

Arthropods and Drought



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Satellite Program

Ips Bark Beetles

- *Ips pilifrons* – spruce
- *Ips pini* – pine
- *Ips confusus* – pinyon pine



Ips Bark Beetles



- Adults colonize & reproduce in conductive tissues
- Construct tunnels (galleries) to lay eggs & feed
- 6-8 wk life cycle; up to 5 gens. per year
- Attack trees under stress
- Attack smaller diameter limbs at tops of trees first



Ips Bark Beetles

Typically considered secondary pests
Prefer fresh downed wood and slash, and weakened trees
Population build-up in area can result in attack on nearby healthy trees
Current Utah situation: many stressed spruce in landscapes and nurseries due to lengthy drought and summer heat stress



Management of *Ips* in the Landscape

- Maintain tree vigor, avoid stress (proper watering, planting site, avoid injuries)
 - 2-4" water every 2-6 weeks
 - Avoid planting in very dry sites
- Remove & dispose of infested material
 - Dispose 2-3 miles away from hosts
- Remove and treat infested material
 - Chip and spread to dry
 - Burn
 - Remove all bark
 - Cover logs with ≥ 10 ml clear plastic & heat to lethal temperatures

Management of *Ips* in the Landscape

- Apply preventive insecticide or apply to “lightly” infested trees:
 - Carbaryl (Sevin): flowable, 1-2% ai solution
 - Permethrin (Astro)
 - Treat in spring before beetle flight (late April to early May) or treat in fall (late Sep to Oct)
 - 12-18 months protection (carbaryl)
 - High-pressure sprayer (≥ 250 psi) for large trees
 - Apply to entire bole & larger limbs

Management of *Ips* in Pinyon Pine Stands

- *Ips confusus*, Pinyon Engraver Beetle
- Colorado and single-leaf pinyon pines
- Thinning
 - Below 10% of max stand density index
 - Cut stumps close to ground
 - Delay until late July
 - Burn/dispose of slash
- High value trees may be treated with insecticides

Tree Borers

Flatheaded Borer (*Chrysobothris*)



Girdling Injury



Adult (1/4-1/2 inch)



Beetle larva

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Tree Borers

- Avoid planting trees with borer problems (birch, poplars, aspen, ash, spruce)
- Maintain good tree health – stressed trees are more prone to attack
- Remove & burn sources
- Do not plant new trees next to sources
- Prevent trunk sunburn by painting trunks
- Keep weeds and debris away from base of trunks
- Preventive trunk insecticide sprays
- Systemics for some species



Tree Borer Management

- Trunk Protection
 - Timing is critical (northern Utah)
 - Ash/Lilac borer – May 1- late June
 - Bronze birch borer – late May – June
 - Aspen borer – May-July
 - Peachtree (Crown) borer – late June – August
 - Poplar-and-Willow borer – July – Sept.
 - Locust borer – August – Sept.
 - Shothole borer – June and late Sept.
- Insecticides: carbaryl, endosulfan, pyrethroids (permethrin, bifenthrin)

Systemic Insecticide

- **Imidacloprid** (Merit, Bayer Advanced Garden Tree & Shrub Insect Control, BAG Plant Spikes (fert. + insect.)
 - Soil drench, soil injection, foliar
 - Soil: translocation delay of 60 days or longer
 - N containing fertilizer may enhance uptake
 - Target insects: soft-bodied pests on leaves and limbs (aphids, adelgids, leafminers, leaf beetles, mealybugs, psyllids, scale); longhorned borers, flatheaded borers, white grub larvae

Root Borer

Larvae bore into roots
and crown



Large beetle
Prionus californicus

Adults fly at night

Older sweet cherry roots
with extensive damage;
common in cottonwoods



No success with insect-
parasitic nematodes;
systemic may be effective

Spider Mites

- Hot, dry weather promotes mite population growth
- Multiple applications of pyrethroid insecticides (permethrin – Astro) kill predator mites and cause mite burn to trees – fruit trees
- Controls: pressurized stream of water, horticultural oils, insecticidal soap
- Don't recommend Kelthane or Vendex unless a rescue treatment
- Biological control: Predaceous mites

