



This bulletin from the Cooperative Extension Plant Health Clinic (Plant Disease Clinic) is an electronic update about diseases and other problems observed in our lab each month. Input from everybody interested in plants is welcome and appreciated.



The Plant Health Clinic now has a Facebook page:

<https://www.facebook.com/UAEXPlantHealthClinic/?pnref=story>

Tomato

The larvae of several species of moth attack tomato fruit, including the Corn earworm, *Helicoverpa zea* and the Yellowstriped armyworm, *Spodoptera ornithogalli*. **Tomato Fruitworms**, *Helicoverpa zea*, are destructive pests of tomato, corn, and other crops. The adults are medium-sized moths, pale tan to brown with a dark spot in the center of the fore wing. They lay eggs singly on both surfaces of the leaves. The eggs hatch as creamy white caterpillars with a dark head. They change color as they grow and can be shades of brown, pink, green, or black with alternating light and dark stripes running lengthwise on their bodies. The caterpillars begin feeding on the leaves but move to the fruit as soon as green tomatoes appear. First noticeable on the fruit is a black hole at the base of the fruit stem. Inside the fruit, tunneling, frass and the worm may be found when the fruit is cut open. When the larvae reach full size, they migrate out of the fruit, fall to the ground and pupate. Adults emerge from the soil in 10-14 days and begin the cycle again. Caterpillars of the Yellowstriped armyworm are up to 2 inches long and may be green when small to almost

black.. They have two cream yellow to orangish stripes along the back, and a prominent dark spot on the sides of the fourth body segment behind the head (the first legless abdominal segment). Partially grown larvae appear to have pairs of triangular dark markings along the back of each body segment inside of the light-colored stripes. Adult moths have a wing-span of 1-1/2 to 1-3/4 inches. Control of both the Tomato Fruitworm and Yellowstriped armyworm consists of scouting for the larvae and handpicking along with chemical controls if necessary. *Bacillus thuringiensis* (Bt), is a naturally occurring bacterium that is fatal to caterpillars when ingested by them, but harmless to pets, people, and other types of insects. Other insecticides may be used including Baythroid, or Brigade, or Sevin, or Excel, or Coragen, or Voliam Xpress, or Asana, or Belt, or Synapse, or Lannate, or Intrepid, or SpinTor, or Confirm, or Mustang Maxx, or Hero. Homeowners may use Bt, or Ortho Flower, Fruit, & Vegetable Insect Killer, or Ortho Bug-B-Gon Insect Killer for Lawns and Gardens, Sevin, or Spectracide Insect Control for Gardens, or permethrins, or spinosad. Chemical control is ineffective once the fruitworm enters the fruit.



Tomato fruit with Yellowstriped armyworm- *Spodoptera ornithogalli*



Photo, courtesy of Janet Udouj

Tomato leaf with Yellowstriped armyworm- *Spodoptera ornithogalli*



Photo, courtesy of Janet Udouj

Tomato Fruitworm - *Helicoverpa zea*



Photo courtesy of Shane Ferguson, Blackcat Barnyard
Zinnia

Zinnias are delightful annuals that love the heat, and bloom constantly in an array of sizes, and colors. They don't require much in the way of care except for average fertility, adequate soil moisture, and six hours of sun per day. In spite of their easy care requirements, they can be bothered by several fungal diseases and a bacterial disease during humid, warm, weather. Bacterial Leaf Spot, caused by the bacterium *Xanthomonas campestris* pv. *zinniae*, causes a leaf, petal, and stem blight. Symptoms begin with dull gray, water-soaked spots that become yellow to tan and finally brown as the tissue is killed. The bacteria can survive in plant debris for as long as a year and is an important source of contamination when new plants are introduced to that site. The bacterium can be easily spread plant to plant by splashing irrigation water. Growers should avoid handling plants and working in the bed when the foliage is wet. Plants with leaf spots should be pulled up and removed. Fungicides containing copper hydroxide are labeled for control of *Xanthomonas* on ornamentals, but are only marginally effective.

Cercospora leaf spot, caused by *Cercospora zinniae*, produces nearly round, reddish-brown or dark purple spots with white or light gray centers. Leaves that are heavily infected turn brown and dry. *Alternaria* leaf spot, caused by *Alternaria zinniae*, produces nearly identical



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symptoms, but may also infect the stems, petioles, and flowers. Homeowners may use Fertilome Broad Spectrum Lawn and Garden Fungicide, (chlorothalonil), or Hi-Yield Vegetable, Flower, Fruit, and Ornamental Fungicide, (chlorothalonil) or Ortho Garden Disease Control, (chlorothalonil), or Ortho Disease B Gon Garden Fungicide, (chlorothalonil), or Garden Tech Daconil Fungicide, (chlorothalonil), or Bonide Fung-onil Multipurpose Fungicide, (chlorothalonil), or Spectracide Immunox Plus, (myclobutanil & permethrin), or Bayer Advanced Garden-Disease Control for Roses, Flowers, Shrubs, (tebuconazole), or Bayer Advanced Garden-All-in-One Fungicide/Insecticide/Fertilizer, (tebuconazole & imidacloprid), or Bonide Infuse Systemic for Turf and Ornamentals, (thiophanate-methyl), or Ortho Rose and Flower Insect and Disease Control, (triticonazole & acetamiprid), or BioAdvanced Science Based Solutions All-In-One Rose & Flower Spray Concentrate, or BioAdvanced Science Based Solutions All-In-One Rose and Flower Spray Concentrate, (tebuconazole & tau-fluvalinate).. All zinnia debris should be removed from the garden at the end of the season. Powdery mildew attacks a wide range of annuals, perennials, vegetables, field crops, shrubs, and turf. Lilacs, Crape myrtles, Dogwoods, tall garden phlox, zinnias, Columbine, Monarda, Roses, and cucurbits, are just a few species vulnerable to powdery mildew. Zinnia Powdery mildew, caused by *Golovinomyces spadiceus* (formerly *Erysiphe cichoracearum*), attacks zinnias in late summer as nights start to cool. Plants with too much shade and poor air circulation are the most susceptible. Symptoms are gray to white powdery growth on leaves and flower buds, distorted buds, and yellowed leaves. Powdery mildew seldom kills zinnias, but it is ugly and can weaken the plants. The most important preventative measure is planting resistant cultivars. The cultivars Zahara, Profusion, Bluepoint, Pinwheel, and the Star series are very resistant to powdery mildew. Fungicides don't cure, but can suppress powdery mildew. Ornamental fungicides such as those containing chlorothalonil give good control if applied at 7-10 day intervals at the first sign of disease. Watering the plants at ground level instead of by overhead irrigation also helps greatly to control diseases.

Zinnia Bacterial Leaf Spot- *Xanthomonas campestris* pv. *zinniae*



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Zinnia Cercospora Leaf Spot-
Cercospora zinniae



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Zinnia Powdery Mildew-
Golovinomyces spadiceus (formerly
Erysiphe cichoracearum)



Jim Robbins, University of Arkansas Cooperative Extension

Zinnia Powdery Mildew-
Golovinomyces spadiceus (formerly
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Jim Robbins, University of Arkansas Cooperative Extension

Apple

Blotch of apple, caused by *Phyllosticta arbutifolia*, can attack leaves, fruit, and twigs. Symptoms on fruit are raised scabby lesions. Spots on leaves range from pinhead sized, yellowish green spots in the interveinal areas to elongated, sunken, light tan areas. Petiole lesions result in defoliation. Lesions on twigs may coalesce, girdling the twigs and small branches. A regular fungicide program beginning two weeks after petal fall controls Blotch. Homeowners may use Serenade, or Bonide Fruit Tree and Plant Guard Concentrate, or Bonide Fruit Tree Spray, or Hi-Yield Captan, or Gordons Fruit Tree Spray, or Monterey Fruit



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Tree, Vegetable, and Ornamental Fungicide, ,Hi-Yield Vegetable, Flower, Fruit, and Ornamental Spray, or Spectracide Immunox Multi-purpose Fungicide for Gardens Spray Concentrate, or Bonide Infuse Systemic Fungicide (apply only to non-bearing trees).

Apple by Keiddy Urrea

a mancha de la manzana o "blotch of apple" como es conocida en inglés, es una enfermedad causada por el hongo *Phyllosticta arbutifolia*. Este patógeno ataca las hojas, frutas y tallos. Los síntomas en las frutas se expresan con pequeñas lesiones abultadas, mientras que en las hojas los síntomas se presentan de diferentes formas: pueden presentarse como pequeños puntos negros o como manchas verdes amarillentas a lo largo de la nervadura. Estas manchas pueden convertirse luego en manchas alargadas de color marrón. Las lesiones en los peciolo pueden causar defoliación. Cuando la enfermedad avanza los tallos y las ramas más largas se pueden torcer y morir. Para controlar la mancha de la manzana se recomienda aplicaciones de fungicidas dos semanas posteriores al comienzo de la floración. Para controlar la mancha de la manzana en jardines y huertas se recomienda Serenade, o Bonide Fruit Tree y Plant Guard Concentrate, o Bonide Fruit Tree Spray, o Hi-Yield Captan, o Gordons Fruit Tree Spray, o Monterey Fruit Tree, Vegetable, y Ornamental Fungicide, Hi-Yield Vegetable, Flower, Fruit, y Ornamental Spray, o Spectracide Immunox Multi-purpose Fungicide for Gardens Spray Concentrate, o Bonide Infuse Systemic Fungicide (aplicar únicamente en árboles que no estén produciendo frutas).

Apple Blotch- *Phyllosticta arbutifolia*



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"This work is supported by the Crop Protection and Pest Management Program [grant no. 2017-70006-27279/project accession no. 1013890] from the USDA National Institute of Food and Agriculture."
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