



VEGETABLE PEST ADVISORY

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Advisory Key



Current status and risk of pest within Utah. This is based off site surveying, grower reports, and degree-day modeling.



Identifying characteristics of the pest along with their life cycle in Utah.



Identification of signs and symptoms caused by the arthropod pests or disease on host plants.



Monitoring, prevention, and control strategies using integrated pest management.

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ABIOTIC DISORDERS

Blossom End Rot



Blossom End Rot (BER) is a concern as fruits begin developing. Tomatoes, peppers, eggplants, pumpkins, squashes, and watermelons are all susceptible.



Blossom-end rot is a disorder caused by a lack of calcium in the fruit. Calcium is a nutrient that contributes to healthy cell walls, and when deficient, cell breakdown occurs. Causes of the disorder include uneven soil moisture, over-fertilization, or prolonged periods of cool, wet soil. The uneven or excess moisture prevents the delivery of calcium to the farthest reach of the plant—the blossom ends of the fruits.



Brown water-soaked or targetlike spots on the bottom of the fruit.



Blossom-end rot can be prevented with proper irrigation management and mulch to maintain even soil moisture. Avoid overwatering as it can exacerbate the condition, especially in heavy clay soil. If blossom-end rot is a recurring problem, spray plants with a foliar calcium spray (available at garden centers). Applying calcium or eggshells to soil is ineffective as Utah soil typically has ample calcium levels. Remove affected fruit from plants to promote healthy development of remaining fruit.



Blossom end rot on tomatoes



Blossom end rot on tomatoes

Poor Root Development



A lot of diagnostic sample submissions and field scouting have shown tomato plants with poor development.



A lot of diagnostic sample submissions and field scouting have shown tomato plants with poor root development. Poor root development in tomatoes can occur from a variety of factors. This includes being rootbound within the growing cells at transplant. In this case, adventitious roots may develop higher up in the stem. Other factors include planting depth, irrigation, and soil type.

Plants that look wilted or have extensive die-back, may need to be pulled and have the roots examined. Rootbound plants may only extend a couple of roots into the surrounding soil and if root rot pathogens are present can decay the roots leaving the plants without adequate water and nutrient supply. The symptoms aboveground look very similar for many different causes. Some tomato plants curl their leaves upwards to prevent moisture loss in the heat. It has nothing to do with curly top disease. So far, this year we had only a couple of tomato plants with curly top but a lot of tomato plants that were rootbound and/or root rot.



Tomato plants with bounded roots



Tomato with poorly developed roots

Physiological Leaf Curl/Roll



Tomato plants are currently showing symptoms of physiological leaf curl/roll due to the heat and other factors.



Upward curling or rolling of tomato leaves can be caused by a variety of factors, such as herbicide damage, virus infection, or environmental stresses. Leaf curling or rolling can also be attributed to physiological factors like transplant shock, early planting, root damage from hoeing, severe pruning, drought, heat, an excess or shortage of nutrients, or excessive moisture.



Physiological leaf curl in tomatoes



Symptoms of leaf curling are the upward cupping of the leaflets toward the mid-vein, and thickened, leathery foliage that remains green. Indeterminate varieties (vining tomatoes) tend to exhibit more physiological leaf roll than determinate varieties (bushing tomatoes). Fortunately, physiological leaf roll tends to have minimal impact on the plant growth and fruit production of tomatoes.



Practices to mitigate physiological leaf roll include selecting less susceptible cultivars, allowing seedlings to properly harden off before transplanting, maintaining consistent soil moisture, avoiding over or under fertilizing, and avoiding excessive pruning.

Sunscald



Exposed tomatoes, peppers, and eggplants fruits can lead to sunscald.



Sunscald occurs on multiple fruit crops when intensive sun light damages the skin. Both green and fully ripened fruit can be affected. Fruits on plants that lose foliage suddenly are especially susceptible.



On tomato, it is expressed as white or light-colored, blister-like spots. Eventually the affected areas of the fruit may dry out, become sunken or flattened, and have a paper-like texture. The injury may allow for rot-causing fungi or bacteria to enter.



Prevent sunscald by not pruning in mid-to-late summer. Improve water and nutrient management to allow for healthy foliage growth. Risk of sunscald can increase after harvesting has begun. Therefore, when working amongst tomato plants, take care not to cut or break excessive amounts of vines, leaves, or branches. Shade cloth (30%) can help reduce sun exposure and lower plant temperatures



Tomato with sunscalding



Pepper with sunscalding

Herbicide Damage



Tomatoes and other vegetables crops are susceptible to herbicide damage, especially during the heat of the summer.



Herbicide damage occurs when a broad leaf herbicide contacts the plant either directly or indirectly via drift, vapor, or herbicide residues in soil, mulch, or compost materials.



Symptoms include small misshaped leaves that are thick and tightly curled, stunted growth, and die back in severe exposure. Plants may recover from minor damage, but yields are typically reduced. Some herbicides that are sprayed during hot temperatures can volatilize with long-distance drift of vapors, while others drift to nearby plants on windy days.



Avoid accidental exposure by following label application directions for temperature, wind speed, correct nozzle size, and spray pressure. Use a hooded sprayer, increase the droplet size, add a spray additive to reduce drift, thoroughly clean sprayers after use, and avoid spraying when winds are blowing toward the crop. Tomato plants that are exposed to small doses of herbicide damage will likely recover. If exposure is determined to be from mulch or compost, then immediately stop using and remove infected compost.



Tomato with symptoms of herbicide damage



Tomato with symptoms of herbicide damage

DISEASES

Curly Top Virus



There have been a few confirmed cases of curly top virus across Utah this season.



Beet leafhopper adults and nymphs jump when disturbed and have wedge-shaped bodies varying in color from pale green, gray, or tan. As BLHs pierce a plant and feed, they will inject and leave behind virus particles inside the plants. They only need to feed for one minute on an uninfected plant to transmit the virus. BLHs that have acquired the virus can transmit the virus for the remainder of their life. There are many hosts that can be infected with the beet curly top virus. This includes common weeds such as filaree, kochia, lambsquarter, mustards, pigweed, plantain, Russian thistle, and shepherd's purse. Keep your tomato production area well-maintained and free of weeds that can serve as an alternate host for beet leafhoppers and the virus they spread. The spread of curly top in tomato fields depends on the seasonal cycle of the beet leafhopper. It's well adapted to desert conditions and can overwinter on limited vegetation in areas that have been uncultivated. When weed hosts dry up in the spring or early summer leafhoppers move into the valleys and feed on spring crops.



Potyvirus symptoms in garlic



Potyvirus symptoms in garlic



Infected young plants are usually killed. Infected older plants may survive, but they will be yellow with stunted growth. Leaves will become thicker and crisp and will roll upwards as the petioles of the leaf roll downwards. They will also turn a dull yellow color with purple-colored veins. The fruit will ripen prematurely and will be dull and wrinkled. Calyx tissues will often be abnormally large and thick.



The sporadic nature of BCTV occurrence makes it very difficult to implement practical management strategies for this disease. Physically exclude beet leafhoppers from tomatoes early in the season by using row covers. Spraying pesticides for leafhoppers may be effective early in the season. However, leafhoppers are highly mobile and may return to the site.

Disposing of infected plants early on may reduce virus spread. Tomato is not a desired host for the BLH, but the insects will remain in tomato fields long enough to transmit the virus while feeding.

INSECTS

Earwigs



Earwig populations tend to peak mid-summer.



Adults are slender with a brown body, red-brown head, and a prominent pair of "pinchers" (cerci) on the rear of the body. European earwigs are omnivores, feeding on a diverse diet including plants, fungal spores, small invertebrates, and decaying organic matter. Populations tend to build to their highest densities in mid- to late summer. There are 2 or more generations per year. They overwinter as brooding pairs or above ground in aggregations. Adults like to hide in dark, tight, and moist places during the daytime and may seek shelter inside buildings. Eggs are laid in clusters of 30-40 within nests in the soil.



Earwigs feed on buds, flowers, fruits, corn silks (and some corn kernels), tender vegetable seedlings, and leaves causing direct plant damage, reduced crop yields, and aesthetic injury. They like to crawl into tight, dark places to spend the day making them an unwanted presence in harvested fruits, vegetables and flowers.



Earwigs are more abundant in highly irrigated or mulched areas.

- Place boards, corrugated cardboard, rolled-up or crumpled moistened newspaper, or bait containers (e.g. tuna can, yogurt container) with smelly oils (e.g. clam oil, bacon grease) in crop areas early spring and monitor weekly.
- Only manage when there is unacceptable crop damage.
- Use traps to monitor and reduce numbers.
- Reduce or remove nesting and hiding places.



Earwigs on lettuce



Earwigs on sweet corn