



COMMON EVERGREEN PESTS IN NEW MEXICO

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Bark beetle-killed ponderosa pine near Eagle Nest, NM

EVERGREENS?

- Trees and shrubs having foliage that persists and remains green throughout the year
- In New Mexico
 - Native conifers
 - Pines
 - Junipers
 - Firs
 - Spruce
 - Douglas-fir
 - Some native broadleaf trees
 - Oaks
 - Mahogany



Giant sequoia, Santa Fe Rose Park, January 2022

PESTS?

- Any organism, usually an animal, judged as a threat to human beings or their interests
- Most pests either compete with humans for natural resources or cause harm to humans, their crops, or their livestock
- Monocultural farming, use of broad-spectrum pesticides, and introduction of exotic species can increase number of pest species
- Examples
 - Insects
 - Plants (weeds)
 - Fungi
 - Mammals
 - Birds
 - Nematodes



Caterpillars

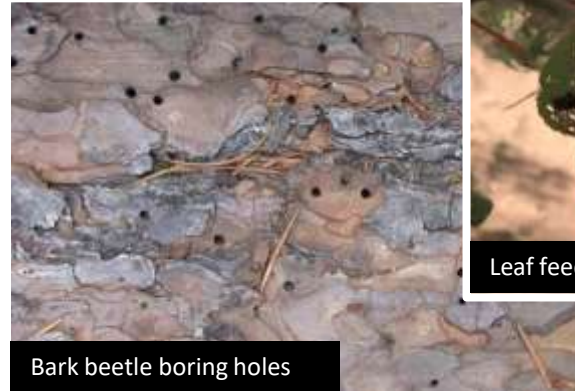


Piñon ips, *Ips confusus* (photo: Sarah McCaffrey)

SIGNS AND SYMPTOMS OF PESTS

SIGN: Visual evidence of pest activity

- Pest itself
 - Eggs, larvae (caterpillars), pupae (cocoon), adults of insect
 - Mushrooms
 - Sapsucker
- Evidence of activity
 - Leaf feeding/defoliation
 - Boring holes/boring dust
 - Tents/webbing
- Predator activity
 - Birds/woodpeckers
 - Beneficial arthropods
 - Ladybird beetles/ladybugs
 - Spiders



SIGNS AND SYMPTOMS OF PESTS

SYMPTOM: Visual or chemical change or response of the plant

- Dead or dying crown of tree
 - Entire crown or part of crown
- Leaf/needle color change
 - Entire leaf
 - Part of leaf
- Gall formation
- Branch flagging
- Increased sap or pitch production
- Increased defensive chemical compound production



PESTS AND MANAGEMENT OPTIONS

By tree species

PIÑON PINE

STATE TREE OF NEW MEXICO



Large piñon near Capitan, NM

PIÑON (*Pinus edulis*)

Piñon ips bark beetle (*Ips confusus*)

Primary pest

- *Other bark beetle species attack ponderosa, southwestern white, limber pine, and other species of piñon*
- *Multiple generations/year depending on local climate*
- *Ips bark beetles are attracted to freshly cut trees, limbs*
- *Pruning and tree cutting only during winter months*

SIGNS

- Insect itself
- Boring dust
- Tiny boring holes
 - Exit holes more noticeable than entrance holes
 - Usually only a few millimeters in width
- Increased predator activity
 - Woodpeckers (tapping on trees)
 - Insect predators

SYMPTOMS

- Needles, entire branches, or crowns dying/turning yellow
- 'Pitch tubes'
 - Not always present

PIÑON (*Pinus edulis*)

Piñon ips SIGNS AND SYMPTOMS

Pitch tubes and boring dust



Woodpecker or increased woodpecker activity



Crowns/needles turning yellow

PIÑON (*Pinus edulis*)

Piñon ips

MANAGEMENT

- Water properly (will go over this later)
- Cut and prune during winter months only
- Use insecticides labeled for *ips* spp. bark beetles
 - Carbaryl, bifenthrin, permethrin
 - Need to be applied in March to trunk and larger limbs
 - 1 to 2 years of control
- Verbenone may be a deterrent
 - Anti-aggregation pheromone
 - More studies needed
 - Low-cost treatment

PIÑON (*Pinus edulis*)

Piñon needle scale (*Matsucoccus acalyptus*)

Primary Pest

- Other species of scale can attack piñon and ponderosa, e.g. pine needle scale

SIGNS

- Thin crown aka 'thiñon' needle scale
- 'Chia seeds' attached to older needles
- Egg masses on trunk and under limbs
 - Found during early spring
 - Cotton appearance
 - Green aphid-like insects sometimes visible within 'cotton'
- Males flying around trees in spring
 - Look like gnats
 - Early spring

SYMPTOMS

- Older needles yellow or brown
 - Begin turning brown in early winter
 - Very noticeable late winter, early spring

PIÑON (*Pinus edulis*)

Piñon needle scale SIGNS AND SYMPTOMS



PIÑON (*Pinus edulis*)

Piñon needle scale

MANAGEMENT

- Water properly
- Use insecticides labeled for scale insects
 - Carbaryl + horticulture/dormant oil
 - Horticulture or dormant oil alone may offer protection
 - Treatment timing critical
 - Need to be applied when crawlers are visible
 - March to April depending on temps
- Systemic insecticides may be better
 - Systemic insecticide labeled for scale
 - Imidacloprid
 - Will need a licensed applicator that has equipment
 - Less off-target effects
 - Timing not as critical
 - Kills scale as they feed

PIÑON (*Pinus edulis*)

Dwarf mistletoe (*Arceuthobium divaricatum*)

Primary Pest; Fully parasitic plant

- Other species of pines are infected, e.g. *ponderosa*
- Tree mortality 3-4x higher in dwarf mistletoe infected trees
- Bark beetles frequently attack heavily infected trees
- Spread by self-ejecting seeds that can spread 10 to 40 feet away
- Root system in tree tissues

SIGNS

- Small, olive-green to brown shoots
 - A few centimeters up to 5" in height
 - Perennial
 - Usually on limbs, but can be on trunk

SYMPTOMS

- Branch dieback
- Thin canopy

PIÑON (*Pinus edulis*)

Dwarf mistletoe

SIGNS AND SYMPTOMS



Short, olive-green to brown shoots on limb



Short, olive-green to brown shoots in canopy

PIÑON (*Pinus edulis*)

Dwarf mistletoe

MANAGEMENT

- Water properly during drought
- Very difficult to control
- Can prune-out if mistletoe is greater than 6" from trunk
 - May not be feasible if majority of crown is infected or many trees are infected
 - Breaking off shoots offers no long-term control
- Can thin trees if over multiple acres
 - Increases health and vigor of remaining infected trees

PIÑON (*Pinus edulis*)

Pitch moths (*Dioryctria* spp.)

Secondary Pest

- *Ponderosa* can be occasionally attacked
- Severe attacks (rare) can stress trees

SIGNS

- Moths egg laying on bark in summer (rare to see)
- Larvae found deep inside blobs of sap

SYMPTOMS

- Gummy, off-white to redish blobs of sap
 - Mainly on trunks and main stems
 - Some on smaller limbs
- Branch dieback
- Thin canopy

PIÑON (*Pinus edulis*)

Pitch moth

SIGNS AND SYMPTOMS



PIÑON (*Pinus edulis*)

Pitch moth

MANAGEMENT

➤ *Management usually not warranted*

- Water properly during drought
- No insecticides labeled for this insect
- Only effective control is removing larvae from inside blob with knife or similar tool
 - Not very feasible

PIÑON (*Pinus edulis*)

Tip moth (*Rhyaciona* spp.)

Secondary Pest

- *Other species of pines also attacked, esp. ponderosa and Afghan pines under 12 feet tall*

SIGNS

- Interior of branch tip with tunnel (mined)
- Tiny caterpillars (yellow to brown color) and pupae can be found within the damaged tips
- Frass accumulating near feeding site
- Adult moths can be found on trees March-June

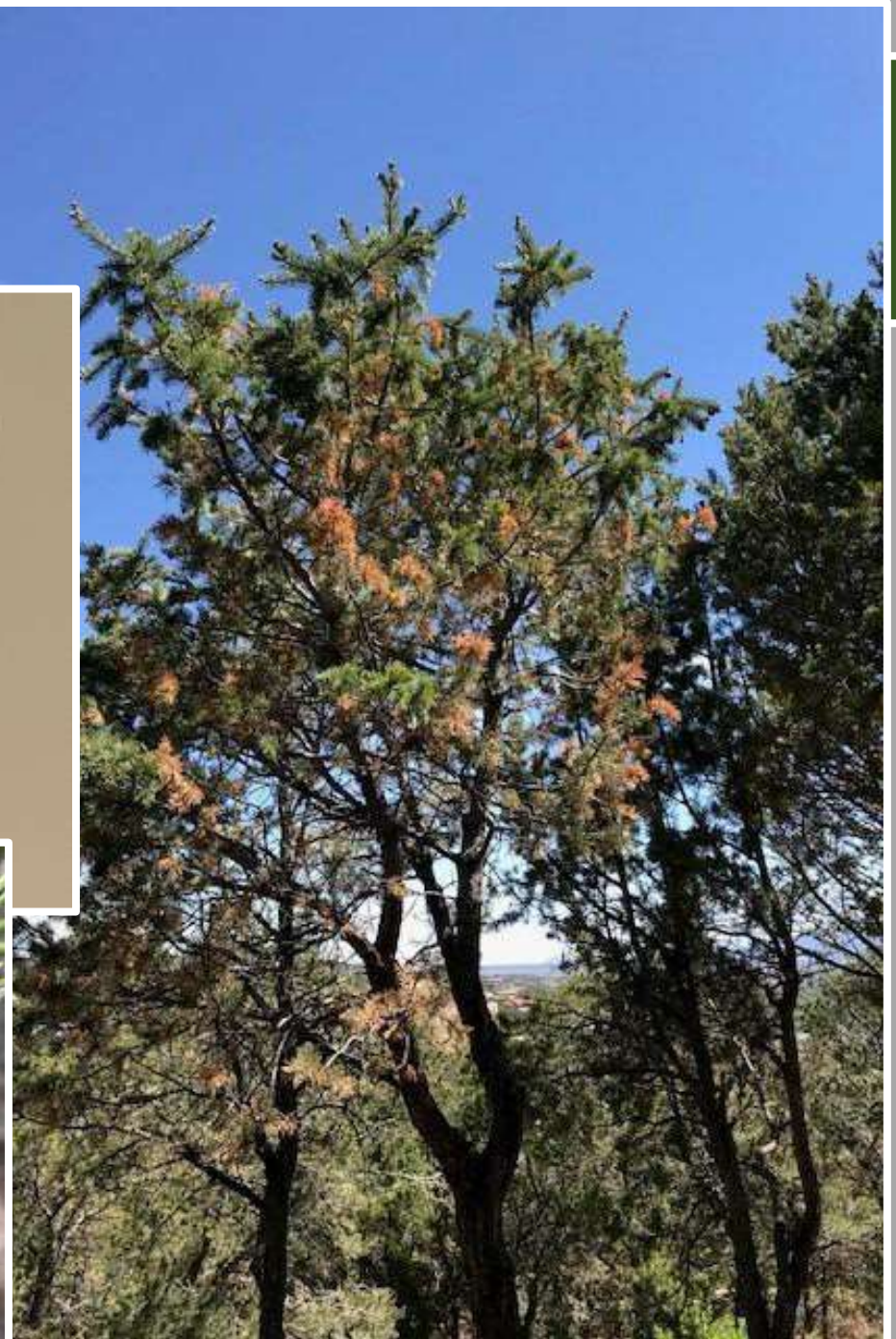
SYMPTOMS

- Dead and dying terminal shoots (i.e. branch tips)
 - May be heavy damage on some small trees
- Small amounts of resin flow from at point of attack

PIÑON (*Pinus edulis*)

Tip moth

SIGNS AND SYMPTOMS



PIÑON (*Pinus edulis*)

Tip moth

MANAGEMENT

➤ *Management usually not warranted*

- Water properly during drought
- Heavily attacked, small ornamental pine trees may require spraying with insecticide labeled for tip moths
 - Timing of application very hard to determine
 - Must detect larvae when newly hatched

PIÑON (*Pinus edulis*)

Twig beetles (*Pityophthorus* spp. and *Pityogenes* spp.)

Secondary Pest

- Other species of pines also attacked, esp. ponderosa and limber/southwestern white
- High populations can build-up in drought-stressed, injured, or recently felled trees

SIGNS

- Boring/sawdust visible on damaged tips
- Interior of branch tip with tunnel (mined)
- Tiny bark beetle adults or larvae (white grubs) found within damaged tips

SYMPTOMS

- Dead and dying tips

PIÑON (*Pinus edulis*)

Twig beetle

SIGNS AND SYMPTOMS



PIÑON (*Pinus edulis*)

Twig beetle

MANAGEMENT

➤ *Management usually not warranted*

- Water properly during drought
- Infestations can be controlled by carefully hand pruning infested twigs or branches
 - Must prune before newly developed adult beetles emerge

PIÑON (*Pinus edulis*)

Seed and cone insects (e.g. *Conophthorus edulis*)

Secondary Pest

➤ Other species of pine cones also attacked

- Can affect quality and quantity of piñon nut production
- Control/management very challenging
 - Chemical control not feasible
 - Very little research on other control methods
 - Pheromone
 - Trapping



Hole(s) in cone and resin near hole

PIÑON (*Pinus edulis*)

Sapsuckers (*Red-naped and Williamson's*)

Secondary Pest

➤ Other species of pines also attacked, e.g. *ponderosa*, *Afghan*, and *Austrian*

SIGNS

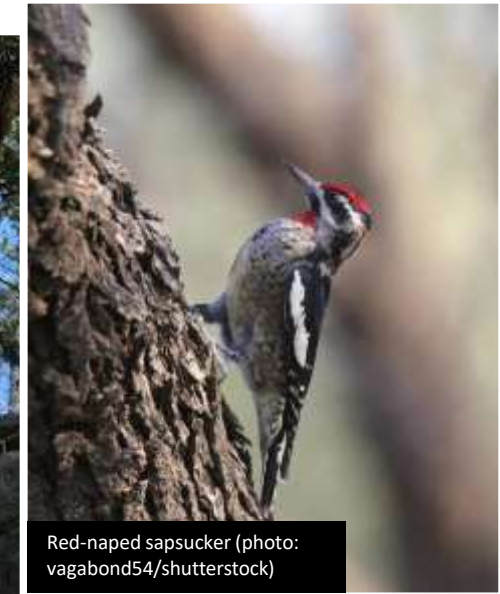
- Line of holes
 - Can be multiple lines on top of each other
- Sapsucker itself
- Audible tapping on trees

SYMPTOMS

- Clear to yellow resin streaming from attack sites
- Occasional branch death/dieback
 - Needles turning colors
- Rarely tree death
 - If feeding is severe enough



Sapsucker damage



Red-naped sapsucker (photo: vagabond54/shutterstock)

PIÑON (*Pinus edulis*)

Sapsucker

MANAGEMENT

➤ *Management usually not warranted*

- Water properly during drought
- Wrap burlap or other fabric over feeding area
- Place suet feeder near damaged tree

JUNIPERS

DROUGHT TOLERANT TREES



Juniper near Tijeras, NM infected with mistletoe

JUNIPER (*Juniperus* spp.)

Juniper bark beetles (*Phloeosinus* spp.)

Primary Pest

- *Juniper and Arizona cypress attacked*
- *These bark beetles are not as active as species that attack pines*

SIGNS

- Boring dust gathering in bark fissures or at base of tree
- Boring holes
 - Exit holes are more noticeable
- Predators
 - Woodpeckers
 - Parasitoid wasps

SYMPTOMS

- Dead and dying trees
 - Needles in part or entire crown turning brown

JUNIPER (*Juniperus* spp.)

Juniper bark beetle SIGNS AND SYMPTOMS



JUNIPER (*Juniperus* spp.)

Juniper bark beetles

MANAGEMENT

➤ *Management usually not warranted*

- Water properly during drought
- Can apply insecticides labeled for bark beetles prior to spring flight
 - March
- Generally okay to prune or cut juniper trees during the summer

JUNIPER (*Juniperus* spp.)

Juniper borers (*Callidium* spp., *Atimia* spp, among others)

Primary Pest

- *Can be a slow, cryptic killer*
 - *Interior damage can be extensive before symptoms are apparent*
 - *Large portion of tree dies before exit holes are noticeable*
- *Attack stressed tree, usually by drought, heat, or human-caused stressors*

SIGNS

- Large, D- or oval-shaped exit holes
- Peeling bark
- Wide, wavy galleries engraved into wood

SYMPTOMS

- Dead and dying trees
- Needles turn light green, yellow, or brown
 - Large branches will die at different rates/times
- Loose, peeling bark

JUNIPER (*Juniperus* spp.)

Juniper borers

SIGNS AND SYMPTOMS



JUNIPER (*Juniperus* spp.)

Juniper borers

MANAGEMENT

➤ *Management usually not warranted*

- Water properly during drought
- May need to prune infested limbs
 - Newly developed adult beetles may emerge from one limb and then attack another limb on same tree
- Can spray larger limbs and trunk with insecticide labeled for woodborers if concerned about stopping continued attack
 - Will need to spray in April - May
- Systemic insecticides also an option
 - Labeled for woodborers
 - Emamectin benzoate (expensive)

JUNIPER (*Juniperus* spp.)

Juniper twig pruner (*Styloxus bicolor*)

Secondary Pest

➤ *Attack stressed trees, usually by drought or heat*

SIGNS

- Interior of branches with large tunnel
- Larvae (white grubs) found within large tunnels

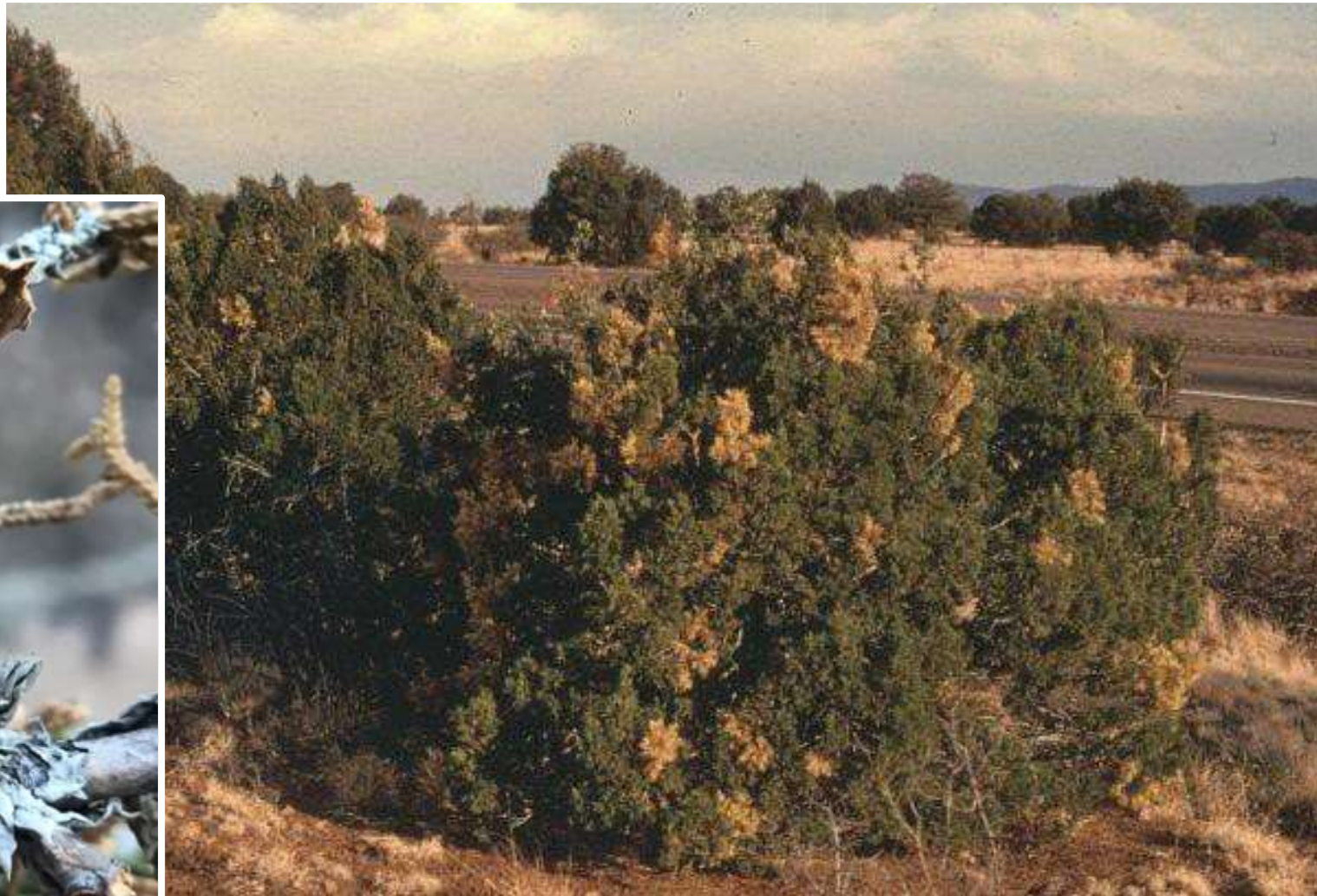
SYMPTOMS

- Ends of branches dead/dying
 - Needles turn yellow or bronze color
 - Very noticeable during late summer into fall

JUNIPER (*Juniperus* spp.)

Juniper twig pruner

SIGNS AND SYMPTOMS



JUNIPER (*Juniperus* spp.)

Juniper twig pruner

MANAGEMENT

➤ *Management usually not warranted*

- Water properly during drought
- If infestation is large enough, may need to prune infested twigs
 - Newly developed adult beetles may emerge from one limb and then attack another on same tree or attack nearby juniper twigs

JUNIPER (*Juniperus* spp.)

Juniper mistletoe (*Phoradendron juniperinum*)

Secondary Pest; Hemi-parasite

- Negligible affect on tree, generally
 - Can be detrimental to tree health during periods of drought
- Spread by birds (harder to control)
- Infect larger, older trees where birds prefer to perch
- Roots invade tree tissues

SIGNS

- Large, leafless green to yellow shoots

SYMPTOMS

- Occasional branch death/dieback
- Thin crowns
- Reduced vigor/growth

JUNIPER (*Juniperus* spp.)

Juniper mistletoe



JUNIPER (*Juniperus* spp.)

Juniper mistletoe

MANAGEMENT

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STRESSORS THAT CAN INCREASE
PEST ACTIVITY

STRESSORS (ENVIRONMENTAL)

- Cold injury
- Heat injury
 - Especially trees in urban areas
 - Pests will likely become more prevalent as annual average temperatures increase
- Water injury
 - Too much water
 - Too little water
- Soil deficiencies
- Storm injury
 - High winds
 - Lightening
 - Hailstorms
- Mammal injury
 - Mice
 - Elk
 - Porcupines



STRESSORS (HUMAN-CAUSED)

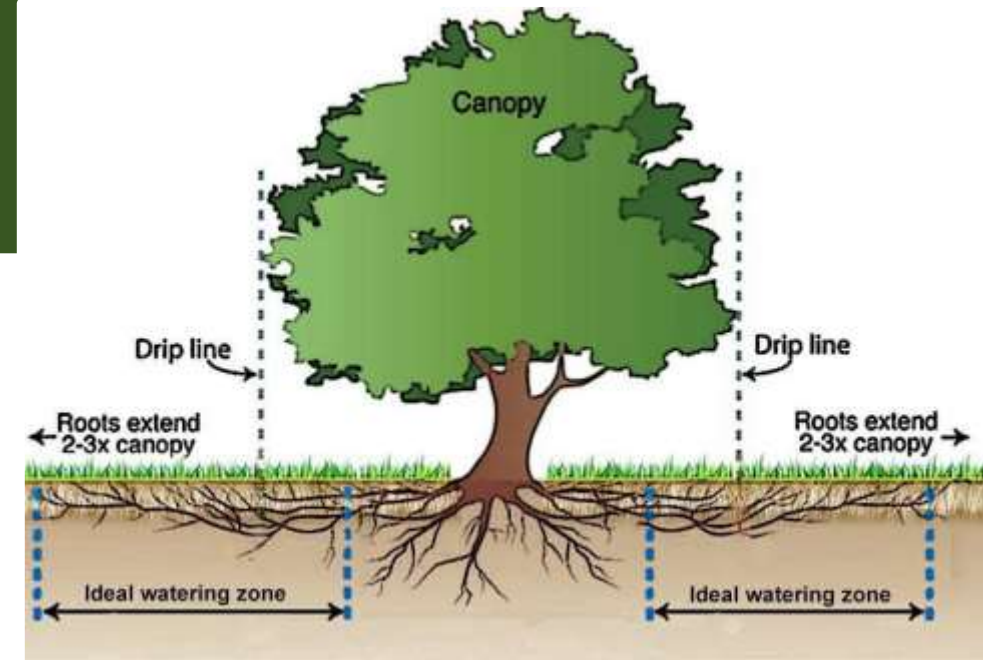
- Soil compaction
- Improper planting
 - Too deep
 - Root girdling
- Mechanical injury
 - Wounds from trimmers, mowers, poor pruning
 - Excavating
- Air pollution
- Salt/deicer injury
 - Yellow, red, or brown needles
 - Calcium-based better than sodium-based
- Herbicide injury



HOW TO BEST PROTECT TREES

PROACTIVE PROTECTION

- **Properly** water overnight in times of drought
 - Water once/month if no precipitation occurs during that month (soaker hose or similar slow drip device)
 - High value trees
 - Water at ideal watering zone
 - Water 'berms' can be detrimental (mulch instead)
 - May need to move drip irrigation systems to ideal watering zone
 - Can overwater pinyon and juniper
 - Soil moisture meter
- Fertilize conifers with low NPK fertilizer
 - Some fertilizer labeled as 'conifer fertilizer'
 - YUM YUM Mix
- Thin trees on property
 - More resources for remaining trees
 - Bark beetle pheromones dissipate quicker
 - Generally, trees go through 'shock' for few years following thinning





QUESTIONS?

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