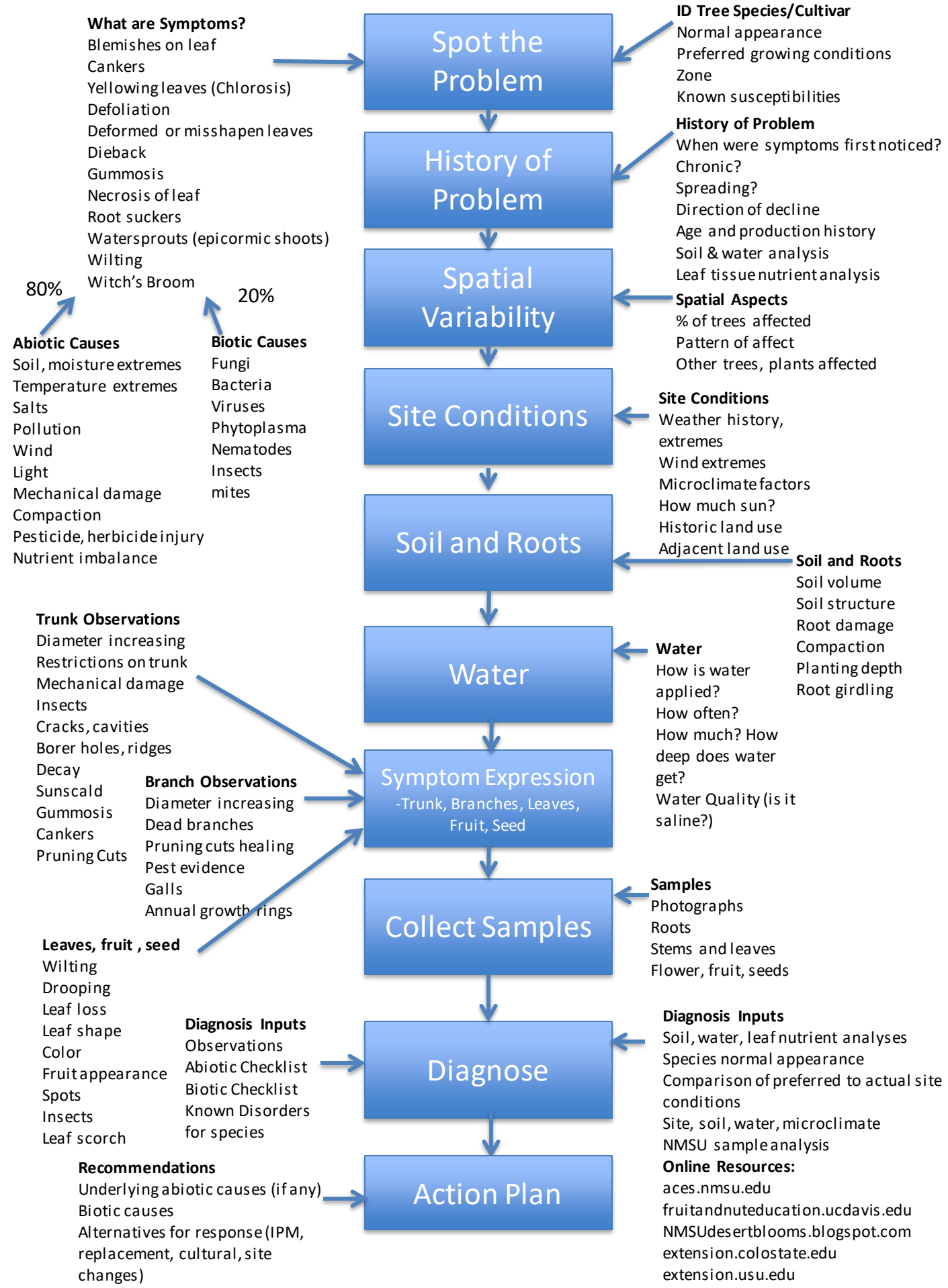
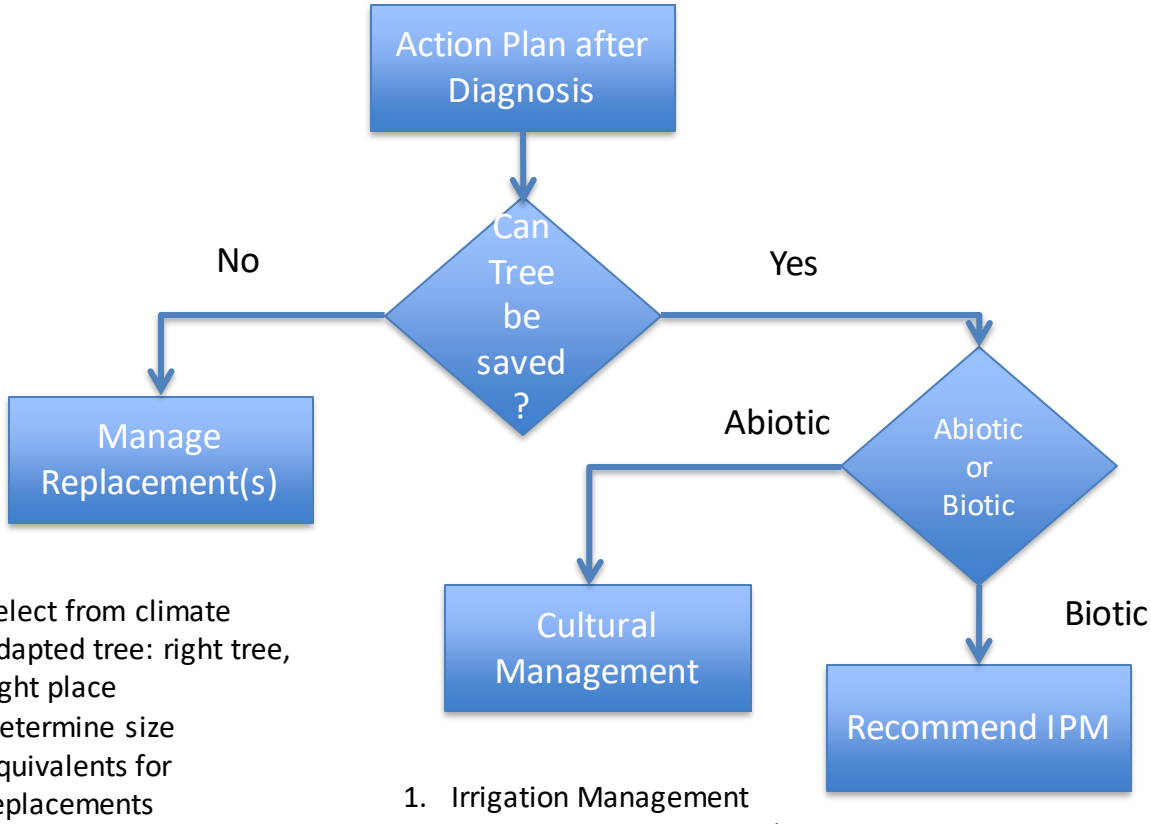
Tree Diagnostic Process



Diagnostic Rules of Thumb for Urban Trees in New Mexico

1. 80% of causes are abiotic and 20% are biotic.
2. If symptoms are found on a variety of different plants, it suggests abiotic disorders.
3. Insects and diseases tend to be host specific.
4. Push screwdriver or rebar into ground to check for moisture depth. Most tree problems are water related.
5. Decline from top of the canopy down is typical of root problems and/or drought.
6. Use soil penetrometer to check soil texture.
7. Surface roots indicate soil compaction and/or wet soils and/or not watering deeply enough. Roots proliferate where water is applied, so in order to keep roots from peeking up at the top, water to a depth of 2-3 feet and allow soils to dry between irrigations for root access to oxygen.
8. Lack of visible root flare indicates tree planted too deep.
9. Normal vs. abnormal
    a. Needle problems and dieback of new needles at branch tip is abnormal.
    b. Yellowing and dropping of older needles from the inside of a tree are normal.
    c. Stress may cause needles to drop sooner.
10. Normal occurrences confused as abnormal:
    a. Fuzz on underside of leaves
    b. Male pollen cones on pine or spruce mistaken for insects or disease
    c. Less conspicuous fruit, such as juniper berries
    d. June drop of apples and other fruit
11. Trees under stress (drought, non-irrigated site, limited root spreading, or newly planted) are less tolerant of pests and other disorders, and more prone to their damage as well.
12. Healthy trees not under stress can withstand loss of 1/3 of total leaving surface by chewing insects.
13. Lawnmower decline (aka weed whacker wilt) is a common problem with park and residential trees. Take care not to damage bark when working near trees and shrubs.
14. Evidence of decay may be seen in large size pruning cuts. A drum-like hollow sound when the trunk is tapped with a wooden mallet is a symptom of extensive internal decay.
15. Ridges and valleys along the trunk are symptoms of internal problems and decay.
16. Borer exit holes indicate stress issues.
17. Evaluating annual growth rings on trimmed branches can show year-to-year changes in vigor of tree and effects of stress.
18. Mulch, mulch, mulch. The best amendment on top of soil to prevent moisture loss, compaction, trunk damage from mowers. Wood chips are the best.

Urban Tree Disorder Management Process



1. Select from climate adapted tree: right tree, right place
2. Determine size equivalents for replacements
3. Site selection and preparation
4. Microclimate(sun, wind, temperature extremes)
5. Soil analysis (texture, compaction, Ph, Alkalinity, nutrients)
6. Planting (depth, staking, water, mulch)
7. Irrigation (adjustment by season, tree age)
8. Structural pruning for young trees

1. Irrigation Management
2. Measures to improve soil Conditions (texture, compaction, nutrients, alkalinity)
3. Repair or eliminate cause of mechanical damage (girdling, weed whacker, root damage, planting depth, trunk damage)
4. Structural (Wind, Sun, Pruning)
5. Herbicide use

1. Cultural
   a. Sanitation
   b. Pruning infested areas
2. Biological
   a. Beneficial insects (Pocket Guide to Beneficial Insects)
   b. Birds
3. Physical
   a. Physical removal
   b. Traps
   c. High pressure water stream
4. Chemical: Correctly ID pest before selecting a chemical. Always read and follow the label.

Rules of thumb for managing urban tree disorders

1. If a tree is not under drought or soil stress, it is more likely to survive biotic pest problems without pesticide use.
2. If a tree is under drought stress:
    a. Correct watering schedule for weather, soil texture
    b. Mulch with wood chips to minimize loss of moisture
3. If disorder is caused by soil conditions:
    a. Compaction can be reduced by eliminating vehicle, foot traffic nearby
    b. Severe compaction corrected with air hammer
4. If soil volume problem:
    a. Remove obstructions to horizontal root growth
    b. Recommended soil volume is 1-2 cubic foot for every 1 square foot of canopy.
5. If mechanical damage:
    a. Recommend assessment, pruning by ISA certified arborist
6. If nutrient problem confirmed by soil analysis:
    a. Suggest nutrients
    b. Suggest extra irrigation to leach out salinity
7. If pesticide problem, revise IPM for site
8. If a tree is in a grassy area where weed whackers and power mowers are used, a layer of mulch around the tree trunk will prevent problems occurring.

Integrated Pest Management (IPM) Rules of Thumb:

1. PREVENTION: Avoid insect pests through proper plant selection, planting and maintenance.
2. MONITORING: Regularly inspect trees and shrubs for insect pests and damage.
3. IDENTIFICATION: Be sure to correctly identify tree species and insect pests.
4. MANAGEMENT: Select appropriate IPM strategy for the pest.
5. Minimize tree stress with proper irrigation and mulching.
6. Sanitize area to reduce pest population (weeds, fallen fruit)
7. Correct pruning of trees and shrubs for airflow and to remove infested areas.
8. Avoid mechanical damage to trunk and improper pruning that creates vulnerable locations for pests to attack.
9. Provide habitat for natural predators (insects and birds).
10. Use hand-removal of pests (e.g. eggs and bagworms) when possible.
11. Traps can be used to trap codling moth larva.
12. Monitor pest infestations to determine an “action threshold” requiring use of chemicals.
13. Use insecticides only after correctly identifying the pest, the insect is in the correct stage for treatment, and the product is registered for use in NM.
14. ALWAYS READ THE LABEL BEFORE APPLYING A PESTICIDE.