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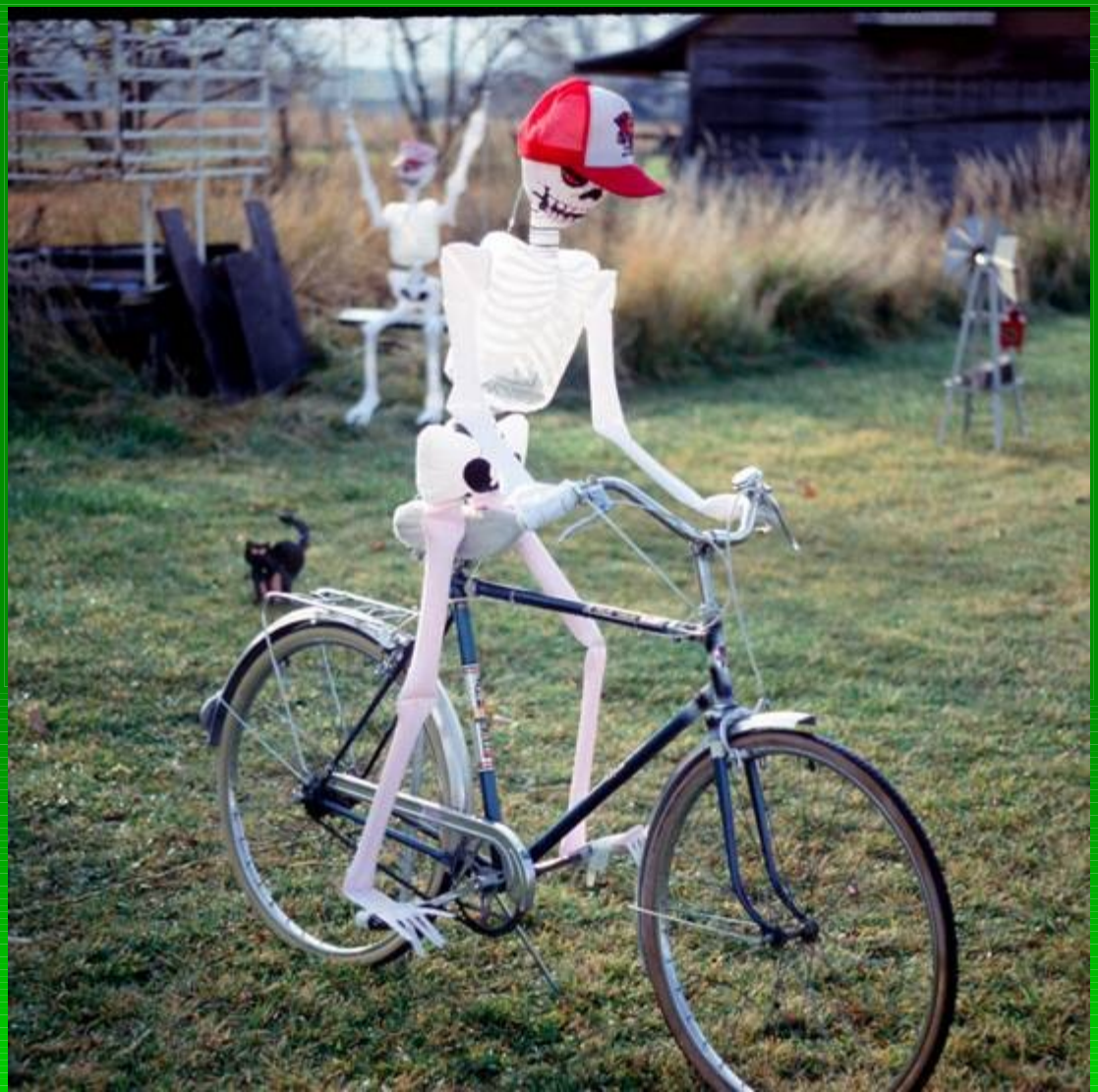
Thanksgiving Point
2004

What’s Wrong With My Plant?

Or How Can I Feel So Good?

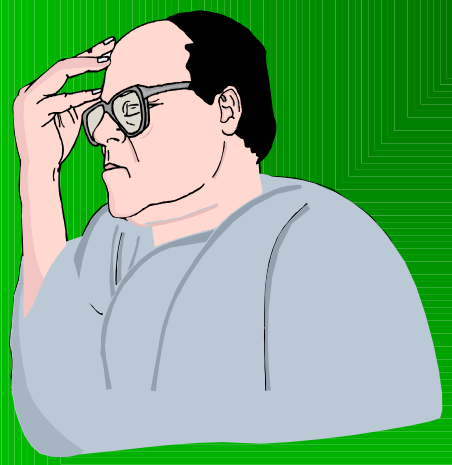


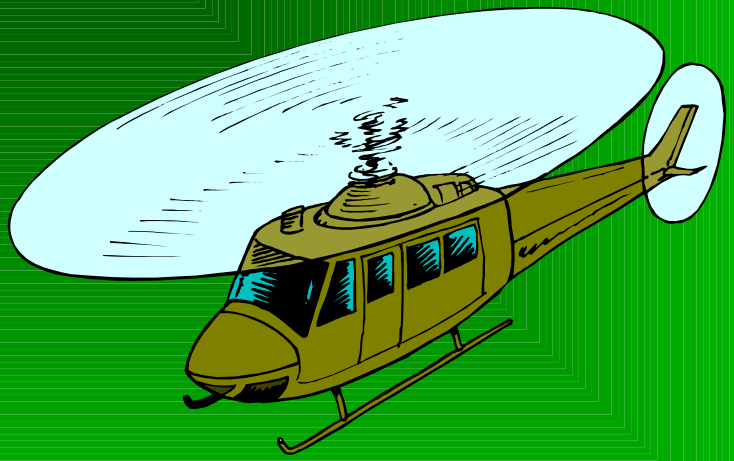
When My Plants Look So Bad

The "Art" Of Diagnosis Is Not Always Easy.

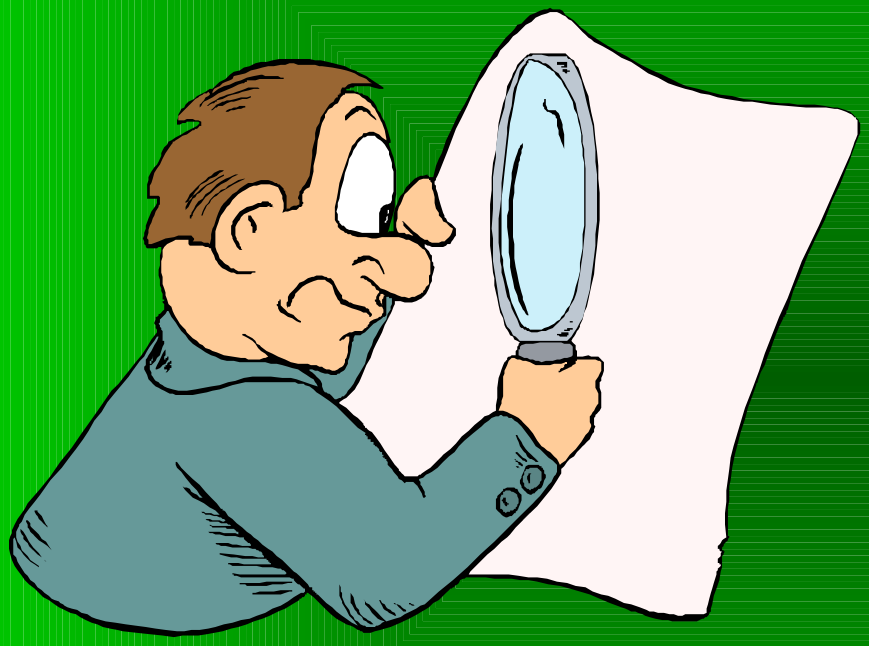
Simplot

Diagnosing A Problem Is An Orderly Thinking Process Proceeding From Recognition Of A Problem Through A Solution.



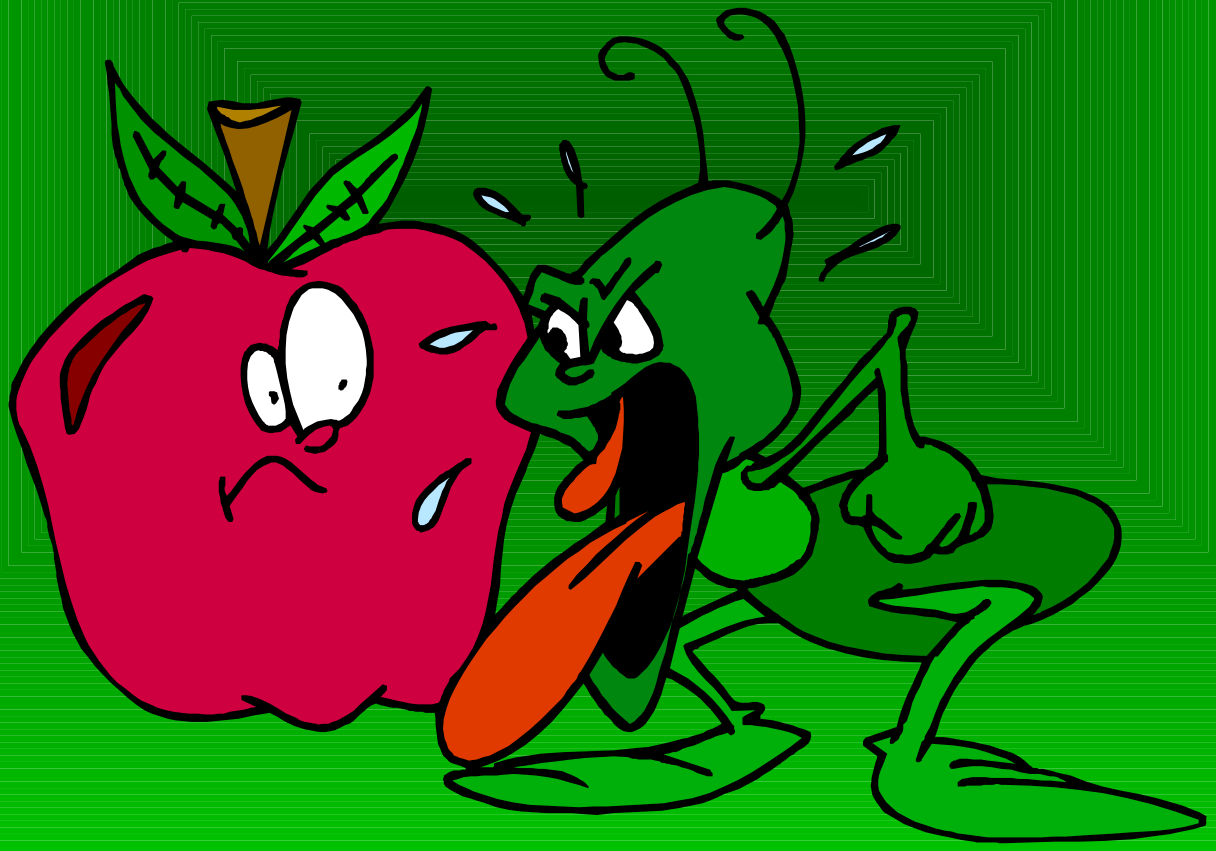


Look At The Clues, Ask Good Questions, And Make Accurate Observations Of Your Plants And What Happened To Them.



- Weather observations
- Pesticide applications
- Watering
- Insects
- Disease outbreaks

Many Potential Pests And Problems Can Harm Your Plants.



Possible Pest Problems Include Insects And Other Creepy, Crawly Creatures Including Mites, Slugs And Snails And Crustaceans.

Rodents, Deer, Birds And Even Dogs And Cats And Other Animals Can Damage Plants.

Diseases Include Pathogenic Problems Caused By Fungi, Bacteria, Viruses And Other Living Organisms.

Diseases Include Environmental Problems, Nutritional Problems And Many Other Nonpathogenic Maladies.

Plant Pathology Basics

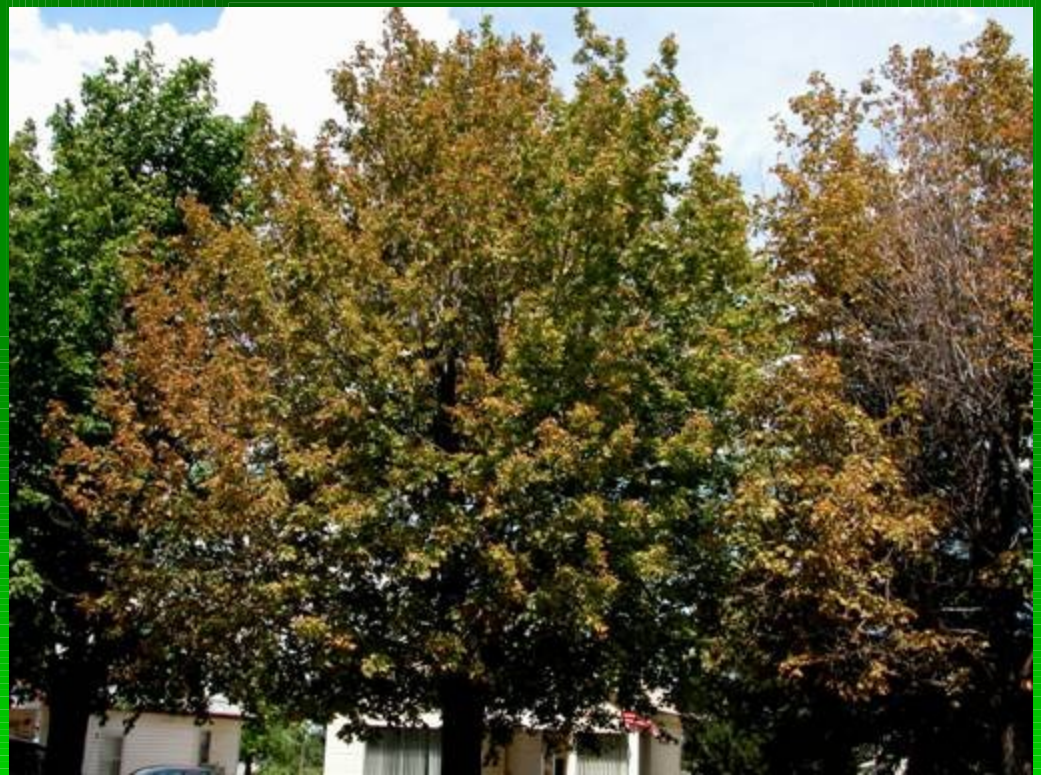
- Disease
  - Anything that interferes with normal plant function

Plant Pathology Basics

- Biotic
  - Caused by living organism (pathogen)

Plant Pathology Basics

- Abiotic
  - Caused by non-living factor



Non-Infectious Diseases

- Also known as abiotic or nonpathogenic diseases

Non-Infectious Diseases

- Caused by such things as:
  - Unfavorable weather
  - Mechanical damage
  - Nutrient deficiency
  - Excess salts
  - Chemical toxicity
  - Water excesses or deficiencies

Non-Infectious Diseases

Unfavorable weather

Non-Infectious Diseases

Mechanical damage

Non-Infectious Diseases

Excess salts

Non-Infectious Diseases

Chemical toxicity

Non-Infectious Diseases

Water excesses or deficiencies

Non-Infectious Diseases

- Most diseases belong to this group

Non-Infectious Diseases

- There are no chemical controls for noninfectious diseases.

Infectious Diseases

- Also known as biotic or pathogenic diseases

Infectious Diseases

- Pathogens grow within plant tissue and disrupt function

Infectious Diseases

- May spread to new plants

Infectious Diseases

- Main concern of pesticide users is to reduce spread
- Many diseases have no chemical controls

Non-Infectious Diseases

Nutrient deficiency

Infectious Agents in Plants

- Classes of infectious agents
  - Fungi
  - Bacteria
  - Viruses
  - Phytoplasmas
  - Nematodes
  - Parasitic seed plants

Fungi

- Lack chlorophyll
- 100,000 species
- Reproduce by spores
- Saprophytes decompose dead organic matter
- Parasites attack other organisms

Coryneum Blight

Bacteria

- Small one celled organism
- Divide very rapidly
- Causes relatively few tree diseases
- Chemical control requires bactericides

Fireblight on crabapple

Viruses

- Must reproduce in living cells
- Must be transmitted mechanically by insects propagation or handling
- Only visible with electron microscopes
- No practical chemical controls

Virus on Lilac

Phytoplasmas

- Discovered relatively recently
- Diseases previously were thought to be caused by viruses
- Organisms like a bacteria without a cell wall

Western X of Cherry

Nematodes

- Small eel-shaped worms
- Usually problems in warmer areas
- Most feed on roots
- Attack many plants
- Not all nematodes attack plants

Root Knot Nematode Lesions

Parasitic seed plants

- Small eel-shaped worms
- Usually problems in warmer areas
- Most feed on roots
- Attack many plants
- Not all nematodes attack plants

Dwarf Mistletoe

Mistletoe

Dodder

SIGNS AND SYMPTOMS

- SIGNS
  - Structures of the pathogen that occur in connection with the disease - example: Mildew

Sign of Disease

SIGNS AND SYMPTOMS

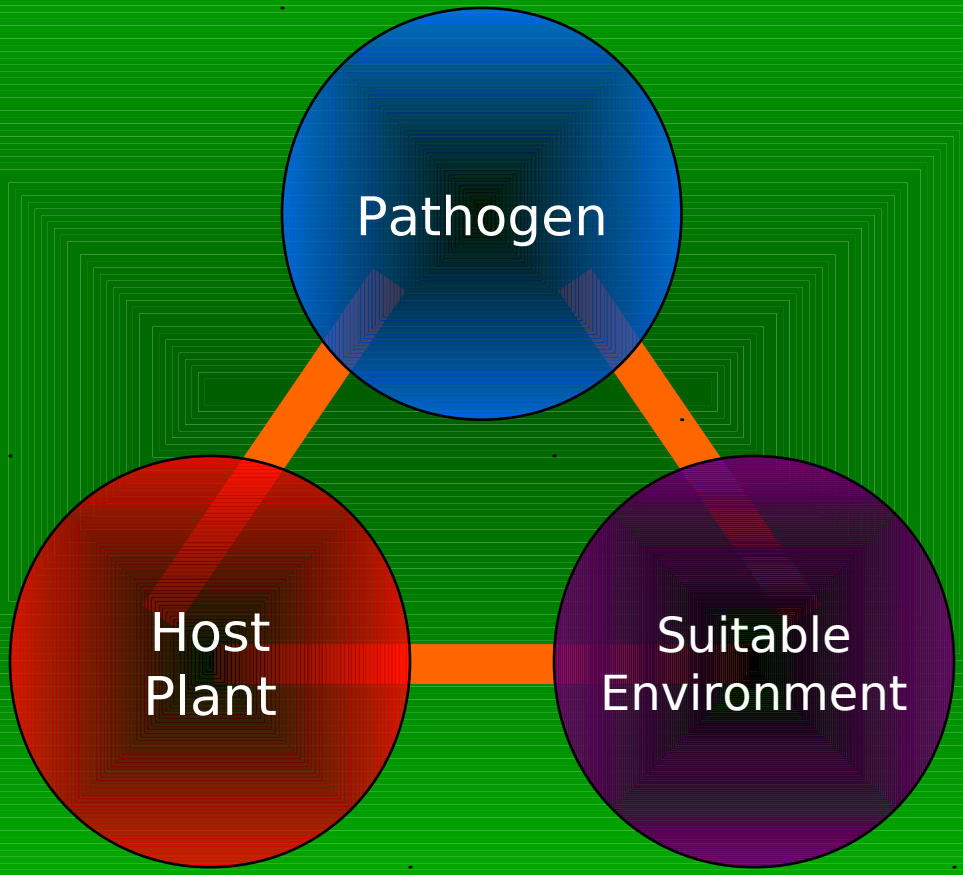
- SYMPTOMS
  - Evidence of sickness or injury that shows up in the plant -- dead spots in leaves, rotten spots in fruits, etc.

Symptom of Disease

Disease Development

- Three factors necessary for disease development
  - Susceptible host
  - Presence of pathogen
  - Favorable environmental conditions
- “Disease triangle”

Plant Disease Development



All three factors must exist for disease to occur

Insects And Related Pests Are Divided Into Two Major Categories.

They Either Chew Your Plants Or Suck Out The Juices.

It Seems Like These Pests Would Be Easy To Diagnosis, But Pests Are Often Carefully Hidden Or They Feed Only At Night.

Sometimes The Damage Is Confused With Other Problems.

Some Insects Are Specific To One Kind Of Plant, Slugs And Snails, Grasshoppers And Many Others Feed On Many Types Of Crops.

To Successfully Diagnose A Plant Problem, Follow These Steps:

1. Although This Seems Very Elementary, It Is Critical To Identify The Plant Correctly.

If Possible, Find The Scientific Name Of The Plant Because Common Names Are Frequently Used For Distinctly Different Plant Species.

For Example, There Are Many Different Species Of Pine Trees Each With Different Plant Diseases Unique To That Species.

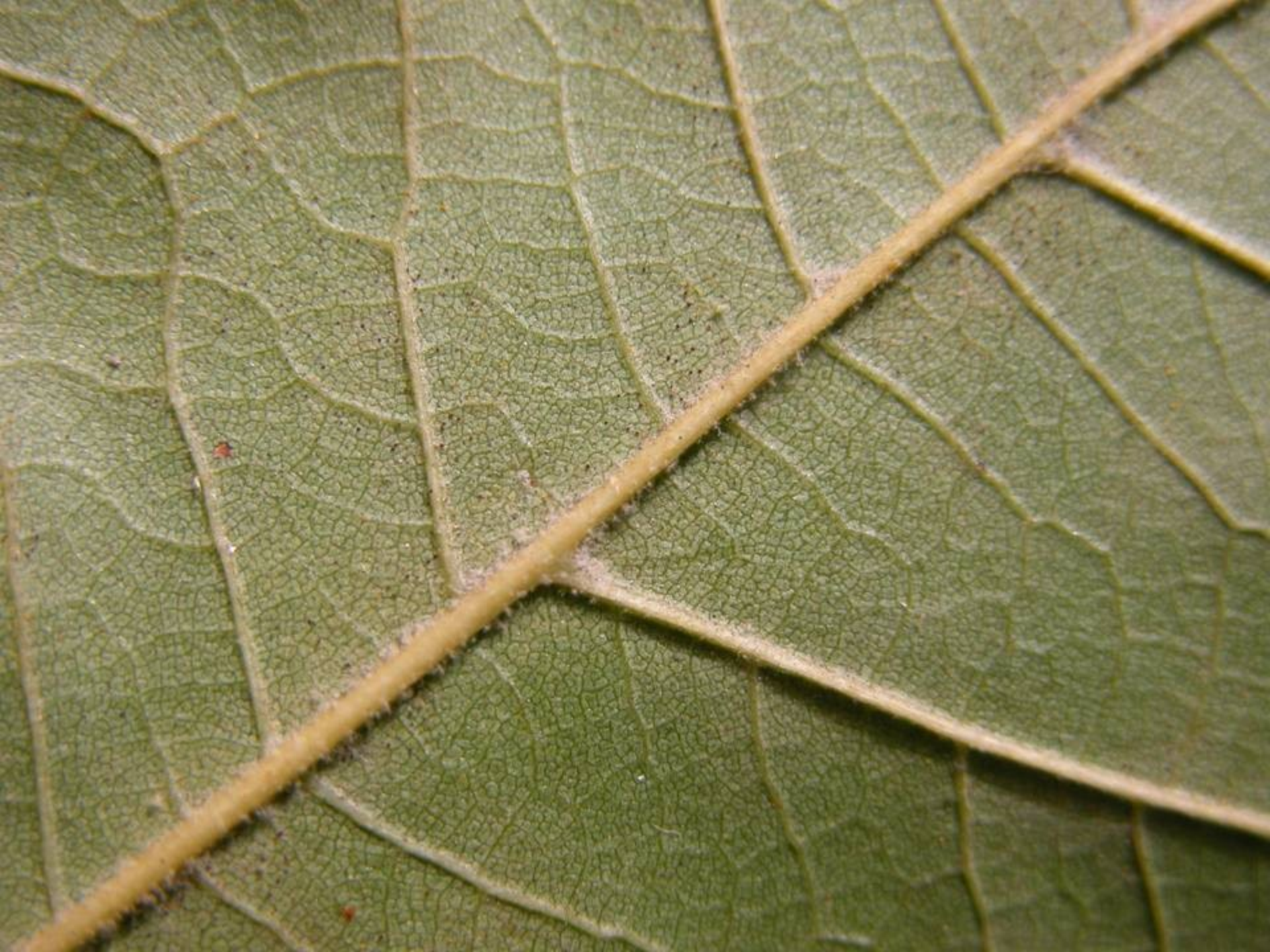
Many evergreens are erroneously called pine trees but there are pines, spruces, firs and many other trees that have needles

2. Determine What Problems Are Likely To Occur On Your Plant.

Two Good References Are Utah Plant Disease Control Bulletin No. 13 And Ortho Problem Solver Available As A Reference At Many Libraries And Most Local Nurseries.

3. Compare The Affected Plant With Nearby Healthy Plant To Make Certain There Is A Problem.

Sometimes Normal Plants Are Mistaken To Have Problems.



For Example, Conspicuous Fuzz That Is Confused With Fungus Mycelium Covers The Leaves Of A Healthy Sycamore.

My Tree Has Brown Needles

- Ask these questions
- What kind of tree?
- What is normal?
- What needles are brown?
- What is the growing environment?

My Tree Has Dropped Needles

My Tree Has No Needles

Dawn Redwood Deciduous Conifer

Blue Spruce

Blue Spruce

Giant Sequoia

Needle Drop of Evergreens

- Pathogenic or Non Pathogenic

Next, Determine The Distribution Of The Problem Within The Garden.

Is More Than One Plant Species Affected?

If So, Climate, Chemicals Or Other Cultural Factors Likely Caused The Problem.

Other Causes Are Toxic Chemicals Such As Herbicide Or Air Pollution.

If The Condition Is Distributed Uniformly In A Low Spot In The Field Or At The Edge Of A Planting, Suspect A Soil Or Water Factor Or Toxic Chemical.

If The Symptoms Show Up "Overnight" Or In One Or Two Days, Suspect A Climatic Factor Or Toxic Chemical.

When The Problem Affects All Of The Plants In A Particular Area, The Cause Of The Problem Is Probably A Deficiency Or Excess Of A Soil Nutrient Or Problems Or Drought, Frost Or Hail.

Plant Pathogens Rarely Cause A Condition To Appear Suddenly. They Usually Begin At One Point And Spread Slowly To Other Plants.

Parasitic Diseases And Insects Progress With Time And Rarely Infect 100% Of The Plants In An Area.

Look At The Growing History.

Have You Grown The Same Plants There Year After Year?

Have You Grown The Same Plants There Year After Year?

Were There Problems Growing Other Species Of Plants In The Same Location?

Have Herbicides Or Other Chemicals Been Used In The Area?

Look At The Weather History And Determine If There Have Been Any Unusually Cold, Hot Or Wet Climatic Conditions In The Past.

Many Above-ground Symptoms Indicate Root Rot.

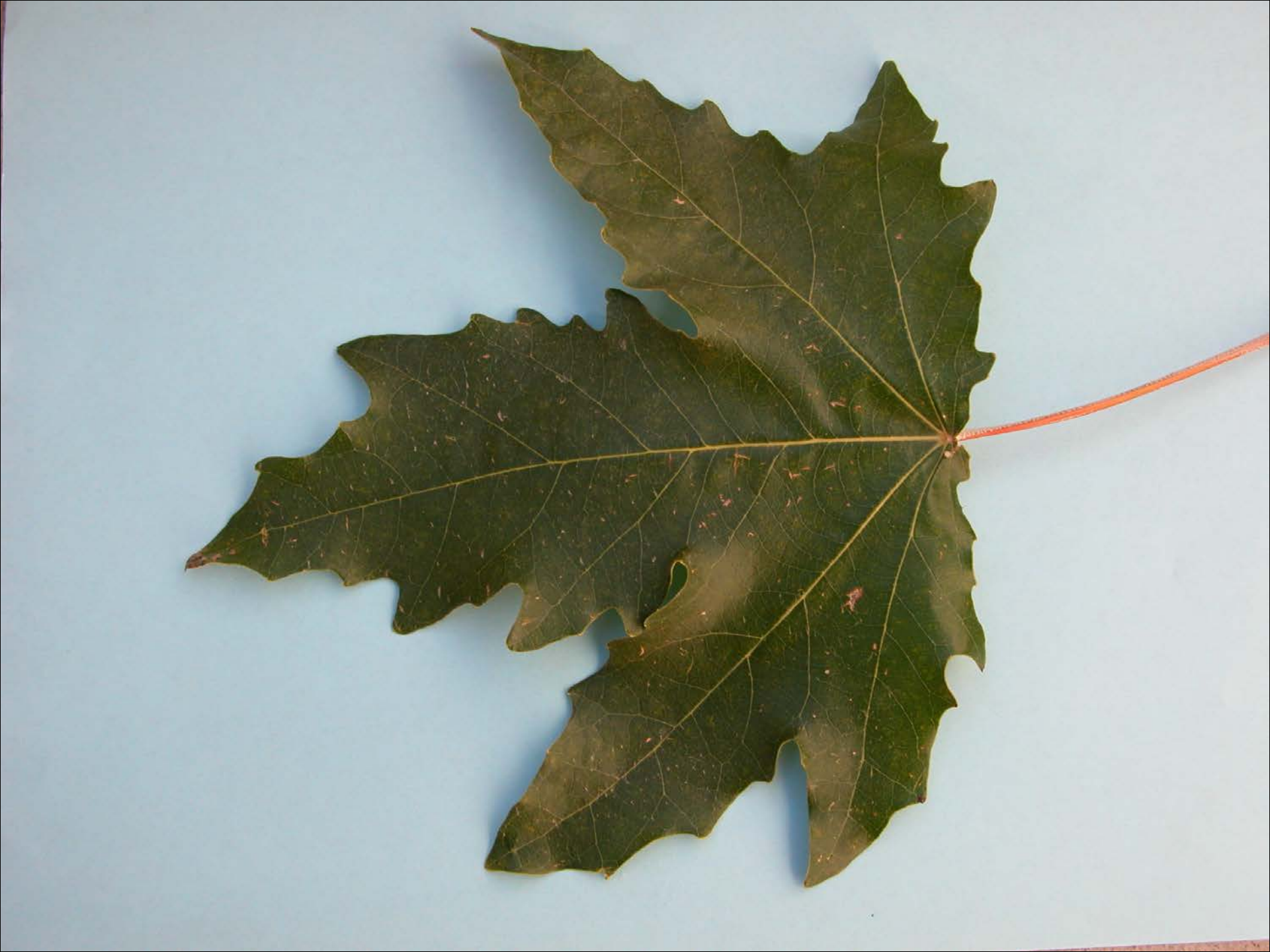
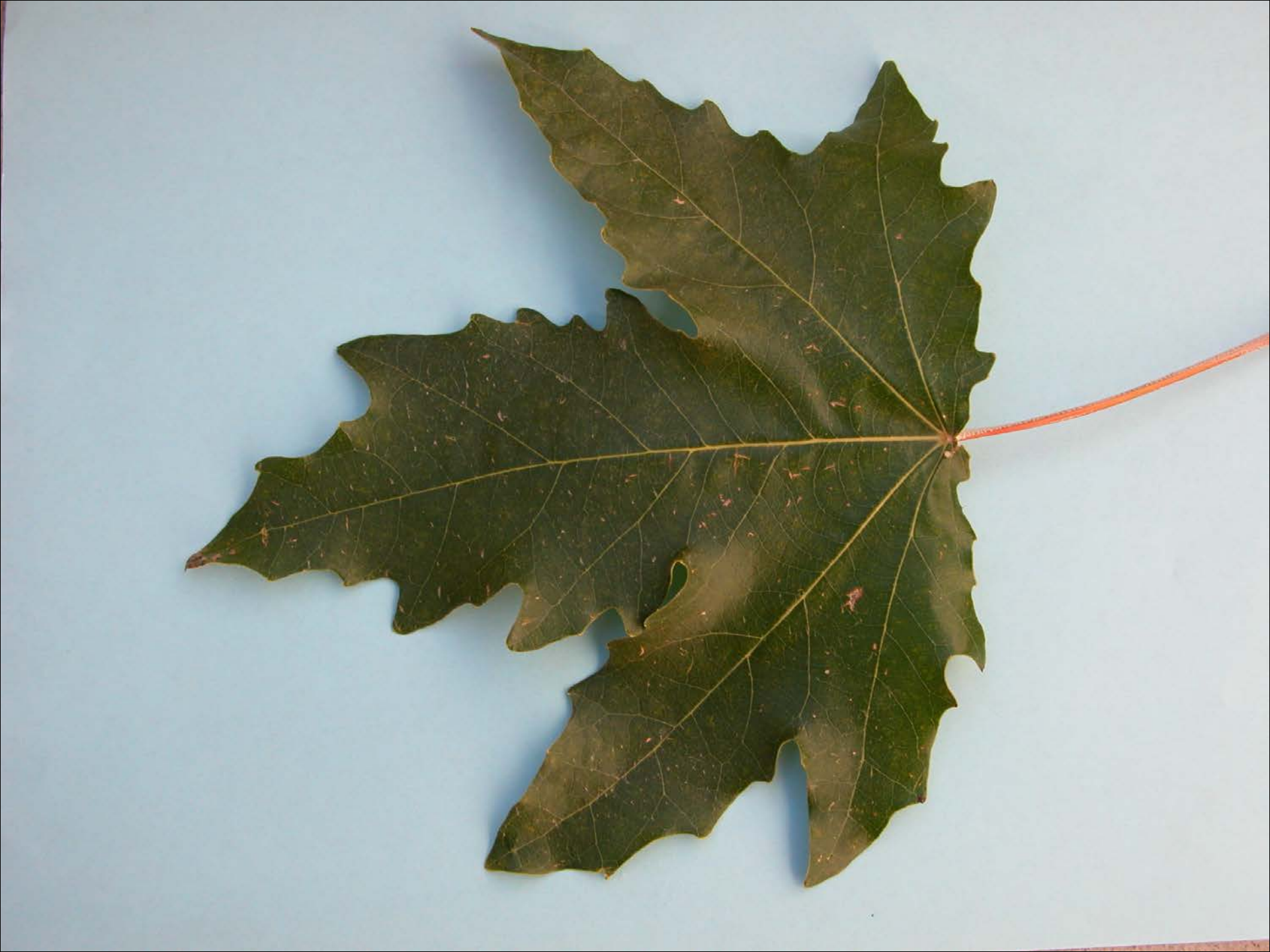
Small, Yellow Or Wilting Leaves, Poor Terminal Growth And Little Fruit Or Flower Production Often Indicates Root Rot.

Many Plant Diseases In Utah Are Caused By Soil-borne Pathogens.

Look For Dead Roots Or Dead Areas In The Bark.

Healthy Roots Are White Or Cream Color. If The Insides Are Brown Or Black The Plant Likely Has Root Rot.

One Excellent Resource To Help You With Plant Problems Is The Diagnostic Clinics At Utah State University Extension Service Offices Along The Wasatch Front.

Agents And Master Gardeners Will Examine Your Plants Or The Pests That Are Bothering Your Plants And Recommend A Solution.

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