Plectosporium blight, Powdery Mildew and Black rot of Pumpkin

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Plectosporium blight

Plectosporium blight is a new fungal disease of pumpkin and zucchini in the Northeastern United States. The fungus, *Plectosporium tabacinum,* was previously known as *Microdochium tabacinum.* The disease is relatively new to North America. It was first described in Tennessee in 1988. Over the next ten years it became more common and recognized in the Mid-Atlantic States and farther west. In 2000, Plectosporium blight occurred in Massachusetts. Several years later it was reported in Connecticut and now occurs on a regular basis in southern New England.

Plectosporium is well known in Europe as a pathogen of cucurbits. While it appears that *Plectosporium* was introduced into the United States, genetic studies of isolates from Europe have not yet established a link.

The life cycle of this pathogen as it relates to cucurbits is poorly understood. Field observations suggest that the disease is most severe under moderate temperatures; growth under laboratory conditions is maximum at 75 F. *Plectosporium* has not been shown to be seed-borne but has been reported to survive in the soil. It has not been determined if it can overwinter in New England but circumstantial evidence suggests that it has over-wintered in Connecticut.

The symptoms of *Plectosporium* blight are relatively distinctive; although if only a few lesions are present on the fruit, it would be difficult to distinguish from arrested lesions caused by scab or black rot. Vines, petioles and fruit become peppered with white scabby lesions. Typically, the disease spreads quickly during rainy weather with moderate temperatures and may occur throughout many acres.

When Plectosporium blight occurs, rotate away from summer squash and pumpkins for two years. Fungicides have been widely reported to control this disease but rainy seasons will reduce their effectiveness. Thorough coverage of foliage, vines and fruit is necessary for good control. Research carried out in 2005 on isolates collected from 16 locations in Massachusetts and Connecticut did not reveal any fungicide resistance to fludioxonil, azoxystrobin, thiophanate methyl, myclobutanil, propiconazole or trifloxystrobin.

Powdery mildew

Powdery mildew of pumpkins and other cucurbits is readily recognized by the powdery white coating on the top and bottom of the foliage and petioles. This fungus disease generally shows up during the last week of July or the first week of August. It is believed that the powdery mildew fungus cannot survive in New England and reinvades every year from the south. Millions of spores are produced per square inch of infected leaf, and they are easily disseminated by wind to other plants. When a spore lands on a leaf, infection occurs within hours and three or four days later it is producing spores. While the host range of the cucurbit powdery mildews is not known, these fungi are

generally restricted to one or a few host plants. For example, the powdery mildews that occur on zinnias and lilacs do not infect cucurbits and visa versa.

Many fungicides will control powdery mildew including formulations of baking soda (potassium or sodium bicarbonate). There are two problems in achieving good control of powdery mildew in cucurbits. The first problem is that both the top and bottom of the leaves need to be protected and this is hard to do adequately with non-systemic fungicides. The second problem is that powdery mildew fungi commonly develop resistance to systemic fungicides. Powdery mildews are reported to be widely resistant to strobilurin and sterol inhibiting fungicides.

Black rot

Black rot is caused by the fungus *Didymella bryoniae*. In the southern United States black rot is often referred to as gummy stem blight because it causes cankers that exude gummy sap. In New England, black rot is more commonly associated with the fruit where the symptoms are variable. Symptoms can include a superficial serpentine or ring pattern. In some cases, small lesions develop which become sunken as the pumpkin continues to expand. In either case, these symptoms can develop into an expansive rot. The disease gets its name from the more aggressive rot which includes blackened fungal tissue on the rind.

Didymella can be seed-borne and it can survive in the plant debris in the field for up to two years. Rotate out of cucurbits for two years following black rot. Control weeds to reduce humidity and leaf wetness duration. Fungicides will provide protection against this disease.