



POCKET GARDENER

Common Plant Diseases

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Diagnosing Plant Problems

Environmental Symptoms

- Typically more than one species is affected.
- Symptoms typically develop suddenly.
- Symptoms do not spread (localized).
- Distribution is typically uniform.

Pathogen Symptoms (Fungi, Bacteria, Virus)

- Typically only one species is affected.
- Symptoms typically develop slowly.
- Symptoms spread from plant to plant.
- Distribution is typically scattered, clustered, or sporadic.

Fungi: Dry, defined border. Visible hyphae, cankers or fruiting bodies.

Bacteria: Slimy, smelly, wet, and no defined border. Bacterial ooze or galls.

Virus: Colored, streaks, and distorted tissue.

Keeping Notes

- Identify the plant species affected.
- Observe and document the symptoms seen.
- Observe and document the plant's environment prior to and during symptom development.
- Take thorough notes and photos of the suspected problem.



Powdery Mildew

Fungal Disease



FIG 1. ORNAMENTAL PLANTS



FIG 2. PUMPKIN



FIG 3. CHILE



FIG 4. ONION

Powdery Mildew

Overview: Powdery mildew does not typically kill its host but does decrease yields and flowers.

Plants Affected:

Almost all vegetable and garden plants.

Signs:

Fungal white mats on leaves, buds or fruit.

Symptoms:

Yellow leaves, leaves curl and drop.

How it Spreads:

Spores can be spread by wind, splashing water, or plant to plant contact.

What to do:

- Remove fallen, infected leaves.
- Selectively prune to encourage airflow.
- If necessary, preventative and systemic fungicides are available.

Rust

Fungal Disease



FIG 1. SPORE PUSTULES ON COTTON



FIG 2. APPLE



FIG 3. ROSE



FIG 4. CEDAR

Rust

Overview: Rust does not typically kill its host but does decrease plant vigor and decrease yields.

Plants Affected:

Numerous trees, shrubs, grasses, fruits, and vegetables.

Signs:

Spore pustules on fruit and leaves.

How it Spreads:

Spores can be spread by wind, insects, rain, and animals.

What to do:

- Sanitation.
- Remove infected areas or plants.
- If necessary, preventative and systemic fungicides are available.



Needle Cast

Fungal Disease



FIG 1. REDDISH PURPLE NEEDLES



FIG 2. REDDISH PURPLE NEEDLES



FIG 3. PYCNIDIA



FIG 4. BOTTOM-INSIDE
NEEDLES FALLING

Needle Cast

Overview: Needle Cast is caused by the *Rhizosphaera* fungus.

Plants Affected:

Evergreens and conifers.

Signs:

In early spring, black pycnidia containing spores are visible on needles.

Symptoms:

In summer and fall, needles turn yellow to red-purple to brown, then drop from the plant from bottom to top and inside to out.

How it Spreads:

Spring rain splashes spores from infected needles onto newly emerged needles.

What to do:

- Reduce stress by providing adequate water to the plant.
- Selectively prune to reduce humidity and encourage air circulation.
- Remove potentially contaminated brush, grass, weeds, and needles from around trees.
- If needed, fungicides are available for severe outbreaks.



Phomopsis Blight

Fungal Disease



FIG 1. DIEBACK OF JUNIPER



FIG 2. PYCNIDIA



FIG 3. PINE



FIG 4. JUNIPER BRANCH TIP

Phomopsis Blight

Overview: Phomopsis blight is caused by a fungus that affects stressed or wounded plants.

Plants Affected:

Junipers, cottonwood, cedars, pine, shrubs, small fruits and other hardwood trees.

Symptoms:

Dieback, blight, and cankers.

How it Spreads:

Spores spread by wind, water (rain and sprinklers), insects, and pruning with contaminated tools.

What to do:

- Avoid wounding plants.
- Reduce stress; provide adequate water.
- Remove infected twigs and branches.

Vascular Wilts

Fungal Diseases



FIG 1. TOMATO



FIG 2. BRANCH DIEBACK



FIG 3. VERTICILLIUM WILT



FIG 4. FUSARIUM WILT

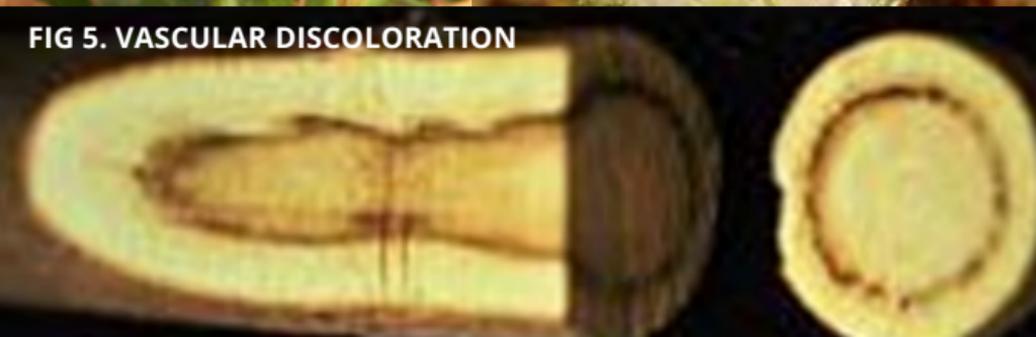


FIG 5. VASCULAR DISCOLORATION

Vascular Wilts

Overview: Vascular wilts are common in New Mexico soils. They include Verticillium Wilt and Fusarium Wilt; each is caused by a fungi of the same name.

Plants Affected:

Most garden and ornamental plants; potato, chile, tomato, pumpkin, melons, alfalfa, cotton, redbud, rose, catalpa etc.

Symptoms:

Yellowing, wilting, leaf loss, and vascular discoloration.

How it Spreads:

Infested soil or infected plant material.

What to do:

- Management is difficult, therefore prevention is key.
- Avoid crown and root injuries.
- Soil solarization can reduce the amount of fungus in the soil. Tightly cover the area of soil with clear plastic and let the sun heat up the soil for a couple of weeks. After solarization, reintroduce beneficial fungi and bacteria into the soil before planting.

Fire Blight

Bacterial Disease

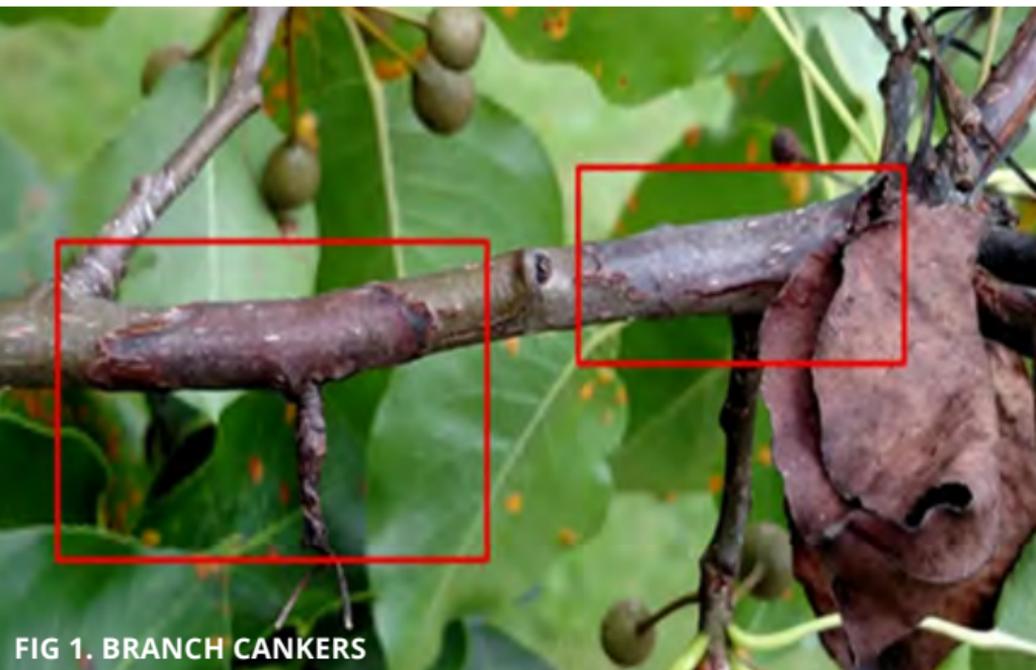


FIG 1. BRANCH CANKERS

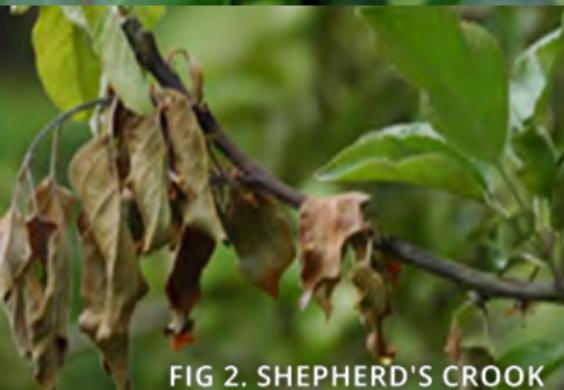


FIG 2. SHEPHERD'S CROOK



FIG 3. FIRE-LIKE SYMPTOM



FIG 4 ORNAMENTAL PEAR

Fire Blight

Overview: Fire blight is caused by the bacterium *Erwinia amylovora*. It is one of the oldest known bacterial diseases of plants.

Plants Affected:

Rosacea family: e.g. apples, cherries, rose, peach, ornamental pear and photinia.

Signs to look for:

Bacterial ooze leaking from fruit.

Symptoms:

Twigs become water-soaked, dark and dry, and cracks can develop. Young twigs and branches die from the terminal end and will appear burned or sometimes bend (Shepherd's Crook).

How it Spreads:

This bacteria is spread by wind-blown rain, contaminated pruning tools/insects.

What to do:

- Prune infected branches at least 6-inches below the margin of disease.
- For commercial orchards, protective sprays applied during flowering may be cost-effective.



Bacterial Leaf Spot

Bacterial Disease



FIG 1. LETTUCE



FIG 2. TOMATO



FIG 3. CHILE



FIG 4. BEAN "SHOT-HOLE"

Bacterial Leaf Spot

Overview: This bacteria normally lives on plant surfaces in small numbers with no problems. Moist, humid conditions can cause the bacteria to multiply and cause disease.

Plants Affected:

Commonly pepper, tomato, beans, lettuce, pumpkins.

Symptoms:

Leaf spot with yellow halo. Over time the center of the spot dries and falls out leaving a "shot hole" appearance.

How it Spreads:

The bacteria can spread by irrigation splash or movement of people and equipment through the affected areas.

What to do:

- Avoid sprinkler irrigation.
- Increase airflow around plants.
- Treat seeds in hot water (122 F for 20 minutes)
- Protective sprays are available.



Beet Curly Top Virus

Viral Disease



FIG 1. YELLOWING



FIG 2. STUNTED
YELLOWING CHILE



FIG 3. BEET LEAF HOPPER



FIG 4. CURLING
TOMATO LEAVES



FIG 5. LONDON ROCKET

Beet Curly Top Virus

Overview: Beet curly top virus (aka. curly top virus), is common throughout arid and semiarid regions of the world.

Plants Affected:

Wide host range including: peppers, potatoes, tomato, melons, beans, spinach, alfalfa, hemp/cannabis, and many weeds.

Symptoms:

Yellowing, stunting, twisted/curling leaves, leathery leaves, and little to no fruit.

How it Spreads:

This virus is transmitted (vectored) from infected plants to healthy plants by the beet leafhopper (*Circulifer tenellus*), which overwinters in mustards (e.g. London Rocket and flixweed).

What to do:

- Remove infected plants that contain the virus.
- Manage weeds such as the mustards which harbor the beet leafhopper.



Alfalfa Mosaic Virus

Viral Disease



FIG 1. MOSAIC PATTERN



FIG 2. PEPPERS



FIG 3. CHILE



FIG 4. APHIDS

Alfalfa Mosaic Virus

Overview: Alfalfa mosaic virus is found worldwide. It is common in New Mexico and can infect individual plants resulting in little or no fruit production.

Plants Affected:

Commonly: chile, soybeans, legumes, alfalfa, tomato.

Symptoms:

Leave have mosaic patterns of bright yellow and dark green tissue. Plants may be stunted.

How it Spreads:

This virus is transmitted (vectored) from infected plants to healthy plants by aphids.

What to do:

- Remove infected plants.
- Manage weeds and insects.

Key Concepts

Integrated Pest Management (IPM) is a broad-based approach that combines both non-chemical and chemical practices for economic control of pests (pathogens). Identification of the problem is the most critical part of IPM.

Examples of IPM for diseases include:

- Host/Crop Selection: Looking for tolerant and resistant varieties.
- Cultural Management: Proper site selection, spacing, watering schedule, insect and weed management.
- Biological Management: Using beneficial bacteria or fungi to manage pathogens.
- Chemical Management: Preventing and protecting crops/plants from pathogens.

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Limitations

The suggestions provided in this publication are not comprehensive nor intended for commercial purposes. Please consult additional resources for further information.

POCKET GARDENER

Common Plant Diseases Pathogen Identification Cards

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Summary

These cards are meant to help readers identify and manage common disease problems in New Mexico home gardens. The suggestions provided are not comprehensive nor intended for commercial purposes. Please consult additional resources for further information.

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Learn more at : plantclinic.nmsu.edu



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