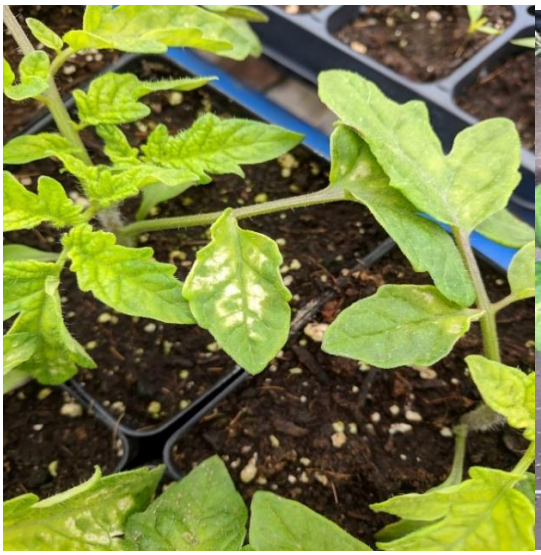
THE UNIVERSITY OF VERMONT EXTENSION

High tunnel tomato diseases

Ann Hazelrigg, Ph.D. and Gabriella Maia, M.S., UVM Plant Diagnostic Clinic

Early season issues are primarily abiotic:

- **Cold air or soil temperatures** can cause leaf spotting/damage and/or purpling of foliage. Check new growth-if it looks good and undamaged this indicates the roots are vigorous and the plant is recovering. If the new growth looks poor, check the root system for rot.



- **Ethylene damage:** Curling and twisting of foliage that seems to occur all at once. Check for cracked or poorly vented heaters. New growth should grow out healthy once the source of ethylene is identified and eliminated, although the damaged tissue will remain lower in the plant. If these symptoms occur later in the season, check for broad mites, pesticide contaminated compost or virus diseases.

- **Edema:** Corky lesions appear on leaf undersides, sometimes on upper side or along veins. Too much water during cloudy cool weather. New growth should look ok once conditions have changed.


The main infectious disease problem early in season is damping off or crown rot. Several soil borne fungi attack roots causing wilt and poor vigor. These fungi are in all soils and prefer cold, wet conditions. New growth would look poor. Always look at the roots first. If they are brown and sloughing off, start over with clean flats and soil. Heat mats, good sanitation and Rootshield ® may help. **Crown rot** shows the same upper plant symptoms as damping off but roots tend to look ok while the stem at the soil line is constricted or rotted from cool wet soils**.** New growth not would not be ok.

Later season diseases:

Foliar: High tunnel tomatoes do not typically get the same leafspot diseases (Septoria or Alternaria/early blight) as field-grown tomatoes since they are protected from rain and leaf wetness. However, high tunnel tomatoes are susceptible to a variety of fungal diseases that thrive in high humidity. To avoid these diseases maintain humidity below 85% through use of fans, rolling up sides, open ends, top vents, pruning lower leaflets and increasing space between plants.

Botrytis/gray mold: Prefers high humidity and will attack dying tissue and old flower blossoms. Fine gray spores are obvious on the affected parts. 'Ghost spotting' may occur on fruit. Lower humidity, clean up dead tissue.


Leaf mold: Prefers high humidity and causes yellow “polka dotting” on the upper leaf surface and on the underside of the leaf you will see the gray/purplish spores of the fungus. Lower humidity and choose resistant cultivars.

Powdery mildew: Specific to tomatoes only. White spores on the leaf surface. Hard to keep up with the disease if it occurs early in the season. Keep new tissue protected with fungicides at first sign. Inspect transplants before introducing into the greenhouse. Fungicides include those containing sulfur, copper, chlorothalonil, oils (stylet, sesame, rosemary, thyme); plant extracts (Regalia®), biocontrol microorganisms (including sp. of *Bacillus a*nd S*treptomyces*) and potassium bicarbonate (Milstop®). Fungicides should be applied weekly to maintain control. Pathogen does not live in dead tomato refuse so it will not overwinter.

Late blight: Large patches of dead tissue with spores visible on the lesion edges during high humidity. High tunnel tomatoes will not escape the disease if humidity is high and inoculum in the area is prevalent. Subscribe to Extension newsletters or check USA Blight (https://usablight.org/2019-map/) to see if the disease is in the area. Pathogen does not overwinter in VT. Lower humidity and protect plants with fungicides.

Meg McGrath, Cornell University

Abiotic disorders:

Blossom end rot: dead, brown portions on blossom end of fruit due to imbalance of water and calcium. Even out watering. The second set of fruit is usually fine. Dead areas of the tomato may become covered with black sooty spores due to secondary infections.

Magnesium deficiency: interveinal foliar yellowing in the lower part of the plant. Common in mid/late season. Prune up to first cluster. This rarely results in yield reduction and does not indicate a soil deficiency but is related to high potassium availability or poor root development. This makes the plant unable to take up sufficient Mg, forcing the plant to move Mg from old leaves to the new. Magnesium deficiency is corrected by applying an Epsom salts fertilizer (magnesium sulfate) through the drip or watering directly onto plant rows but is typically not warranted. Most growers prune off these lower leaves. For more information go to

https://www.uvm.edu/vtvegandberry/factsheets/OrganicGreenhouseTomatoNutrition.pdf

Cankers: Symptoms include wilting in the tops of plants that typically do not recover during the night. Leaf edge scorch/browning common. Check lower in the plant.

Sclerotinia white mold: Fluffy white mold at the base of the plant typically in wet or poorly drained areas in the tunnel causing a brown canker and wilt. Black hardened sclerotia that look like mouse droppings may be within the mold or in the stem. Sclerotia can live several years in the soil. Cut off plant at base, remove and destroy.

Bacterial canker-May see black lesions on the stems, wilting and/or severe leaf scorch. Cut into the vascular tissue just under the skin of stem to look for browning. Remove plant, watch neighboring plants for development of symptoms. Very easily spread through suckering and pruning. Purchase only hot water treat seed.

Dan Egel, Purdue **Meg McGrath, Cornell**

For help with disease and pest identification and management, contact the UVM Plant Diagnostic Clinic, 63 Carrigan Drive, Burlington, VT 05405

802.656.0493

https://www.uvm.edu/extension/pdc