3 times wider than root ball



Excessive Irrigation

Symptoms

- Poor root establishment
- Gradual decline in health of the plant
- Iron chlorosis
- Root rot problems
- Weak or stunted growth
- Can mimic drought-stress symptoms

Causes

- Excess irrigation
- Compacted or heavy clay soils
- Poor drainage

Remedies

- Reduce irrigation
- Water deep and infrequently
- Improve soil drainage
- Plant in raised beds



Iron Chlorosis

Symptoms

- Intervenial yellow tissue
- Green veins
- Current seasons growth
- Marginal burning

Causes

- Alkaline soils
- Soil compaction
- Saturated soils

Remedies

- Avoid sensitive plant species
- Aerate compacted sites
- Avoid water saturated soil conditions
- Apply chelated iron (FeEDDHA) in early spring before growth begins



Herbicide Damage

Symptoms

- Curling or cupping leaves
- Prominent veins
- Inter-veinal discoloration
- Elongated stem growth
- May eventually cause death

Causes

- Broadleaf weed killer misuse
- Soil sterilant damage

Remedies

- Use all herbicides according to label
- Avoid soil sterilants in the vicinity of desirable plants
- Keep damaged trees as healthy as possible



Winter Damage

Symptoms

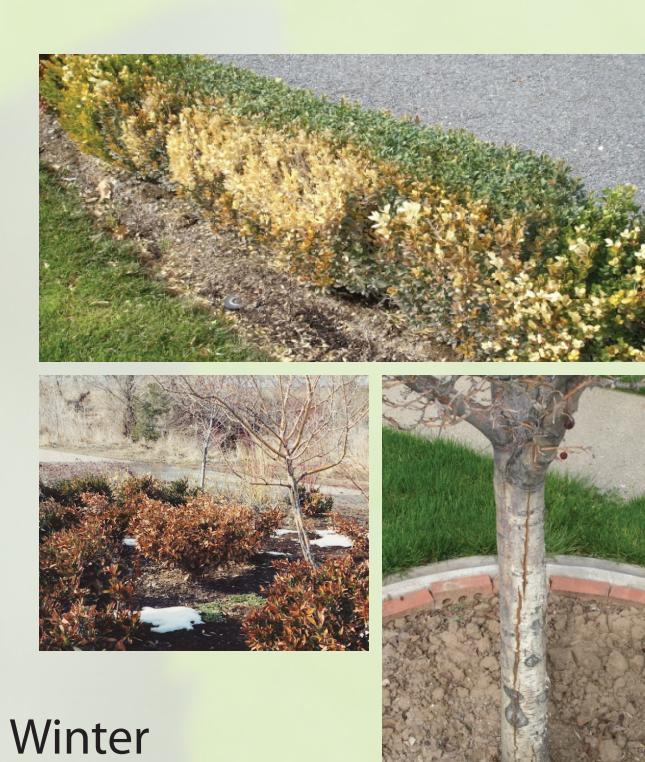
- Brown needles or leaves in Spring
- Excessive needle drop
- Dieback of twigs and small branches
- Southern exposed bark damaged

Causes

- Dry Winter winds
- Inadequate soil moisture for Evergreens
- Young thin bark subject to freezing temperature fluctuations

Remedies

- Insure sufficient soil moisture in Fall and Winter
- Protect young trunks
- Place plant in proper exposure



Mechanical Damage

Symptoms

- Slow growth rate
- Die-back above damaged area
- Sunken or sloughing bark
- Signs of visible damage

Causes

- Improper pruning practices
- Lawn care equipment damage
- Animal damage (deer, rodents, cats)
- Negligent acts (vandalism)

Remedies

- Choose the right size of plant for the area
- Keep turfgrass and lawn care equipment away from tree trunks
- Avoid "topping" trees when pruning



Planting Depth

Symptoms

- Slow growth rate
- Thinning tree canopy
- Early die-back
- Lack of visible root flare
- Trunk decay

Causes

- Re-potted nursery stock
- Depth of planting hole – too deep
- Buried root flare on B&B trees

Remedies

- Select high quality nursery stock
- Examine planting depth before purchase
- Look for voids around the tree trunk in container
- Plant root flare at final soil grade



Packaging Material

Symptoms

- Slow growth rate
- Gradual decline in health of the plant
- Signs of visible packaging material
- May eventually cause death

Causes

- Nursery tags, wire baskets, twine, staking materials, and even containers are left on the plants, usually at the time of planting.

Remedies

- Remove all packaging materials at the time of planting
- Carefully avoid disturbing the root ball when planting
- Carefully remove packaging on B&B plants after they have been placed in the planting hole



Summer Scorch

Symptoms

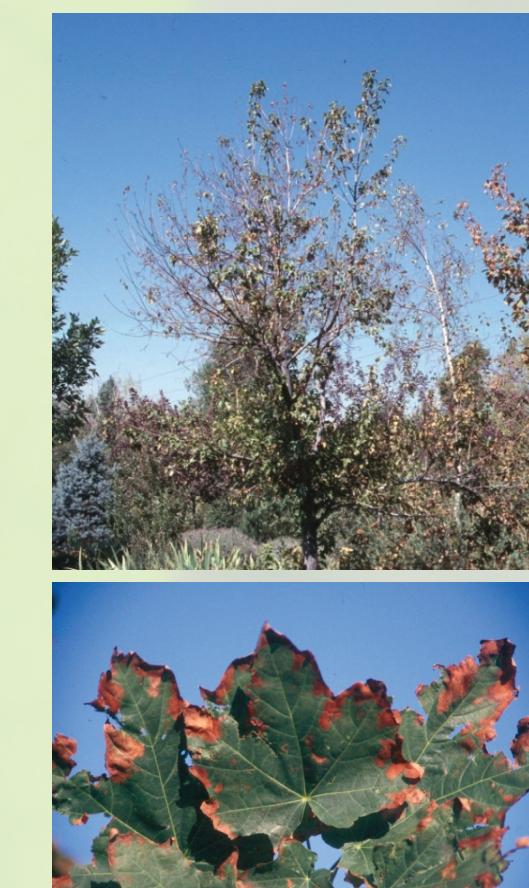
- Browning of the leaf margins
- Reduced vigor - late season
- Damage increases with heat
- May cause brown inter-veinal spotting
- Target rings

Causes

- Hot dry summer winds
- More problematic on larger leaves
- Poorly watered trees
- Some plants are just prone to damage

Remedies

- Water deep during summer heat
- Reduce spring fertilization
- Use mulches at tree base
- Improve soils water-holding capacity



Salt Damage

Symptoms

- Brown needles on new growth
- Drought stress in appearance
- Leaves scorch as they emerge in spring

Causes

- Heavy native salts in soils
- Excess salts from de-icing materials
- Over-fertilization

Remedies

- Use low salt de-icing materials.
- Fertilize properly (consider soil tests before fertilization)
- Deep water to leach excess salts from soils
- Use salt tolerant plants in vulnerable locations

