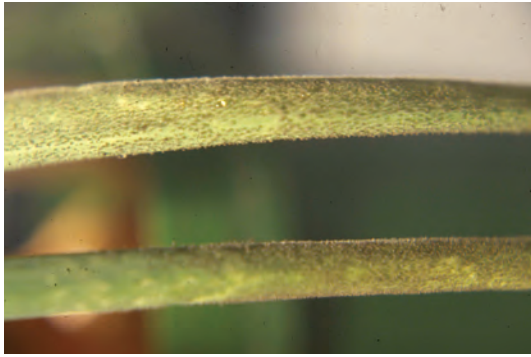


# Diseases & Disorders



Melvyn L. Lacy, Michigan State University,

**D-1 Alliums, Downy Mildew** - Sporulation of the oomycete *Peronospora destructor* on onion foliage.



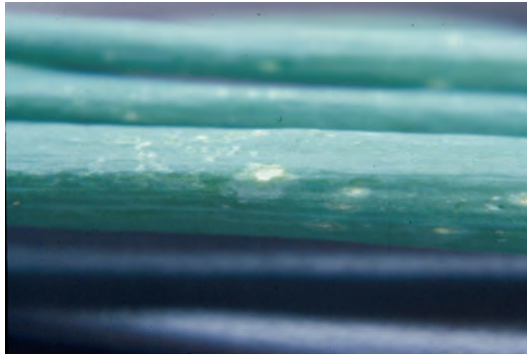
Wade Elmer, Connecticut Agriculture Experiment Station

**D-4 Asparagus, Fusarium Wilt** - Yellowing and wilt caused by the fungi *Fusarium oxysporum* and *F. proliferatum*.



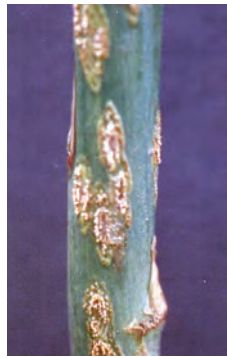
Robert L. Wick, University of Massachusetts

**D-7 Basil, Downy Mildew** - Dark sporulation on underside of basil leaf caused by the oomycete *Peronospora belbahrii*.



Melvyn L. Lacy, Michigan State University,

**D-2 Alliums, Leaf Blight** - Small white lesions with haloes caused by *Botrytis squamosa* on onion foliage.



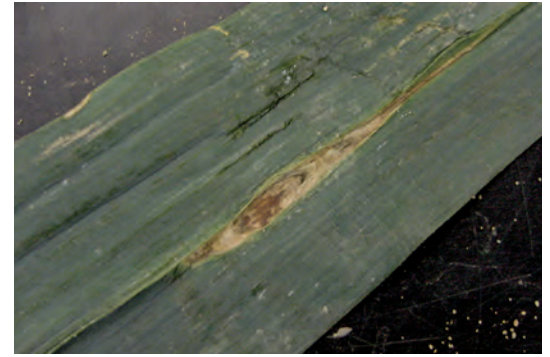
Dennis Johnson

**D-5 Asparagus, Rust** - Rust pustules of the fungus *Puccinia asparagi* on Asparagus fern tissue.



Jude Boucher, University of Connecticut

**D-8 Basil, Downy Mildew** - Yellowing of foliage caused by infection with the oomycete *Peronospora belbahrii*.



C. Andrew Wyenandt, Rutgers

**D-3 Alliums, Purple Blotch** - Oblong, purplish lesions caused by the fungus *Alternaria porri* on leek foliage.



Robert L. Wick, University of Massachusetts

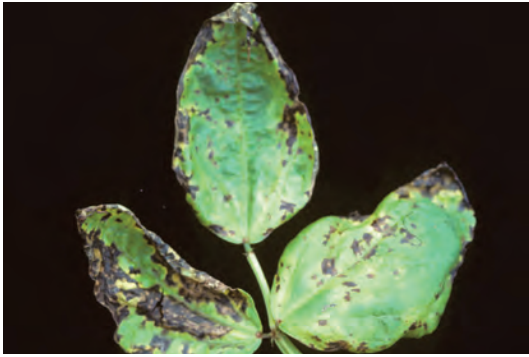
**D-6 Basil, Downy Mildew** - Yellowing of foliage caused by infection with the oomycete *Peronospora belbahrii*.



Robert L. Wick, University of Massachusetts

**D-9 Bean, Anthracnose** - Anthracnose caused by the fungus *Colletotrichum lindemuthianum* on green beans.





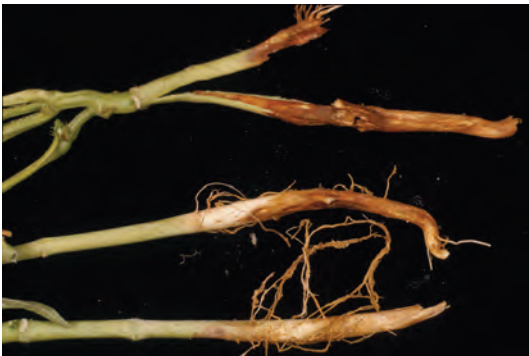
D-10 **Bean, Bacterial Blight** - Leaf blight caused by the bacterium *Pseudomonas syringae*.

Robert L. Wick, University of Massachusetts



D-13 **Bean, Phytophthora Blight** - Diffuse, white mycelia of the oomycete *Phytophthora capsici* on bean pods.

Jude Boucher, University of Connecticut



D-16 **Bean, Rhizoctonia Root Rot** - Root rot caused by the fungus *Rhizoctonia solani*.

James G. Kantzes, University of Maryland



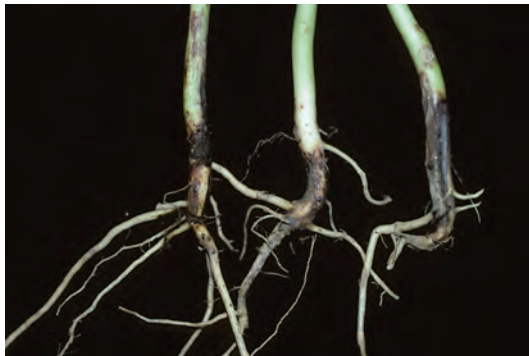
D-11 **Bean, Brown Spot** - Leaf spots caused by the bacterium *Pseudomonas syringae* pv. *syringae*.

James G. Kantzes, University of Maryland



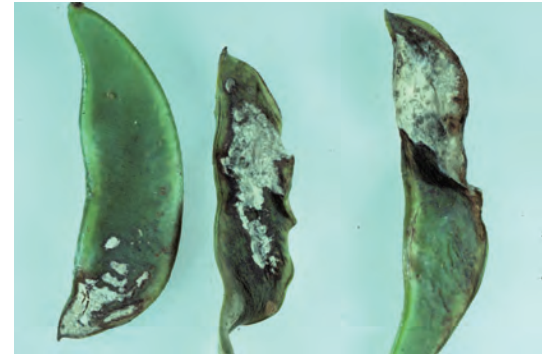
D-14 **Bean, Phytophthora Blight** - Crown rot and plant collapse caused by the oomycete *Phytophthora capsici* in a bean field.

Jude Boucher, University of Connecticut



D-17 **Bean, Root and Crown Rot** - Root and crown rot caused by the fungus *Thielaviopsis basicola*.

Robert L. Wick, University of Massachusetts



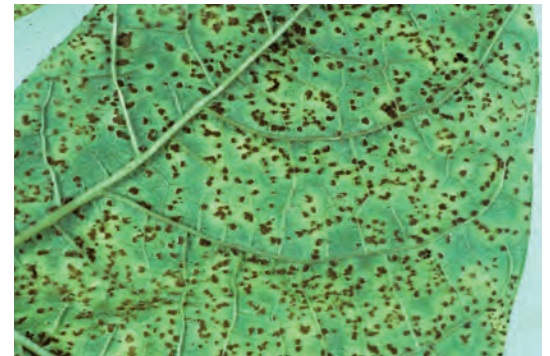
D-12 **Bean, Downy Mildew** - Symptoms of downy mildew caused by the oomycete *Phytophthora phaseoli* on Lima bean pods.

Robert L. Wick, University of Massachusetts



D-15 **Bean, Phytophthora Blight** - White sporangia of *Phytophthora capsici* on surface of lima bean pod.

Robert Mulrooney, University of Delaware



D-18 **Bean, Rust** - Rust pustules caused by the fungus *Uromyces phaseoli* on bean leaf.

Robert L. Wick, University of Massachusetts





Robert L. Wick, University of Massachusetts

**D-19 Bean, Virus** - Symptoms of a viral infection on bean foliage.



Jude Boucher, University of Connecticut

**D-22 Brassicas, Alternaria Leaf Spot** - Target-like lesion caused by the fungus *Alternaria brassicicola* on cabbage leaf.



Robert L. Wick, University of Massachusetts

**D-25 Brassicas, Alternaria Leaf Spot** - Dark spots with yellow haloes on radish foliage caused by one of three species of *Alternaria* fungi.



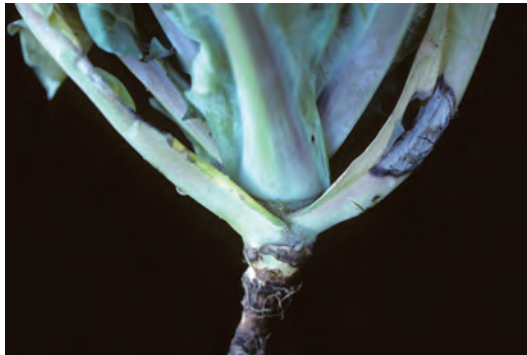
Robert L. Wick, University of Massachusetts

**D-20 - Bean, White Mold** - White, fluffy mycelia and black sclerotia produced by the fungus *Sclerotinia sclerotiorum* on green bean pods.



Robert L. Wick, University of Massachusetts

**D-23 Brassicas, Alternaria Leaf Spot** - Dark, concentric-ringed lesions caused by the fungus *Alternaria brassicicola* on broccoli leaves.



Robert L. Wick, University of Massachusetts

**D-26 Brassicas, Black Leg** - Symptoms of black leg caused by the fungus *Phoma lignan* on stem and petiole of cabbage plant.



Robert L. Wick, University of Massachusetts

**D-21 Beet, Phoma Leaf Spot** - Symptoms of Phoma leaf spot caused by the fungus *Phoma lignan* on beet foliage.



Robert L. Wick, University of Massachusetts

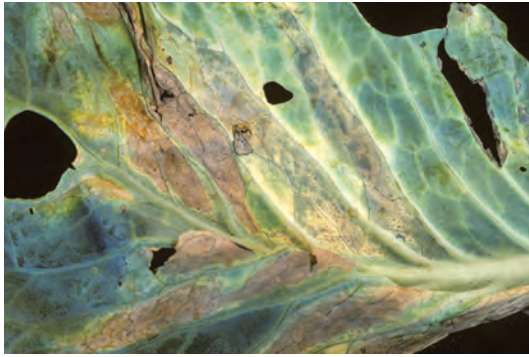
**D-24 Brassicas, Alternaria Leaf Spot** - Brown to black rot of curds caused by the fungus *Alternaria brassicicola* on broccoli head.



Jude Boucher, University of Connecticut

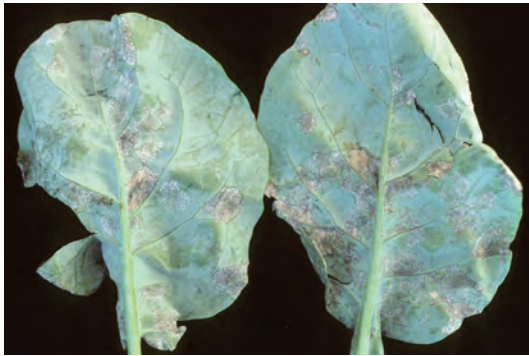
**D-27 Brassicas, Black Rot** - V-shaped lesions on leaf margins caused by the bacterium *Xanthomonas campestris* pv. *campestris* on cabbage plant.





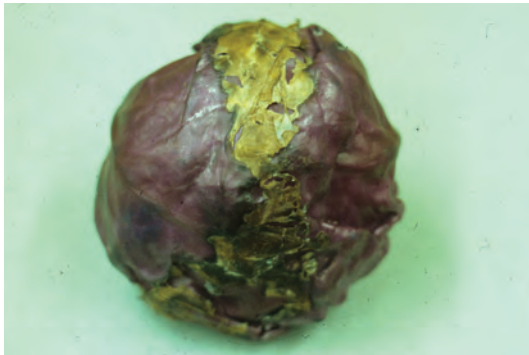
Robert L. Wick, University of Massachusetts

**D-28 Brassicas, Black Rot** - Black discoloration of veins caused by the bacterium *Xanthomonas campestris* pv. *campestris* on broccoli leaf.



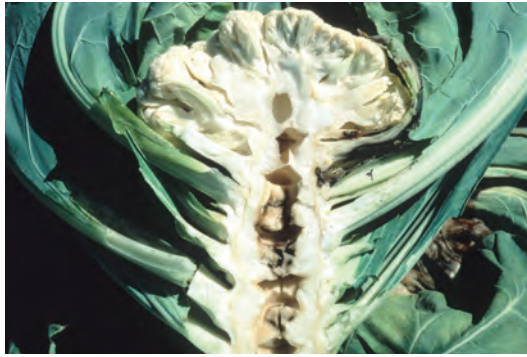
Robert L. Wick, University of Massachusetts

**D-31 Brassicas, Downy Mildew** - Symptoms of downy mildew caused by the oomycete *Peronospora parasitica* on underside of broccoli leaves.



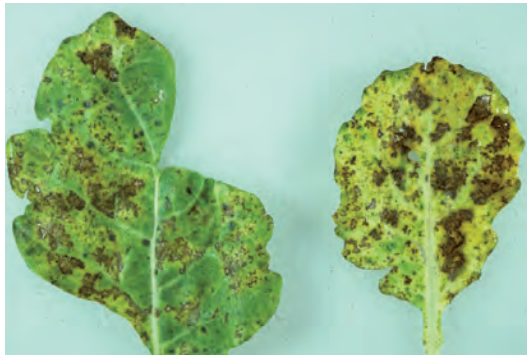
John Howell, University of Massachusetts

**D-34 Brassicas, Tip Burn** - Symptoms of tip burn caused by calcium deficiency on cabbage.



John Howell, University of Massachusetts

**D-29 Brassicas, Boron Deficiency** - Hollow stem symptoms on cauliflower caused by boron deficiency.



Robert L. Wick, University of Massachusetts

**D-32 Brassicas, Downy Mildew** - Symptoms of downy mildew caused by the oomycete *Peronospora parasitica* on collard leaves.



C. Andrew Wyenandt, Rutgers

**D-35 Brassicas, White Mold** - A water soaked lesion, white mycelia, and black sclerotia of the fungus *Sclerotinia sclerotiorum* on cabbage.



Robert L. Wick, University of Massachusetts

**D-30 Brassicas, Clubroot** - Symptoms of clubroot caused by the fungus *Plasmodiophora brassicae*.



Robert L. Wick, University of Massachusetts

**D-33 Brassicas, Downy Mildew** - Symptoms of downy mildew caused by the oomycete *Peronospora parasitica* on broccoli head.



C. Andrew Wyenandt, Rutgers

**D-036 Brassicas, Fusarium Yellows** - One-sided leaf chlorosis and distortion of cabbage leaf caused by one of two strains of *Fusarium oxysporum*.





Robert L. Wick, University of Massachusetts

**D-37 Calabasa, Black Rot** - Symptoms of black rot caused by the fungus *Didymella bryoniae* on calabasa fruit.



Robert L. Wick, University of Massachusetts

**D-40 Carrot, Black Root Rot** - Cankers caused by the fungus *Thielaviopsis basicola* on carrot roots.



Jude Boucher, University of Connecticut

**D-43 Celery, Heart Rot** - Leaf distortion caused by calcium deficiency.



Robert L. Wick, University of Massachusetts

**D-38 Carrot, Alternaria Leaf Blight** - Symptoms of leaf blight caused by the fungus *Alternaria dauci* on carrot foliage.



Robert L. Wick, University of Massachusetts

**D-41 Carrot, Root-Knot Nematode** - Symptoms of infection with the nematode *Meloidogyne hapla* on carrot roots.



Robert L. Wick, University of Massachusetts

**D-44 Chard, Cercospora Leaf Spot** - Leaf spots caused by the fungus *Cercospora beticola* on Swiss chard foliage.



Robert L. Wick, University of Massachusetts

**D-39 Carrot, Bacterial Leaf Blight** - Leaf chlorosis caused by the bacterium *Xanthomonas campestris* pv. *carotae*.



Jude Boucher, University of Connecticut

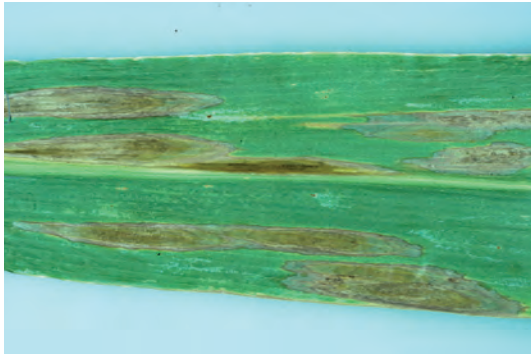
**D-42 Celery, Heart Rot** - Underdeveloped hearts caused by calcium deficiency can provide entry points for bacterial soft rot organisms.



Robert L. Wick, University of Massachusetts

**D-45 Corn, Northern Corn Leaf Blight** - Long, tan or grayish lesions running parallel to leaf margins caused by the fungus *Exserohilum turcicum*.





Robert L. Wicks, University of Massachusetts

**D-46 Corn, Northern Corn Leaf Blight** - Long, narrow lesions with dark green-black sporulation by the fungus *Exserohilum turcicum*.



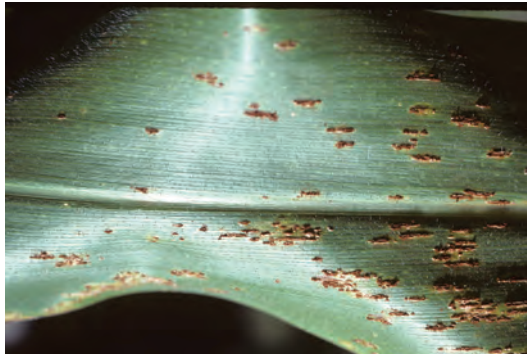
Robert L. Wicks, University of Massachusetts

**D-49 Corn, Stewart's Wilt** - Wavy elongated, bleached tissue characteristic of Stewart's Wilt caused by the bacterium *Pantoea (Erwinia) stewartii*.



Jude Boucher, University of Connecticut

**D-52 Cucurbits, Angular Leaf Spot** - Shot-hole damage caused by severe infection by the bacterium *Pseudomonas syringae* pv. *lachrymans* on winter squash.



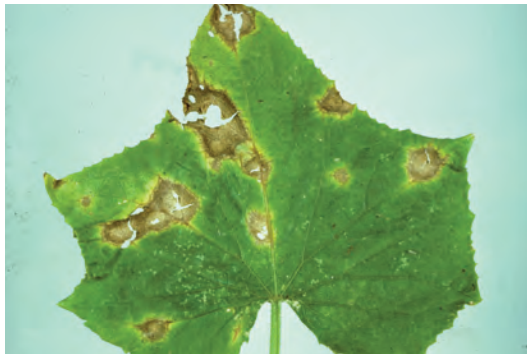
Robert L. Wicks, University of Massachusetts

**D-47 Corn, Rust** - Rust pustules caused by the fungus *Puccinia sorghi* on corn leaf.



Robert L. Wicks, University of Massachusetts

**D-50 Corn, Stewart's Wilt** - Young corn plant killed by the Stewart's Wilt bacterium *Pantoea (Erwinia) stewartii*.



Robert L. Wicks, University of Massachusetts

**D-53 Cucurbits, Anthracnose** - Leaf spots on cucumber foliage caused by the fungus *Colletotrichum orbiculare*.



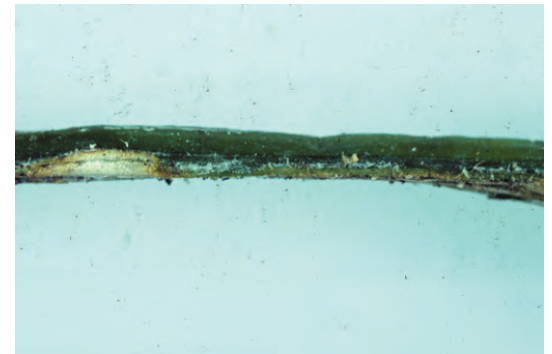
Robert L. Wicks, University of Massachusetts

**D-48 Corn, Smut** - Corn smut caused by the fungus *Ustilago maydis* on corn ear.



James G. Kantzes, University of Maryland

**D-51 Cucurbits, Angular Leaf Spot** - Angular, irregularly shaped leaf lesions with yellow halos caused by the bacterium *Pseudomonas syringae* pv. *lachrymans* on cucumber.

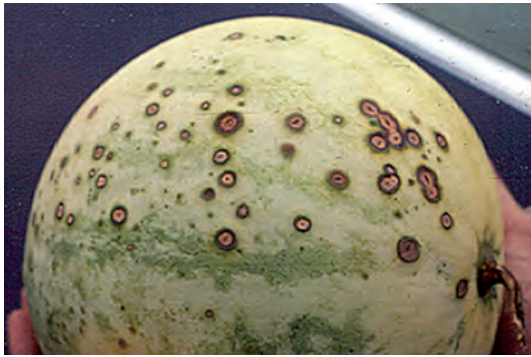


Robert L. Wicks, University of Massachusetts

**D-54 Cucurbits, Anthracnose** - Stem lesions on cucumber caused by the fungus *Colletotrichum orbiculare*.



# Diseases & Disorders



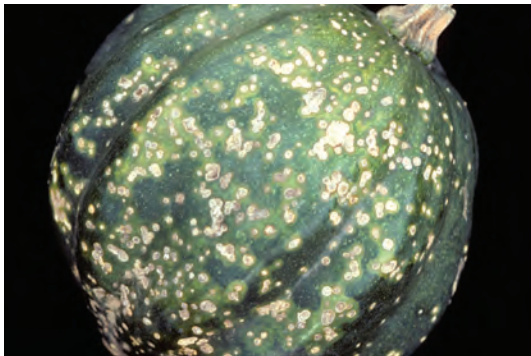
James G. Kantzes, University of Maryland

**D-55 Cucurbits, Anthracnose** - Fruit lesions caused by the fungus *Colletotrichum orbiculare* on watermelon. Under moist conditions salmon-colored sporulation is produced.



James G. Kantzes, University of Maryland

**D-58 Cucurbits, Belly Rot** - Sunken, brick-colored lesions on cucumber caused by the fungus *Rhizoctonia solani*.



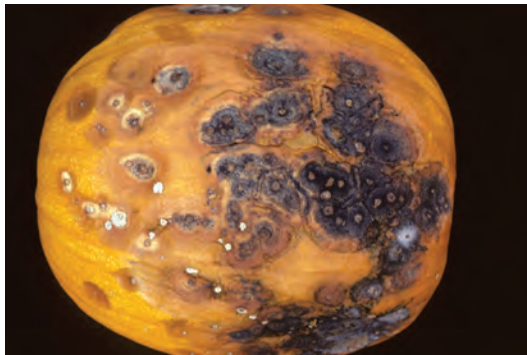
Robert L. Wick, University of Massachusetts

**D-61 Cucurbits, Black Rot** - Lesions caused by the fungus *Didymella bryoniae* on acorn squash fruit.



James G. Kantzes, University of Maryland

**D-56 Cucurbits, Bacterial Fruit Blotch** - Large, olive-green discoloration of watermelon fruit caused by the bacterium *Acidovorax citrulli*.



Robert L. Wick, University of Massachusetts

**D-59 Cucurbits, Black Rot** - Lesions caused by the fungus *Didymella bryoniae* on pumpkin fruit.



Robert L. Wick, University of Massachusetts

**D-62 Cucurbits, Black Rot** - Lesions caused by the fungus *Didymella bryoniae* on butternut fruit.



Jude Boucher, University of Connecticut

**D-57 Cucurbits, Bacterial Wilt** - Symptoms on cucumber caused by the bacterium *Erwinia tracheiphila*.



James G. Kantzes, University of Maryland

**D-60 Cucurbits, Black Rot** - Lesions caused by the fungus *Didymella bryoniae* on winter squash fruit.



Jude Boucher, University of Connecticut

**D-63 Cucurbits, Deer Damage** - Damage to pumpkin caused by deer feeding





James G. Kantzes, University of Maryland

**D-64 Cucurbits, Downy & Powdery Mildews** - Sporulation of powdery mildew (white) and downy mildew (brown) on underside of muskmelon leaf.



Kathryne L. Everts, Univ. MD and Univ. DE

**D-67 Cucurbits, Downy Mildew** - Symptoms on watermelon caused by the oomycete *Pseudoperonospora cubensis*.



Robert L. Wick, University of Massachusetts

**D-70 Cucurbits, Fruit Rot** - Secondary rot of pumpkin fruit caused by fungi in the genera *Alternaria* and *Fusarium*.



C. Andrew Wyenandt, Rutgers

**D-65 Cucurbits, Downy Mildew** - Angular lesions with dark sporulation on leaf undersides caused by the oomycete *Pseudoperonospora cubensis* on cucumber.



Robert L. Wick, University of Massachusetts

**D-68 Cucurbits, Downy Mildew** - Symptoms in winter squash field caused by the oomycete *Pseudoperonospora cubensis*.



Wade Elmer, CT Agriculture Experiment Station

**D-71 Cucurbits, Fusarium Rot** - Lesions on pumpkin fruit caused by fungi in the genus *Fusarium*.



Robert L. Wick, University of Massachusetts

**D-66 Cucurbits, Downy Mildew** - Early symptoms on underside of winter squash leaf caused by the oomycete *Pseudoperonospora cubensis*.



John Howell, University of Massachusetts

**D-69 Cucurbits, Fruit Abortion** - Squash fruit abortion caused by lack of pollination.



James G. Kantzes, University of Maryland

**D-72 Cucurbits, Fusarium Wilt** - Wilt symptoms with stem necrosis and oozing caused by the fungus *Fusarium oxysporum* f. sp. *melonis* on muskmelon.





Franklin Schales, University of Maryland,

**D-73 Cucurbits, Fusarium Wilt** - Wilt symptoms caused by the fungus *Fusarium oxysporum* f. sp. *niveum* on watermelon plant.



Keith Burnell, Syngenta, Inc.

**D-76 Cucurbits, Gummy Stem Blight** - Pycnidia (fungal fruiting structures) of the fungus *Didymella bryoniae* on stems of watermelon.



Jude Boucher, University of Connecticut

**D-79 Cucurbits, Ozone Injury** - Yellowing or bleaching of interveinal leaf tissue caused by excessive ozone in the atmosphere.



Wade Elmer, CT Agricultural Experiment Station

**D-74 Cucurbits, Fusarium Wilt** - Symptoms on vines of pumpkin plants caused by *Fusarium solani* f. sp. *cucurbitae*.



James G. Kantzes, University of Maryland

**D-77 Cucurbits, Leaf Blight** - Circular brown spots with tan to white centers on muskmelon foliage caused by the fungus *Alternaria cucumerina*.



Kathryne L. Everts, Univ. MD and Univ. DE

**D-80 Cucurbits, Phytophthora Blight** - Symptoms of fruit rot caused by the oomycete *Phytophthora capsici* on watermelon.



James G. Kantzes, University of Maryland

**D-75 Cucurbits, Gummy Stem Blight** - Foliar phase of Black rot caused by the fungus *Didymella bryoniae* on watermelon leaf.



Gerald E. Brust, University of Maryland

**D-78 Cucurbits, Manganese Toxicity** - Small lesions with water-soaked edges caused by manganese toxicity pictured on muskmelon.



Robert L. Wick, University of Massachusetts

**D-81 Cucurbits, Phytophthora Blight** - Fruit rot symptoms caused by the oomycete *Phytophthora capsici* on pumpkin.

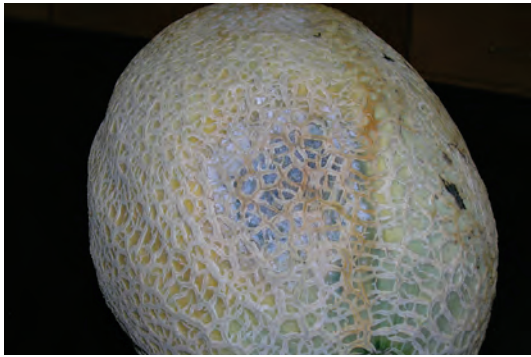


# Diseases & Disorders



Robert L. Wick, University of Massachusetts

**D-82 Cucurbits, Phytophthora Blight** - Crown rot and plant collapse of summer squash caused by the oomycete *Phytophthora capsici*.



Kathryne L. Everts, Univ. MD and Univ. DE

**D-85 Cucurbits, Phytophthora Blight** - Water-soaked lesions with white sporulation of the oomycete *Phytophthora capsici* on muskmelon.



Jude Boucher, University of Connecticut

**D-88 Cucurbits, Plectosporium** - Lesions on pumpkin fruit caused by the fungus *Plectosporium tabacinum*.



Robert L. Wick, University of Massachusetts

**D-83 Cucurbits, Phytophthora Blight** - Fruit rot symptoms on summer squash caused by the oomycete *Phytophthora capsici*.



Jude Boucher, University of Connecticut

**D-86 Cucurbits, Plectosporium** - Lesions on summer squash vines caused by the fungus *Plectosporium tabacinum*.



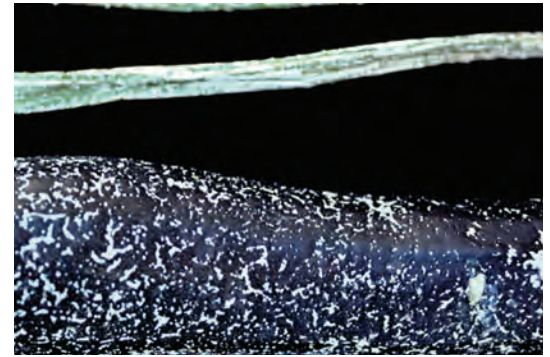
Jude Boucher, University of Connecticut

**D-89 Cucurbits, Plectosporium** - Severe infection of pumpkin fruit by the fungus *Plectosporium tabacinum*.



C. Andrew Wyenandt, Rutgers

**D-84 Cucurbits, Phytophthora Blight** - Dense, white sporulation of the oomycete *Phytophthora capsici* on cucumber fruit.



Robert L. Wick, University of Massachusetts

**D-87 Cucurbits, Plectosporium** - White, scabby lesions on zucchini fruit and stem caused by the fungus *Plectosporium tabacinum*.



Robert L. Wick, University of Massachusetts

**D-90 Cucurbits, Powdery Mildew** - White sporulation on upper and lower leaf surfaces of cucumber caused by the oomycetes *Podospaera xanthii* and *Erysiphe cichoracearum*.





C. Andrew Wyenandt, Rutgers

**D-91 Cucurbits, Powdery Mildew** - White, sporulating lesions on pumpkin leaf caused by the oomycetes *Podosphaera xanthii* and *Erysiphe cichoracearum*.



Jude Boucher, University of Connecticut

**D-94 Cucurbits, Scab** - Leaf lesions caused by the fungus *Cladosporium cucumerinum* infecting summer squash.



Robert L. Wfick, University of Massachusetts

**D-97 Cucurbits, Septoria Leaf Spot** - Leaf lesions caused by the fungus *Septoria cucurbitacearum* on cucumber.



Robert L. Wfick, University of Massachusetts

**D-92 Cucurbits, Powdery Mildew** - Symptoms on foliage of winter squash caused by the oomycetes *Podosphaera xanthii* and *Erysiphe cichoracearum*.



Jude Boucher, University of Connecticut

**D-95 Cucurbits, Scab** - Fruit lesions caused by *Cladosporium cucumerinum* on summer squash.



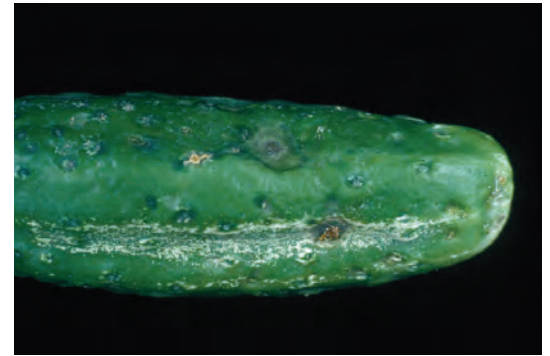
C. Andrew Wyenandt, Rutgers

**D-98 Cucurbits, Virus** - Symptoms of a mosaic virus on pumpkin foliage.



James G. Kantzes, University of Maryland

**D-93 Cucurbits, Pythium Cottony Leak** - White, fluffy mycelial growth of oomycetes in the genus *Pythium* on cucumber fruit.



James G. Kantzes, University of Maryland

**D-96 Cucurbits, Scab** - Sunken, oozing lesions caused by the fungus *Cladosporium cucumerinum* on cucumber fruit.



Robert L. Wfick, University of Massachusetts

**D-99 Cucurbits, Virus** - Mottling and distortion caused by Zucchini Yellow Mosaic Virus (ZYMV).





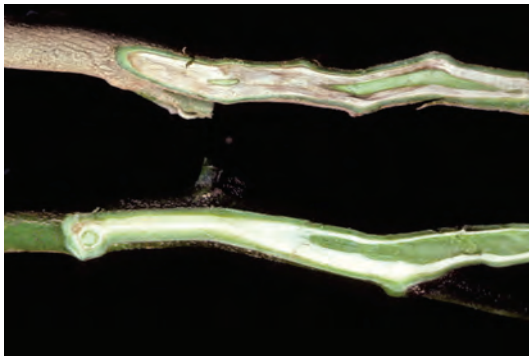
John Howell, University of Massachusetts

**D-100 Cucurbits, Wind Burn** - Injury to cucumber leaves caused by excessive wind.



C. Andrew Wyenandt, Rutgers

**D-103 Eggplant, Phytophthora Blight** - Crown rot symptoms caused by the oomycete *Phytophthora capsici* on eggplant.



Robert L. Wick, University of Massachusetts

**D-106 Eggplant, Verticillium Wilt** - Healthy (lower) and symptomatic stem tissue (upper) showing vascular discoloration caused by the fungi *Verticillium dahliae* and *V. albo-atrum*.



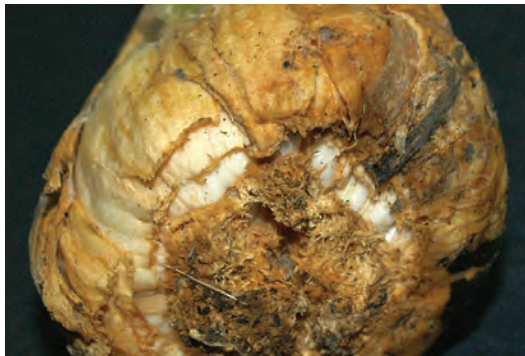
Jude Boucher, University of Connecticut

**D-101 Cucurbits, Woodchuck Damage** - Damage to pumpkin caused by woodchuck feeding.



Jude Boucher, University of Connecticut

**D-104 Eggplant, Pythium Cottony Leak** - Fruit rot of eggplant caused by oomycetes in the genus *Pythium*.



Bruce Watt, University of Maine

**D-107 Garlic, Bloat Nematode** - Yellowed leaves and dry rot of basal plate caused by infection with the nematode *Ditylenchus dipsaci*.



Robert L. Wick, University of Massachusetts

**D-102 Eggplant, Anthracnose** - Sunken, dark lesions caused by *Colletotrichum* on eggplant fruit.



Jude Boucher, University of Connecticut

**D-105 Eggplant, Verticillium Wilt** - Symptoms of Verticillium wilt on eggplant foliage.



C. Andrew Wyenandt, Rutgers

**D-108 Lettuce, Bottom Rot** - Sunken, reddish-brown lesions on leaf petioles and midribs caused by the fungus *Rhizoctonia solani*.



# Diseases & Disorders



Robert L. Wick, University of Massachusetts

**D-109 Lettuce, Septoria Blight** - Brown, necrotic lesions with yellow haloes and black pycnidia in their centers are caused by the fungus *Septoria lactucae*.



C. Andrew Wyeandndt, Rutgers

**D-112 Parsley, Septoria Leaf Spot** - Tan lesions with dark pycnidia in their centers caused by the fungus *Septoria petroselinii*.



Robert L. Wick, University of Massachusetts

**D-115 Parsnip, Leaf Blight** - Symptoms of leaf blight of parsnip caused by *Rhizoctonia* spp. and *Ascochyta* spp. fungi.



John Howell, University of Massachusetts

**D-110 Lightning** - Dead area in a pepper field caused by a lightning strike.



Robert L. Wick, University of Massachusetts

**D-113 Parsnip, Bacterial Soft Rot** - Vascular discoloration caused by the bacterium *Pseudomonas marginalis*.



James G. Kantzes, University of Maryland

**D-116 Pea, Bacterial Blight** - Angular leaf lesions caused by the bacterium *Pseudomonas syringae* pv. *pisii*



Robert L. Wick, University of Massachusetts

**D-111 Okra, Verticillium Wilt** - Yellowing, wilt, and plant collapse caused by the fungus *Verticillium dahliae*.



Robert L. Wick, University of Massachusetts

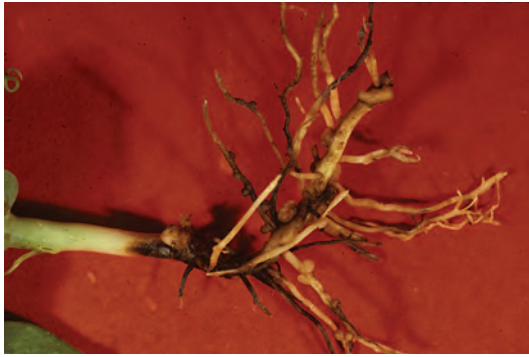
**D-114 Parsnip, Itersonia Blight** - Symptoms of Itersonia blight caused by the fungus *Itersonia perplexans* on parsnip roots.



James G. Kantzes, University of Maryland

**D-117 Pea, Leaf and Pod Spot** - Tan sunken lesions caused by the fungus *Ascochyta pisi* on pea pods.





Robert L. Wick, University of Massachusetts

**D-118 Pea, Rhizoctonia Root Rot** - Symptoms of root rot on pea caused by the fungus *Rhizoctonia solani*.



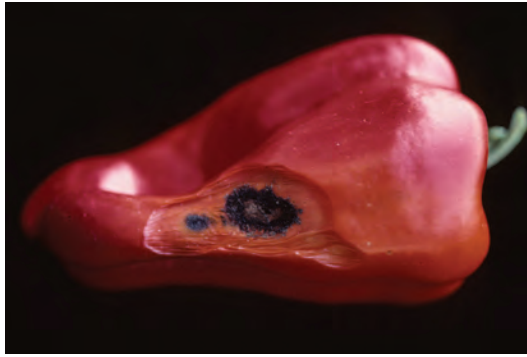
Jude Boucher, University of Connecticut

**D-121 Pepper, Bacterial Soft Rot** - Soft rot of pepper fruit caused by bacteria in the genus *Erwinia*.



Jude Boucher, University of Connecticut

**D-124 Pepper, Bacterial Spot** - Symptoms on pepper fruit caused by the bacterium *Xanthomonas campestris* pv. *vesicatoria*.



Robert L. Wick, University of Massachusetts

**D-119 Pepper, Anthracnose** - Sunken, dark lesions characteristic of the fungus *Colletotrichum coccodes* on ripe pepper fruit.



Jude Boucher, University of Connecticut

**D-122 Pepper, Bacterial Spot** - Leaf spots on pepper foliage caused by the bacterium *Xanthomonas campestris* pv. *vesicatoria*.



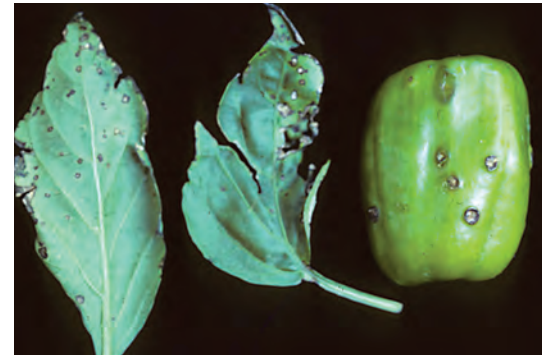
Jude Boucher, University of Connecticut

**D-125 Pepper, Bacterial Spot** - Leaf drop of pepper caused by infection by the bacterium *Xanthomonas campestris* pv. *vesicatoria*.



Robert L. Wick, University of Massachusetts

**D-120 Pepper, Anthracnose** - Sunken lesions on fruit of all stages develop salmon-colored sporulation of the fungus *Colletotrichum acutatum*.



Robert L. Wick, University of Massachusetts

**D-123 Pepper, Bacterial Spot** - Symptoms on foliage and fruit caused by the bacterium *Xanthomonas campestris* pv. *vesicatoria*.



Robert L. Wick, University of Massachusetts

**D-126 Pepper, Cucumber Mosaic Virus** - CMV symptoms on pepper fruit.





**D-127 Pepper, Impatiens Necrotic Spot Virus** - Ringspots on pepper foliage caused by INSV.

Robert L. Wick, University of Massachusetts



**D-130 Pepper, Root-Knot Nematode** - Galls on pepper roots caused by the nematode *Meloidogyne hapla*

Robert L. Wick, University of Massachusetts



**D-133 Potato, Early Blight** - Target-like lesions on leaf tissue caused by the fungus *Alternaria solani*.

James G. Kantzes, University of Maryland



**D-128 Pepper, Phytophthora Blight** - Crown rot of pepper caused by the oomycete *Pytophthora capsici* resulting in plant collapse.

Robert L. Wick, University of Massachusetts



**D-131 Pepper, Sunscald** - Injury to pepper fruit caused by excessive exposure to sunlight.

Jude Boucher, University of Connecticut



**D-129 Pepper, Root-Knot Nematode** - Stunting of pepper plants caused by root infection by the nematode *Meloidogyne hapla*.

Robert L. Wick, University of Massachusetts



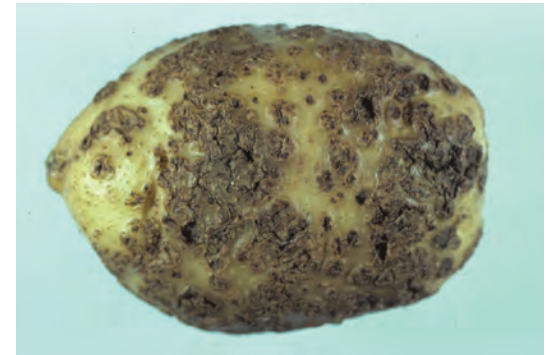
**D-132 Pepper, Sunscald** - *Alternaria alternata*, a weak fungal pathogen, commonly infects fruit that has been injured by sunscald causing blackening.

Jude Boucher, University of Connecticut



**D-134 Potato, Late Blight** - Brown, water-soaked leaf lesions caused by the oomycete *Phytophthora infestans* on potato foliage.

James G. Kantzes, University of Maryland



**D-135 Potato, Scab** - Symptoms of scab on potato tuber caused by the bacterium *Streptomyces scabies*.

Robert L. Wick, University of Massachusetts



# Diseases & Disorders



James G. Kantzes, University of Maryland

**D-136 Spinach, Anthracnose** - Tan, necrotic lesions caused by the fungus *Colletotrichum dematium* f. sp. *spinaciae*.



Robert L. Wick, University of Massachusetts

**D-139 Sweet Potato, Black Rot** - Dark, firm lesions on sweet potato tubers caused by the fungus *Ceratocystis fimbriata*



Robert L. Wick, University of Massachusetts

**D-142 Sweet Potato, Scurf** - Gray-brown lesions on surface of sweet potato tubers caused by the fungus *Monochaetes infuscans*.



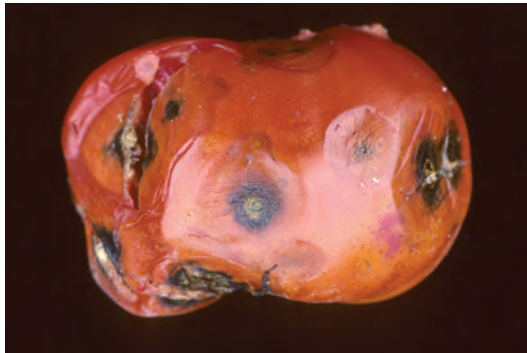
James G. Kantzes, University of Maryland

**D-137 Spinach, Downy Mildew** - Sporulation of *Pero-nospora farinosa* f. sp. *spinaciae* on the underside of spinach leaves.



James G. Kantzes, University of Maryland

**D-140 Sweet Potato, Fusarium Wilt** - Chlorotic, wilted plant infected with the fungus *Fusarium oxysporum* f. sp. *batatas*.



Robert L. Wick, University of Massachusetts

**D-143 Tomato, Anthracnose** - Sunken black lesions on tomato fruit caused by the fungus *Colletotrichum coccodes*.



Kathryne L. Everts, Univ. MD and Univ. DE

**D-138 Spinach, White Rust** - Chlorotic lesions caused by the fungus *Albugo occidentalis* on the upper leaf surface.



James G. Kantzes, University of Maryland

**D-141 Sweet Potato, Pox** - Soil rot causing sunken lesions and distortions on sweet potato tubers caused by the bacterium *Streptomyces ipomoeae*.



Robert L. Wick, University of Massachusetts

**D-144 Tomato, Bacterial Canker** - Wilting on one side of leaf caused by the bacterium *Clavibacter michiganensis* subsp. *michiganensis*, a characteristic early symptom.





Jude Boucher, University of Connecticut

**D-145 Tomato, Bacterial Canker** - Discoloration of vascular element of tomato stem infected with the bacterium *Clavibacter michiganensis* subsp. *michiganensis*.



Robert L. Wick, University of Massachusetts

**D-148 Tomato, Bacterial Canker** - "Bird's-eye" lesions on green tomato fruit caused by the bacterium *Clavibacter michiganensis* subsp. *michiganensis*.



Robert L. Wick, University of Massachusetts

**D-151 Tomato, Bacterial Spot** - Leaf spots caused by the bacterium *Xanthomonas campestris* pv. *vesicatoria*.



Robert L. Wick, University of Massachusetts

**D-146 Tomato, Bacterial Canker** - Stem canker with droplet of bacterial ooze in its center caused by the bacterium *Clavibacter michiganensis* subsp. *michiganensis*.



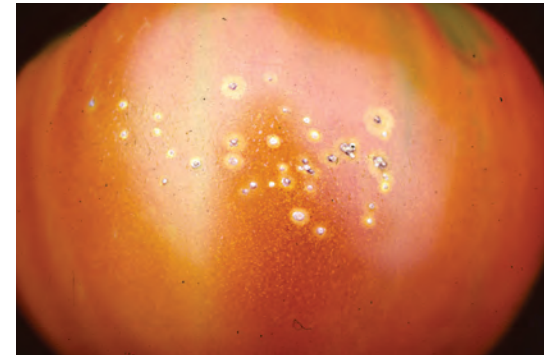
Robert L. Wick, University of Massachusetts

**D-149 Tomato, Bacterial Diseases** - Bacterial fruit spots on tomato. Clockwise from upper left: Bacterial Canker, Bacterial Spot, Bacterial Speck.



Robert L. Wick, University of Massachusetts

**D-152 Tomato, Bacterial Spot** - Brown, rough spots on tomato fruit caused by the bacterium *Xanthomonas campestris* pv. *vesicatoria*.



Robert L. Wick, University of Massachusetts

**D-147 Tomato, Bacterial Canker** - "Bird's-eye" lesions on ripe tomato fruit caused by the bacterium *Clavibacter michiganensis* subsp. *michiganensis*.



Robert L. Wick, University of Massachusetts

**D-150 Tomato, Bacterial Speck** - Small, black lesions on tomato fruit caused by the bacterium *Pseudomonas syringae* pv. *tomato*.



John Howell, University of Massachusetts

**D-153 Tomato, Blossom End Rot** - Fruit injury caused by calcium deficiency.





John Howell, University of Massachusetts

**D-154 Tomato, Blotchy Ripening** - Physiological disorder also known as greywall caused by any environmental stress that slows plant growth.



Robert L. Wick, University of Massachusetts

**D-157 Tomato, Early Blight** - Brown-black leaf lesions with target-like appearance caused by the fungus *Alternaria solani*.



John Howell, University of Massachusetts

**D-160 Tomato, Fruit Cracking** - Concentric and radial cracks in tomato fruit caused by excessive moisture during fruit expansion.



John Howell, University of Massachusetts

**D-155 Tomato, Catfacing** - Fruit injury caused by cool temperatures (below 60°F) during flower bud initiation.



Jude Boucher, University of Connecticut

**D-158 Tomato, Early Blight** - Lesions caused by the fungus *Alternaria solani* develop in lower leaves and progress upward over time.



James G. Kantzes, University of Maryland

**D-161 Tomato, Fusarium Wilt** - Vascular discoloration caused by the fungus *Fusarium oxysporum* f. sp. *Lycopersici*.



Jude Boucher, University of Connecticut

**D-156 Tomato, Early Blight** - Brown-black leaf lesions with target-like appearance caused by the fungus *Alternaria solani*.



Jude Boucher, University of Connecticut

**D-159 Tomato, Fruit Cracking** - Concentric and radial cracks in tomato fruit caused by excessive moisture during fruit expansion.



Jude Boucher, University of Connecticut

**D-162 Tomato, Ghost Spot** - Light ring-spots on tomato fruit caused by the fungus *Botrytis cinerea*.





Robert L. Wick, University of Massachusetts

**D-163 Tomato, Late Blight** - Dark brown-olive green, water soaked lesions caused by the oomycete *Phytophthora infestans*.



Robert L. Wick, University of Massachusetts

**D-166 Tomato, Leaf Mold** - Pale, yellow leaf spots caused by the fungus *Fulvia fulva*.



Robert L. Wick, University of Massachusetts

**D-169 Tomato, Pitch Necrosis** - Vascular discoloration, internal stem necrosis and adventitious roots form as a result of infection with the bacterium *Pseudomonas corrugata*.



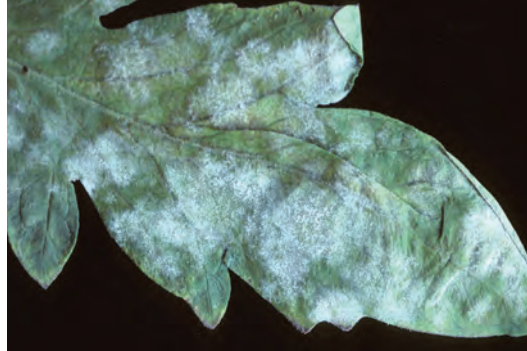
Robert L. Wick, University of Massachusetts

**D-164 Tomato, Late Blight** - Stem lesion caused by the oomycete *Phytophthora infestans*.



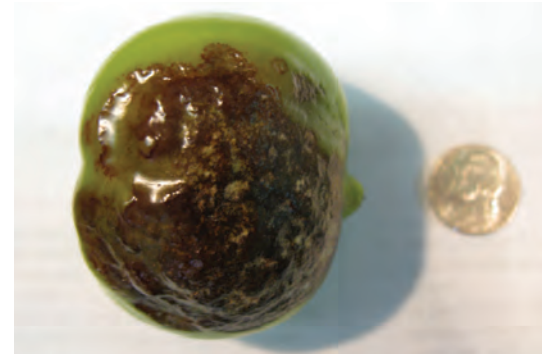
Robert L. Wick, University of Massachusetts

**D-167 Tomato, Leaf Mold** - Velvety, olive-green to brown spots on lower leaf surface caused by the fungus *Fulvia fulva*.



Robert L. Wick, University of Massachusetts

**D-170 Tomato, Powdery Mildew** - Small spots of white sporulation of the oomycete *Oidium neolycopersici* on tomato leaf.



Joan Allen, University of Connecticut

**D-165 Tomato, Late Blight** - Brown, water-soaked, firm fruit rot caused by the oomycete *Phytophthora infestans*.



Jude Boucher, University of Connecticut

**D-168 Tomato, Phytophthora Blight** - Brown, water-soaked, firm fruit rot known as "Buckeye Rot" caused by the oomycete *Phytophthora capsici*.



Robert L. Wick, University of Massachusetts

**D-171 Tomato, Pythium Rot** - Soft, watery rot with some white sporulation of oomycetes in the genus *Pythium*.





John Howell, University of Massachusetts

**D-172 Tomato, Rain Check** - Fine cracks that callus over on tomato fruit shoulders caused by excessive moisture.



John Howell, University of Massachusetts

**D-175 Tomato, Stitching** - Fine cracks that callus over on tomato fruit shoulders caused by cool temperatures during tomato flower bud initiation.



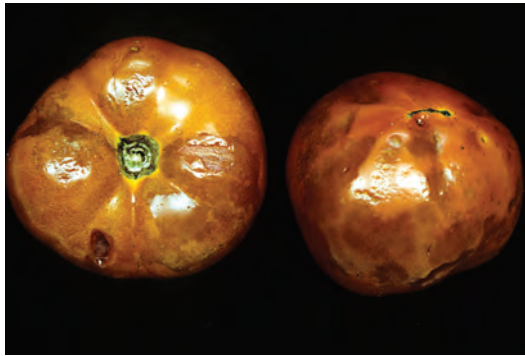
Robert L. Wfick, University of Massachusetts

**D-178 Tomato, Verticillium Wilt** - Yellow blotches with brown veins on tomato foliage caused by the fungus *Verticillium albo-atrum*.



Jude Boucher, University of Connecticut

**D-173 Tomato, Septoria Leaf Spot** - Dark leaf spots caused by the fungus *Septoria lycopersici* have tan centers with black spots (pycnidia) in their centers.



Robert L. Wfick, University of Massachusetts

**D-176 Tomato, Tobacco Mosaic Virus** - Symptoms of TMV are highly variable on leaves and fruit. Fruit may show these "brown wall" symptoms in severe cases.



Robert L. Wfick, University of Massachusetts

**D-179 Tomato, White Mold** - Soft rot of tomato fruit caused by the fungus *Sclerotinia sclerotiorum*. Note white, fluffy mycelia and hard, black sclerotia.



Franklin Schales, University of Maryland

**D-174 Tomato, Southern Blight** - Tan to brown, mustard seed-like sclerotia are produced by the fungus *Sclerotium rolfsii* at the soil line of infected tomato stems.



Robert L. Wfick, University of Massachusetts

**D-177 Tomato, Tospovirus** - Tomato spotted wilt virus and impatiens necrotic spot virus cause dark brown spots or streaks followed by tip dieback on tomato foliage.



Robert L. Wfick, University of Massachusetts

**D-180 Tomato, White Mold** - Stem rot on tomato caused by the fungus *Sclerotinia sclerotiorum*. Note the hard, dark sclerotia inside the stem.