

Diagnosing Plant Damage In The Garden:

Is The Problem Due To Environment, Insect Pests, or Disease?

1. Damage due to non-living (environmental) factors has a uniform distribution

A. Fertility

- Too much fertilizer: this causes injury due to high salt (root burn, leaf tip and periphery of leaf is brown, wilting)
- Too little fertilizer: this causes nutrient deficiency (yellowing and/or death, stunting, no new growth)

B. Light

- Too much light: leaf burn, sunscald, absence of flowers
- Too little light: seeds don't germinate, spindly growth

C. Temperature

- High: rapid wilting, sunscald
- Low: slower growth, death

D. Soil moisture

- Too wet (poor drainage, clay soils): root rot, fruit cracking, wilting
- Too dry (sandy soil): wilting, leaf scorch, stunting, yellowing, no flowers

E. Herbicide injury

- Symptoms include yellowing or death of leaves, stunted or distorted growth, bleached-out (not green) spots

2. Insect damage appears in a non-uniform distribution (clumps, hotspots)

- Symptoms: stippling (tiny yellow spots due to sucking plant juices out of leaf), leaf holes, ragged looking and/or deformed leaves
- Signs: insect poop (frass), presence of insect causing damage, honeydew/sooty mold (honeydew is a sugary liquid secreted by some insects, and sooty mold eats it)

3. Plant Pathogen causing disease appears in a non-uniform distribution (clumps/hotspots)

A. Fungi

-Symptoms: spots with concentric rings like a bulls-eye, stem cankers (depressed areas), wilts, rotting, damping-off of seedlings

Signs: spores, mushrooms/conks, white threads (mycelium)

B. Bacteria

-Symptoms: water-soaked angular lesions, slimy texture, foul smell, leaf and fruit spots, canker, wilt, galls, soft rot

-Signs: bacterial streaming (cutting into damaged area and placing into clear glass of water shows cloudy bacterial stream coming out)

C. Nematodes (microscopic worms):

-Symptoms: stunted plants and root systems, poor or slow growth, death of plant

-Signs: galls (bumps, enlarged areas) on roots

D. Virus:

-Symptoms: distorted or stunted growth, mottling, mosaic, ring spots, death

-Signs: too small to see, requires lab analysis at Virginia Tech

4. Virginia Tech accepts samples of weeds (ID), insects (ID), and plants (ID and disease diagnosis). Please call the Hanover Master Gardener Help Desk (804-752-4306) for instructions about how to collect samples and when to drop off. The Virginia Cooperative Extension Help Desk is located in Ashland, 13015 Taylor Complex Lane, at the rear of the Parks and Rec. building. Each sample requires a form completed by the homeowner describing details of the sample. Form and sample are mailed from the Help Desk to Tech. Sample reports (ID, disease diagnosis and control) are received by the Help Desk and sent to the homeowner. There is no charge for this service.