Tree Pests

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Yard Whispers www.yardwhispers.ca

About Us

Trees are our Passion

Yard Whispers is a leading tree, forestry and agroforestry **consulting company that provides services** for sustainable management of trees/forest on public and private lands

We offer services to:

- Residential and commercial business
- Golf course industry
- Municipal governments
- Parks and campgrounds
- Urban developers
- Legal and regulatory bodies
- Educational institutions
- NGO – provincial, national and international

Yard Whispers is **wholly owned subsidiary of** ATTS Group

Our Services

Arborist Services

- Pruning services for fruit, roses and small trees
- Integrated Pest Management- Tree pests ID, assessment and recommendation
- Tree Risk and Hazard Assessments (**TRAQ Certified)**
- Tree appraisal and value assessment
- Tree preservation and protection plan
- Tree planning and designs for acreage owners

Urban/Town Tree services

- Tree inventory for rural and urban areas
- Urban forest management plan
- Development of tree bylaws, policy and regulations

Natural forest management

- Woodlot management plans- harvesting and reforestation
- Tree/forest design, planting and species selection for reforestation and reclamation projects

Agroforestry Services

- Shelterbelts and windbreaks design
- Riparian and natural revegetation
- Biodiversity, wildlife and pollinators planting

Key Messages

- ***Treatment without diagnosis is malpractice***
- Diversify your property by planting variety of trees and shrub species
- Most of insects, fungus, wildlife, virus and bacteria's **are beneficial**
- Understand and recognize difference between symptoms vs cause
- Do not use any chemicals if possible – use them as last resource
- Do not panic but monitor, monitor, monitor
- Diseases are very difficult to control
- Environmental issues are very difficult to diagnose BUT most of time **AVOIDBALE**
- Pruning is one of tools to mitigate pest problem
- Educate/learn about pests

Photo by: Terry Krause

Diversity at Terry Krause place (52 species)

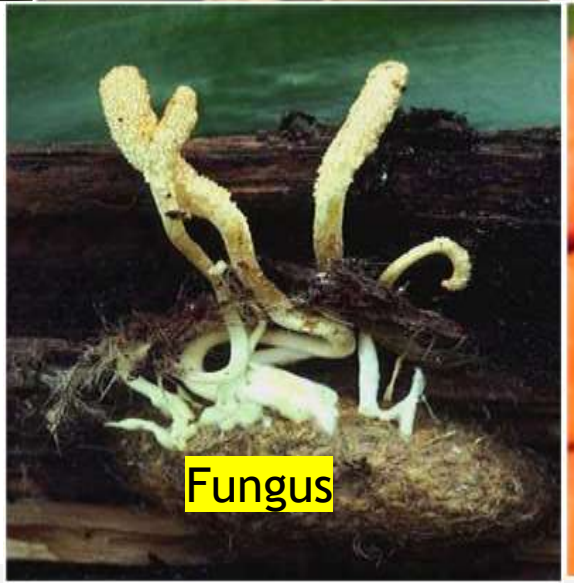
Prairie Fire Crab	Snow Sweet Apple	Rescue Crab	Mock Orange
Brooks Poplar	Okanese Poplar	Northwest Poplar	Green Giant Poplar
Pembina Plum	Brookred Plum	Double Flowering Plum	Elderberry
Lodgepole Pine	Mugo Pine	Common Lilac	Vilosa Lilac
Red Osier Dogwood	Yellow Dogwood	Variegated Dogwood	Red Elder
Nanking Cherry	Evans Cherry	Carmine Jewel Cherry	Cupid Cherry
Crimson Passion Cherry	Romeo Cherry	Juliette Cherry (all Romance Series but Carmine Jewel)	
Western Chokecherry	Western Sandcherry	Mayday	Red Maple
Highbush Cranberry	Snowball (vibernum)	Rowen Berry	Mountain Ash
White Spruce	Alberta Spruce	Balsam Fir	Bird's Nest Spruce
4 Juniper Species	Native Gooseberry	Hedge Rose	American Elm
Laurel Leaf Willow	Sharp Leaf Willow	Siberian Larch	Green Ash
Manitoba Maple	Red Maple	Saskatoon (smoky)	Siberian Elm
Black Currant (Ben Nevis)	Red Currant	5 Honeyberry Species (tundra, aurora, borealis +	
Raspberry - Boyne	Raspberry – Red Mammoth	Paper Birch	Pussy Willow
Bur Oak	Hazelnut	Cotoneaster	Forsythia

Encourage Beneficial Wildlife

- Protect wetlands
- Adopt Beneficial Management Practices
- Diversify Habitat (shelterbelts, woodlots)
- Leave Habitat (fence lines, old & dead trees, brush)
- Plant variety of tree, shrub and plant species

Beneficial insects, fungus, bacteria and virus

99 % are beneficial



"When you kill off the natural enemies of the pests, you inherit their work"

Dr. Carl Huffacker

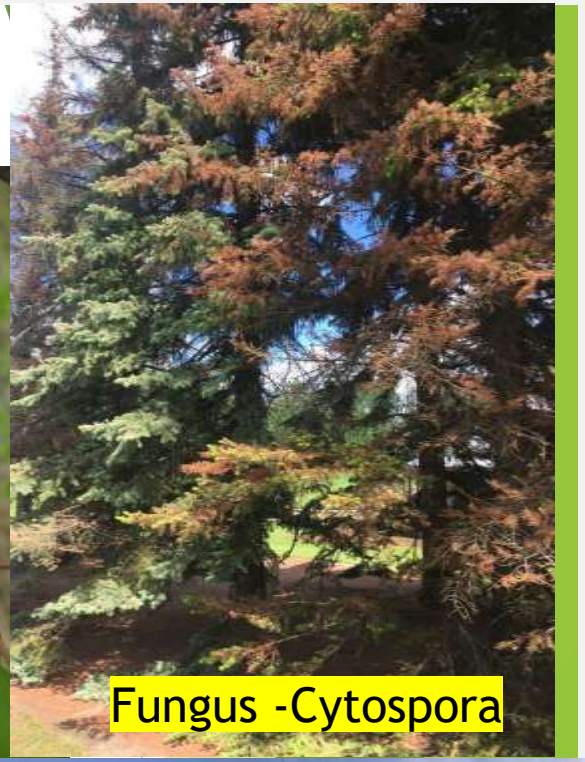
American biologist, ecologist and agricultural

Symptoms vs Cause


Winter burn


Chemicals – aerial spraying


Insect – Leaf roller


Fungus -Cytospora


Woodpecker


Porcupine


Fungus


Fireblight - Bacteria


Salt

Surrounding site assessment

- Salt on road may drain into trees
- Competition from mature trees
- Crop spraying
- Livestock damage (urea, browsing, compaction,)
- Roots damage
- Age of forest
- No understory vegetation due to grazing
- Wildlife in the area
- Drought on aspen
- Chemical use on the lawn
- Nutritional issues- change in color
- Soil compaction and other soil issues


Acreage


Farm


Windbreak


Riparian


City


Urban street

Galls - just cosmetics

The Bad/Very Ugly

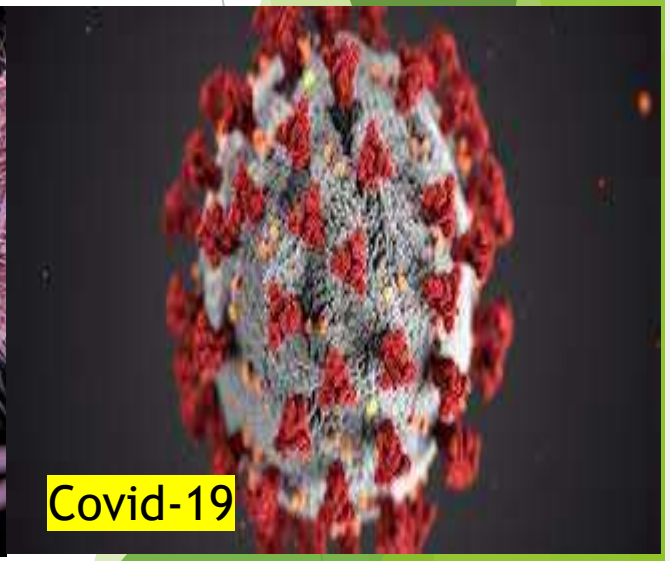
Pest: Any unwanted or destructive organism that ranges from insects, fungi, plants, bacteria, viruses, etc.


MPB


Nodding thistle


Armillaria root rot


Salmonella


Covid-19

What to look for – close up inspection

Leaves

Needles

Trunk

Roots

Spruce Budworm

Photos: NRCAN - Canadian Forest Service

Time of year: late May to June

Symptoms: Rusty shoots usually on top, frass, webbing, defoliation. Feed on old needles first than on new growth. Wasteful feeder

Control Method:

- Hand picks for small trees.
- Sprays include biological insecticide such as *Bacillus thuringiensis* var kurstaki (Btk)
- variety of chemical insecticides (malathion).

Aphids

- All different shapes and colours
- sucking the sap from leaves, causing them to turn yellow, curl or become deformed and eventually fall off
- Extract sticky honeydew
- Aphids attract the ants to protect them which can be nuisance
- Population grow rapidly and there are several generations
- **Control:**
  - Soak them high pressure water- they don't like water, cold weather, rain
  - Natural predators like lady beetles, lacewings and others
  - Insecticide soap, horticultural oil, dormant oil and
- Insecticides registered for control of aphids include: malathion, diazinon, dimethoate, permethrin and pirimicarb.
- Before applying any insecticide check for predators, the amount of aphid damage and make sure the insecticide is not toxic to the plant.

Spruce Spider Mite

Photos: NRCAN - Canadian Forest Service

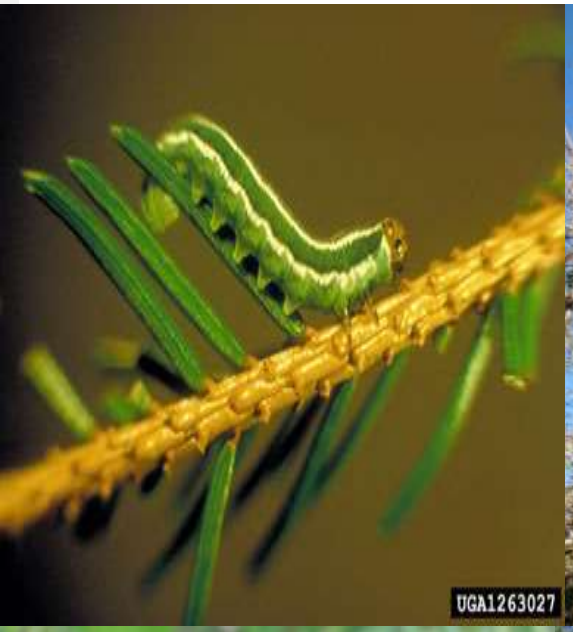
Time: Late May to September

Symptoms: Webbing & discolored needles. Early damage is noticeable in lower branches(yellow colours) and then it spread in upper branches. Adults and nymphs pierce the needles and suck the sap.

Control Methods:

- Usually, natural predator's control mite population
- Heavy rain or soak with water, soapy water or insecticides (miticide) as well heavy wind.
- Encourage beneficial such as Predatory mites (*Typhlodromus*) or Lady beetles

Spruce Sawfly (yellowhead and European)



Host : spruce

Time: Larvae feed on bud needles until late June or July.

Symptoms: Defoliation of buds, presence of S-shaped worms, frass, etc.

- They feed in groups, after 5-6 years of defoliation it can kill tree

Control Method:

- Remove larvae by hand, squish with gloves.
- Chemical insecticides may be used for severe outbreaks. Use Malathion
- Insecticide application should be made when damage is first noted.

White pine weevil (mostly on spruce)

- **Time:** Mid-May to June or July
- **Symptoms:** Wilting leaders with small holes in stem
- **Control Method:**
  - Prune in July
  - It will not kill tree but usually tree will have split tops
  - Infected leaders should be cut back at the level of the topmost whorl of unaffected branches.
  - New leader will form following year.
  - There is very few chemicals to control

Photos: NRCAN – Canadian Forest Service

Willow leaf blotch miner

- **Host: All** willow species but prefer native willows
- **Time:** June and July
- **Symptoms:** Blotches on leaves and larvae will be visible inside the leaf if you expose leaf against light
- **Control Method:**
  - Cosmetic pest
  - It will not kill tree or shrubs.
  - Water trees during dry periods to keep them healthy.

Spruce bud scale

- **Host:** Colorado, Norway, white and black
- **Time:** crawlers late June , July and august
- **Symptoms:** Nymphs and adults feed on the needles by sucking the sap. Black sooty mould as results of fungus feeding on honeydew nutrient
- **Control Method:**
  - Usen insecticide in august when crawlers are active
  - It will not kill tree, but heavy feeding can cause needle discoloration and loss, especially on the lower part of the tree.

Spruce Gall Adelgid

(also on firs and larch!)

Time: Spring & Summer

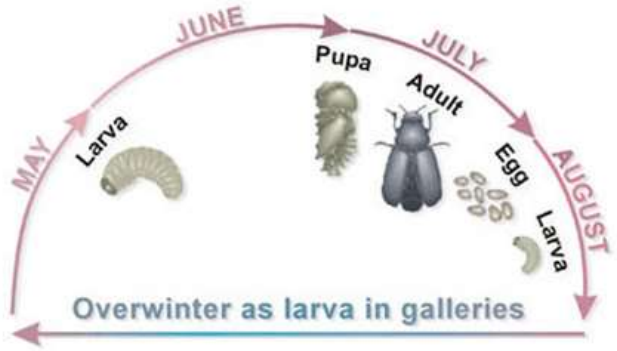
Symptoms: Galls, burls, and swelling

Control Method:

- Hand pick and burn.
- It is cosmetic pest
- Birds and other animals use as food

Photos: NRCAN - Canadian Forest Service

Mountain Pine Beetle (MPB)



Time: Late May and June

Symptom: Yellow / red needles (July & August), trunk redness, pitch tubes, J-shaped galleries.

Control: Anti-aggregation - pheromone "verbenone" or trap logs, but best to remove tree and burn it.

Northern Pitch Moth (Pitch blister moths)

Host : pine mostly but also spruce and fir

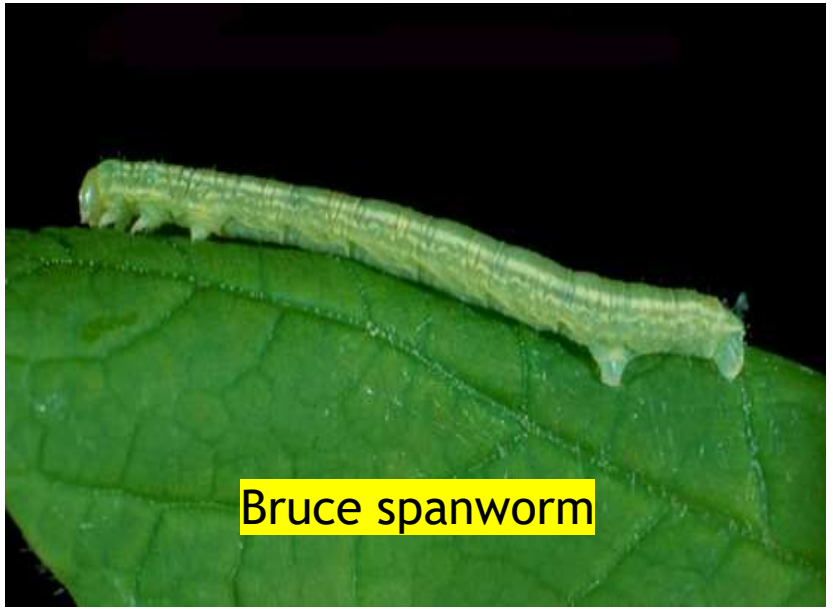
Time: June into September

Symptom: Sappy blisters on trunk and/or branches. Prefer mature pine trees but also spruce

Control:

- Natural predators;
- dig out larvae by wire; or
- use systemic chemical control.
- Avoid trunk damage by lawnmower and weed whacker

Defoliators on hardwoods



Forest Tent Caterpillar

Time: April-June

Symptoms: Defoliation & no visible silk

Control Method: Sprays include biological insecticide such as *Bacillus thuringiensis* var kurstaki (Btk) or a variety of chemical insecticides.
On small trees water jets can knock off the larvae from leaves.

Bruce Spanworm

Figure 1. Bruce spanworm larval feeding (see arrow; note holes in leaves)

Photos: AB Agriculture and Forestry(L) and Canadian forest Services (C) and (R)

Hosts: aspen, poplars, MB maple, willow, saskatoons, chokecherry
Time: mid-May to late June or early July
Symptoms: Defoliation (holes) & visible silk webbing.
Control Method: Sprays include biological insecticide such as ***Bacillus thuringiensis*** **var kurstaki (Btk) or a variety of chemical insecticides.**
Control method: use stick bend or strip at base of trunk in fall to prevent female climbing in spring

Large Aspen Tortrix

Host: aspen, poplars, willows and birch
Time: April-June

Symptoms: Defoliation & only in high population visitable silk webbing.

Control Method: Sprays include biological insecticide such as *Bacillus thuringiensis* var kurstaki (Btk) or a variety of chemical insecticides.

Aspen Leaf Roller

Host: aspen and poplars
Time: April-June

Symptoms: Defoliation & only in high population visitable silk webbing.

Control Method: NO control - they will not kill trees and **it is "cosmetic" pest.**

- Keep trees water.
- Horticulture oil prior tree leaf out.
- Tree will leaf out later in year after infestation

Photos: MD of Provost

Linden looper

Hosts: Maple, elm, oak, linden, apple, birch, American plum and

Time: Early May till early July

Symptoms: Defoliation & no visible silk

Control Method: Sprays include biological insecticide such as *Bacillus thuringiensis* (Bt) in early larvae stage

Banding - In late September, before adult emergence, a 10 cm band of paper-backed insulation or cotton batting and tar paper (paper side out) is attached to the tree at a one meter height. A thin layer of sticky adhesive (Tanglefoot®) is applied to the band.

Impact of defoliators

- Reduces tree vigour; growth and increase chances of mortality
- After infestation healthy trees re-foliate later but with smaller leaves
- Consecutive and severe infestation may kill treetops, side branches and whole tree
- Weaken trees and other pests or environmental disorders(drought) may kill trees
- Nuisance – larva crawling and silks(parks or public space area) , mature moths blocking vents, lights at home
- Large number of larvae may cause slippery conditions on highways that become a traffic hazard

Poplar Borer

Swedish and trembling aspen, towering and balsam poplar

- **Time:** year round
- **Symptoms:** holes, orange oozing and sawdust on bottom of tree
- **Control:**
  - Overall, not much
  - Diversify tree choice
  - Trees can be cut and regenerated from suckers
  - Prune heavily infested trees near buildings, parking lots or playground can break and damage properties or injured people

Bronze Birch Borer

- **Time:** year round
- **Symptoms**: A thinning crown, discoloration of the foliage and premature leaf drop, branch dieback in the crown.
- **Control**:
  - Keep the trees healthy – WELL WATERED and vigorous during dry spells
  - Avoid root damage
  - Pruning dead or dying branches be cut out and incinerated. Prune below last visible hole
  - Fertilize trees in spring and water in fall very well
  - Do not leave infested wood for firewood – burn them

Ash Plant Bug

- It is called group of insects called “True Bugs” which are characterized by lacking hard wing covers like those found on beetles
- **Trees :** Green and Black ash
- **Time:** Ash plant bugs produce two generations each year - early June and mid July and August
- **Symptoms**: Yellow stippling on leaves, small black dots of excrement
  - insects feed by piercing leaf tissue and sucking plant juices from the leaves
  - Heavy feeding can kill leaves
- **Control**:
  - best solution in most cases is to ignore and tolerate them.
  - **Keep the trees healthy - WELL WATERED and vigorous during dry spells**
  - Insecticidal soap applied at 10-day intervals can stop heavy outbreaks
  - In month of June, you can wash out bugs from water jet – in July, this method is ineffective

Photos: Camrose county (top), Grande Prairie County (Center) and Stettler county (bottom)

Birch leaf miner

- **Time:**
  - Mid May insect lay eggs. 3-4 species of sawfly
- **Symptoms:** brown blotch patch with larva inside
- **Control**
  - In 1990 City of Edmonton introduced small tiny wasp (Lathrolestes luteolator) to control this insect
  - No chemical control
  - Usually, tree recovers
  - Keep the trees healthy – WELL WATERED and vigorous during dry spells
  - Avoid root damage
  - Fertilize in spring

Oyster shell scales

Cotoneaster, dogwood, fruit trees, lilac, ash, maple, dogwood, poplar, and willow.

- Time : early June
- Symptoms:
  - oyster-shaped “shells” cover bark on shrubs and trees
  - Reproduce mid June and eggs hatch “ crawlers” that move to new position
  - Pierce bark and feed on “ fluids’ on twigs
  - Serious problem to cotoneaster.
- Control (in early spring/June)
  - Apply a Horticultural Oil
  - ladybugs (lady beetles), lacewings and other natural predators
  - Pruning to the ground of infested branches

Insect management

- Do not panic- most of insects are beneficial insects
- Monitoring, monitoring, monitoring and deal from the start – do not wait
- Encourage beneficial wildlife
- Learn about major insect
- Insects usually are indicator of overall health issues with trees –weaken trees are more susceptible
- Use chemicals as last resort

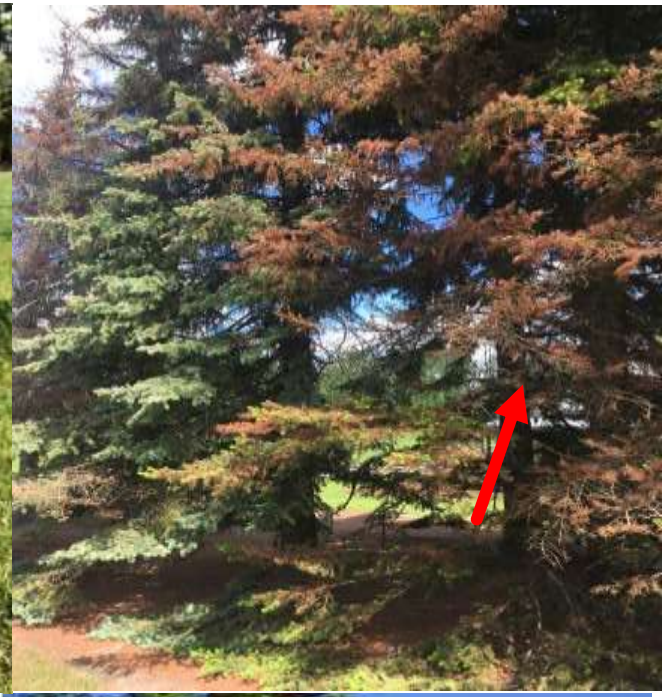
Needle Cast

(Rhizosphaera, Stigmina and Lophodermium fungus)

- **Time**: Spring to Fall
- **Symptoms:**
  - 2nd year needle discoloration in spring or early summer,
  - black spotting (use magnifying glasses to see it)
  - Interior needle drop
  - Infestation starts in lower branches
- **Control Method:**
  - It is cosmetic pest and rarely kill branch or tree
  - Prune dead branches to increase air circulation
  - Fungicides can be applied to high value trees.

Cytospora Canker

(wide range of tree and shrub species)



- **Time**: Spring to Fall
- **Symptoms:**
  - spread by rain, wind or animals
  - Infestation starts in lower branches
  - Interior needle drop, whole branch dead
- **Control Method:**
  - Prune dead branches to increase air circulation late in winter
  - Do not prune during wet and rain period
  - Sterilize pruning tools after every cut

Poplar Leaf Spot (*Septoria* & others)

Photos: NRCAN - Canadian Forest Service

- **Time:** Growing season
- **Symptoms:** Balsam or hybrid poplar appear to have brown foliage and premature leaf drop. Leaf discoloration (blotches or spotting). Orange colored branch and stem cankers.
- **Control Method:**
  - Prune infested branch
  - Remove fallen leaves in infested areas.
  - Heavy infested trees should be removed.

Fire Blight (bacteria)

Infects: apples, pears, hawthorns, mountain ash, cotoneaster

- **Time**: Growing season with warm temperatures (24-28° C) and high. Fire blight can become very severe following hailstorms.
- **Symptoms**:
  - Burnt colour of of foliage, dieback, black colour cankers on stem and trunk
  - amber-colored droplets of bacterial ooze
- Spread by wind, insects, wind and improper pruning
- **Control Method:**
  - Pruning and removal of infected material with sterilized pruners at least 2 feet below
  - Remove entire infected material and do not leave site

Black Knot (fungus)

- **Time:** Infection occurs during spring and growing season- spread by air, rain and human improper pruning
- **Symptoms:** Black swellings on branches
- **Control Method:**
  - Pruning – preferable January till end of March.
  - Cut at least 12 inches below infected branch
  - It is important to carefully sterilize pruners between every cut.
  - DO NOT PRUNE during growing season

Bronze Leaf Disease -BLD

- Aspen, Swedish poplar, towering poplar
- Spores are dispersed from April to June when temp are around 18 C with lot of rainfall … Symptoms are visible in late August and early fall
- Control: Remove and destroy fallen leaves if possible.
- Prune to remove dead branches 12 inches below disease and increase air circulation; sterilize pruning equipment after every cut
- DO NOT chip, compose or use this material for firewood – put in landfill in plastic bag or BURN immediately
- Avoid dense plantings that can reduce air flow.
- Avoid using monocultures

Disease management

- Harder to determine – most of the time you need lab results
- **Alberta Plant Health Lab provides services to municipalities to ID tree disease issues** – contact your county to send samples
- Very little can be done to control –except pruning, removing leaves, cutting entire tree
- Very few chemicals that can be use – most of the time; timing is big issue

Drought – What is it?

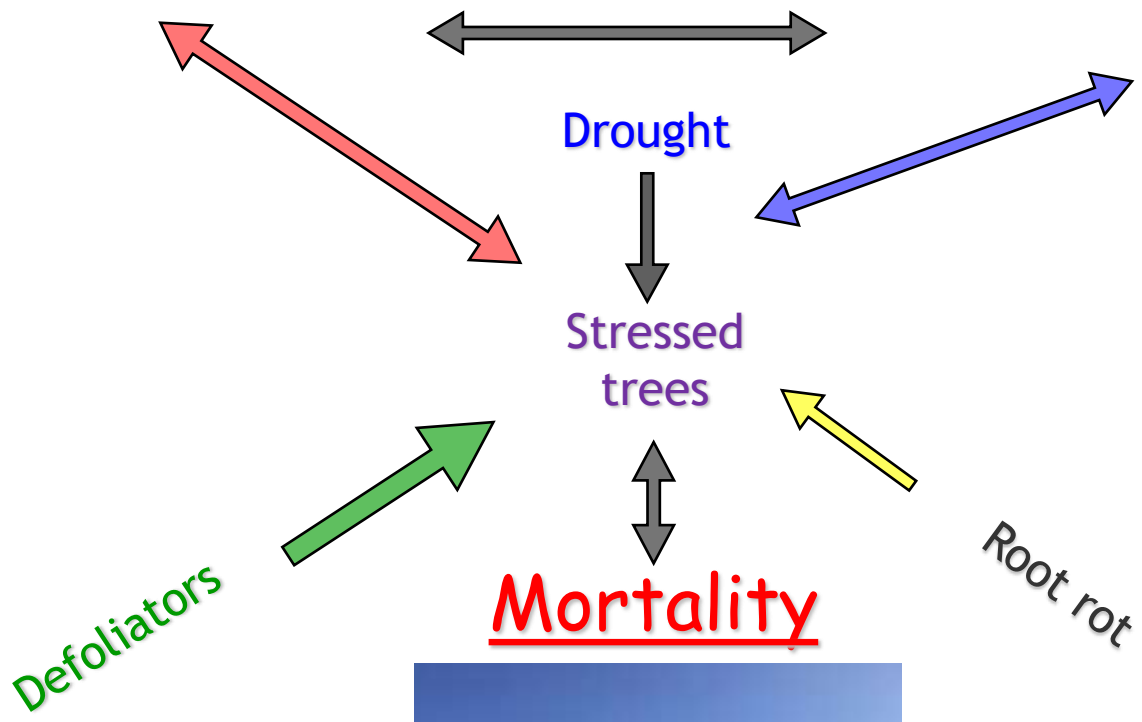
Definition: Drought is defined as a shortage of precipitation over an extended period, usually a season or more, resulting in insufficient water availability that adversely impacts vegetation, animals and people

Source: NRCan – Government of Canada





Long Term Impact of Drought



Symptoms of Drought

- Temporarily and permanent wilting of leaves
- lighter green to yellow-green foliage,
- leaf scorch around the margins- marginal leaf scorch
- Leaves cupping, curling, rolling, leaf scorch
- **In coniferous leaves yellowing and browning needle tips**
- Leaves dropping them prematurely/ leaves shedding
- Cracks on bark
- Thinning foliage and increase number of dead branches in canopy
- Small leaves
- Dieback on tree crown
- More susceptibility to insect and disease attack
- Dead trees

What to look for – Symptoms

Trees

Leaves

Needles

Winterkill/Sunburn

Time:

- Usually, trees get red above snowline
- Browning is noticeable in late winter
- Damage in cold winter with little or no snow

Control:

- Watering in early spring and before freezing
- Mulching around trees
- Avoid planting trees next to building or reflective surfaces
- Consider fertilizing trees following harsh winter conditions
- Do not wrap evergreens
- Avoid planting sensitive trees on south/SW exposure

Road Salt injury

Tree buried in snow and salt

Road Salt injury

- The main de-icing chemicals used are NaCl (table salt) and CaCl (calcium chloride).
- Build-up of salt, abrasives and mechanical shock are the main causes of mortality in trees growing near major arteries
- The symptoms of salt exposure resemble those of summer drought. There is a decline in leaf surface area, yellowing and then browning of foliage, followed by premature leaf shedding
- Another frequent symptom is bud destruction or abortion
- The presence of salt reduces the availability of water and minerals because absorption becomes blocked owing to destruction of the root system by corrosion
- When the de-icing chemicals enter the tree, they have a toxic effect on the cells and impede some crucial enzymatic reactions
- Very common in Alberta

Chemicals

- **Common herbicide mistakes**
  - Direct spraying damage
  - Drifts and vapor inversion uptake
  - Root absorption/uptake: by weed and feed fertilizer

Symptoms

- Deformed foliage: leaf cupping, curling, twisting, Twisted, curled or stunted stem and branch growth
- Clusters of stunted shoots or leaves
- Discolored foliage: yellow, reddish, purplish,
- Leaf scorch (leaf edges turn tan to brown), or complete browning and death of leaves
- Defoliation (leaves or needles drop)
- Branch dieback or death of entire tree

Spill over

Cupping

Twisting

Yellow-bellied Sapsucker

- **Time:** April – September

- **Symptoms:** Wilting top, dieback, gallery on trunk and branches.

- **Control Method:** Protected under the "Migratory Birds Convention Act" so best to deter. Putting old CD discs, noise, sounds of predators.

- *Note:* Hummingbirds rely on spring sap!

Voles

Control

- Metal mesh around tree
- Blend hottest peppers with onion- be careful with pets

Abiotic Factors- Mechanical injury

- **Mechanical Injury**
  - Lawn mowers, line trimmers, rototillers, etc
  - Base of tree – soil bacteria, moisture, shade
  - Improper pruning – avenue for disease

Soil compaction

- Due to soil compaction roots can’t grow and kills the trees
- Very common problem in new house development and road developments
- Trees grows very well in first decade but once roots hit compacted soil they can’t penetrate the soil and trees slowly start dying – very common with spruce
- Also in saline soils– roots hit hard layer with high concentration of salt and start dying

Environmental issues-management

- Sometimes very difficult to diagnose –it almost always combination of few things at same time
- Drought – watering during dry year not just young trees but also mature spruce trees
- Chemicals – try to avoid as much as possible
- Salt – try not to use in shelterbelts near roads
- Winterkill – nothing you can do
- Compaction – aerate soil before planting, remove livestock around trees, make room for roots to grow
- Animals – remove livestock around trees while with wildlife deal on individual wildlife species issues

Treatment options

- **Cultural treatment** – pruning, fertilizing, watering, and keeping trees overall healthy – this is most common and many times ONLY options to keep your trees alive
- **Physical treatment** – physical removal and destruction of insects, or diseases. This include hand picking, using high pressure water jets, water soaking, putting barriers, pruning and removal of weeds
- **Biological treatment** – natural enemies of pest such beneficial insects, bacteria's, fungus and viruses. This also include birds, rodents and other insects eating animals. Bacterium called Bacillus thuringiensis Kurstaki (Btk) is very common biological agent to control variety of caterpillars
- **Chemical treatment** – there are variety of insecticides and fungicides that are available BUT key thing to consider :
  - Safety, timing, application rates, toxicity, equipment, etc

Key Messages

- ***Treatment without diagnosis is malpractice***
- Diversify your property by planting variety of trees and shrub species
- Most of insects, fungus, wildlife, virus and bacteria's **are beneficial**
- Understand and recognize difference between symptoms vs cause
- Do not use any chemicals if possible – use them as last resource
- Do not panic but monitor, monitor, monitor
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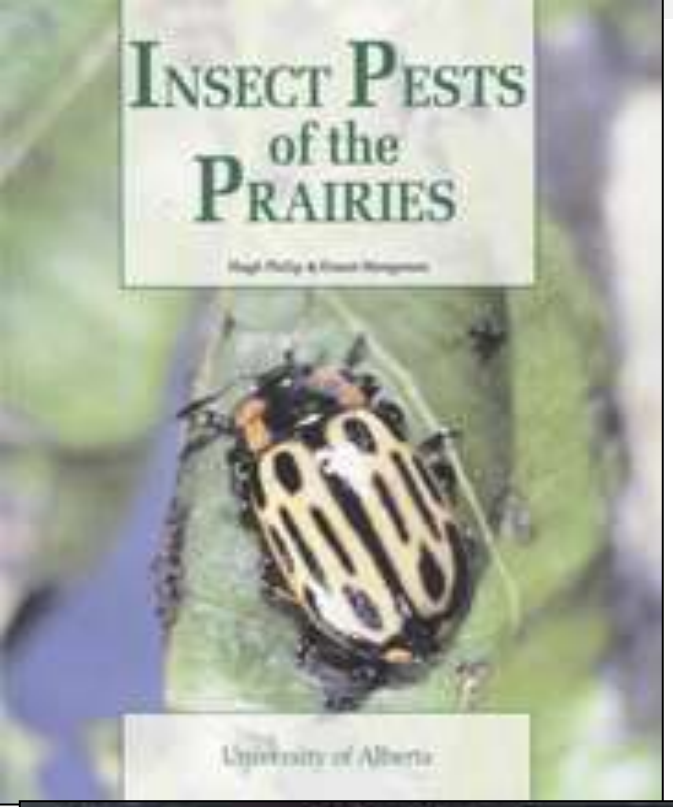
- Environmental issues are very difficult to diagnose BUT most of time **AVOIDBALE**
- Pruning is one of tools to mitigate pest problem
- Educate/learn about pests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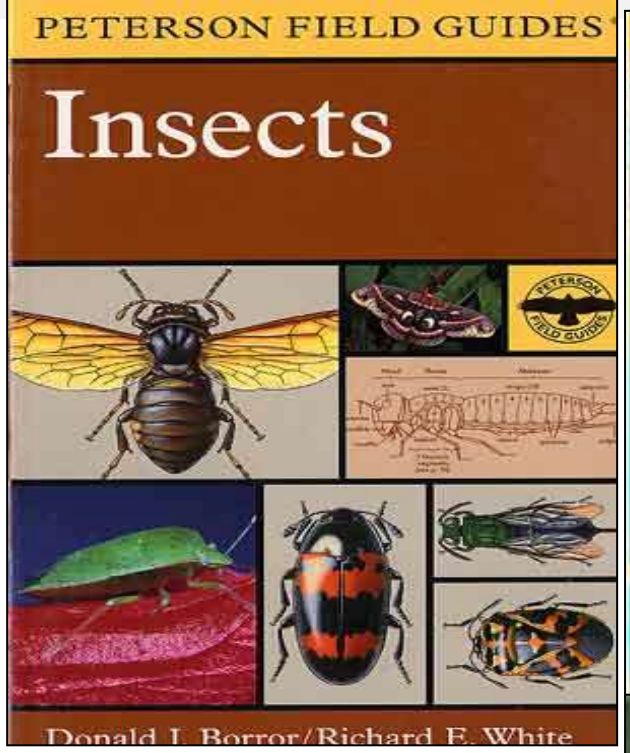
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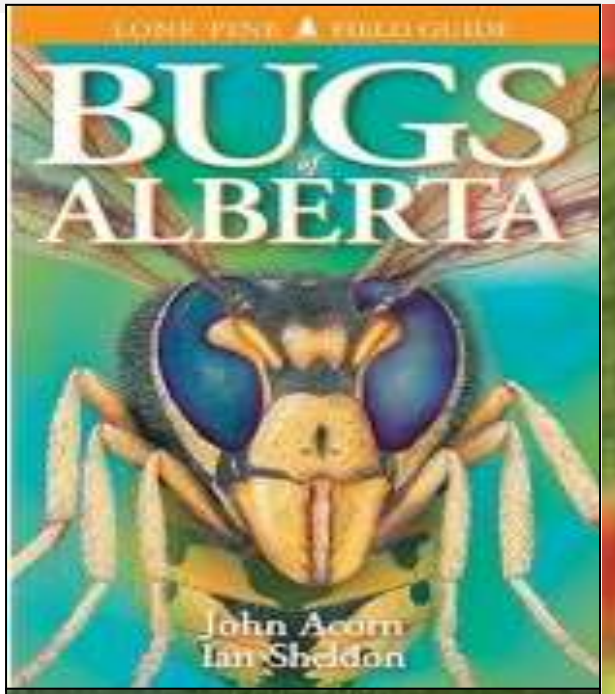
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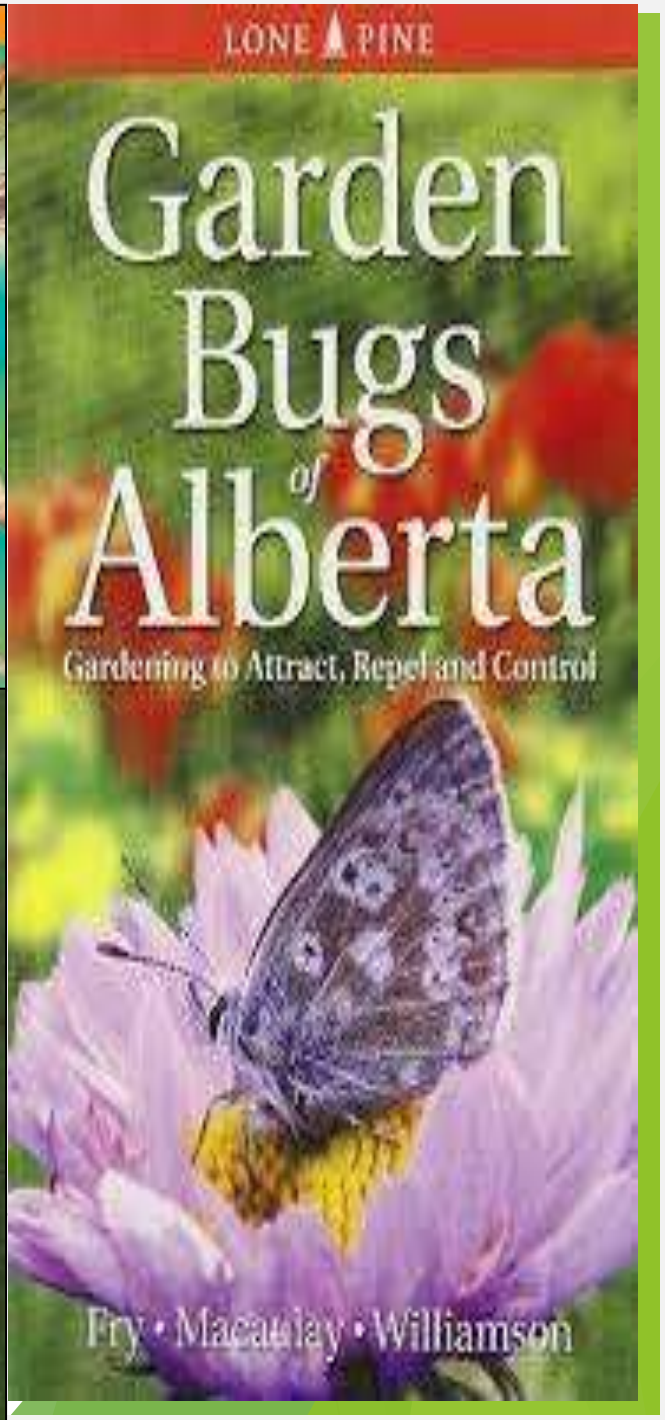
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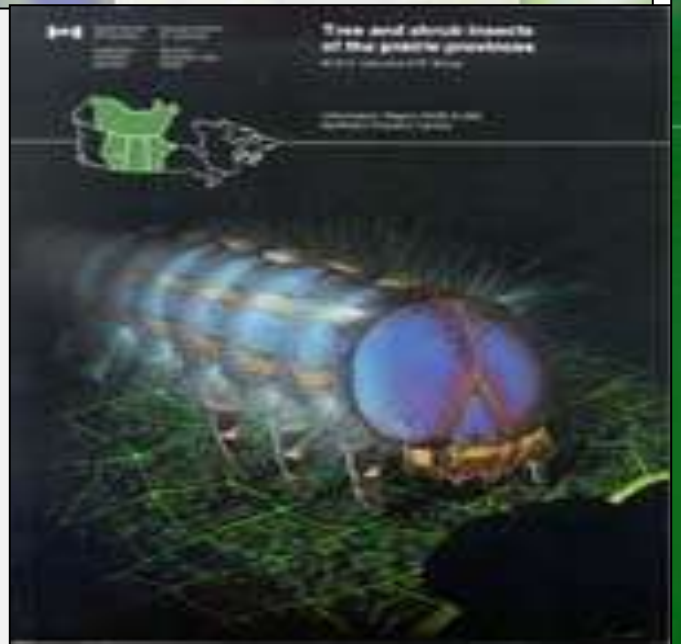
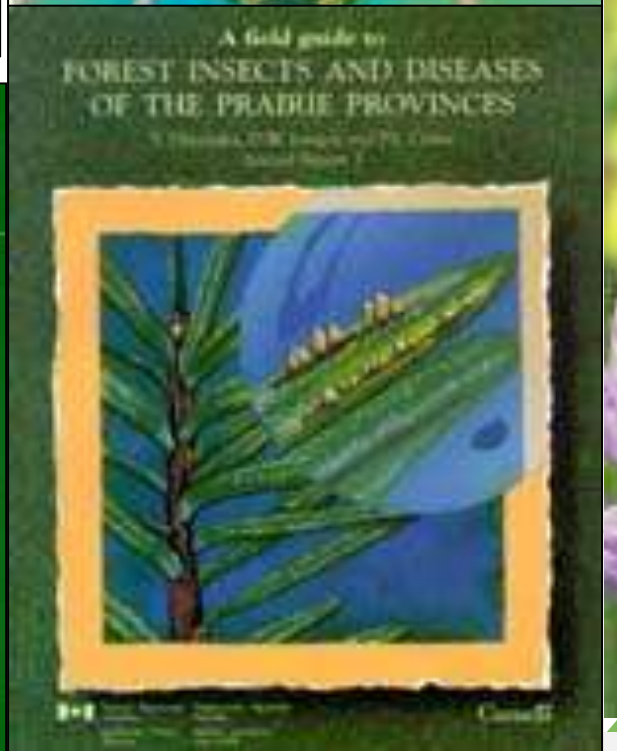
Gardening to Attract, Repel and Control
Fry • Macaulay • Williamson


Tree and shrub insects of the prairie provinces


Forest tree diseases of the prairie provinces


A field guide to
FOREST INSECTS AND DISEASES
OF THE PRAIRIE PROVINCES

Thank You

Blog:
https://yardwhispers.ca/blog/

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