Diagnosing and Controlling Sclerotinia Blight (aka-white mold)
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*Sclerotinia sclerotiorum* is an economically important pathogen which can cause root, crown and stem rot on a wide variety of crops. This pathogen had world-wide distribution especially in moist, temperate regions, and can be a significant pest in agricultural crops. *Sclerotinia* is often confused with the pathogen *Sclerotium* largely due to the similarities in the name, but it is a very different fungus.

Known as white mold, dry rot, cottony rot or crown rot, *Sclerotinia* can infect over 400 species of plants. Flowering greenhouse plants affected include begonia, geranium, gerbera daisy, periwinkle, gloxinia, and zinnia. It is most prevalent in outdoor production contributing to root and crown rots in cabbage, common bean, citrus, celery, coriander, melon, squash, soybean, tomato, lettuce, and cucumber among others. Greenhouse lettuce can also be affected due to the high density of the plants and persistent high humidity. Wilting of leaves and light brown lesions on lower stems are often the first visible symptoms, but symptoms can vary depending upon the host.

The primary source of infection is from overwintering sclerotia (a dark, irregular shaped fungal resting body), which are found in the soil and are commonly 5-30 x 3-10 mm in size. Apothecia (a cup or saucer shaped fruiting body), arises from the sclerotia, releasing spores that become airborne and can travel a great distance before infecting plants.

Once spores land and germinate on the leaves or stems of a susceptible plant, a white, cottony, fungal mat-like growth will start to form and cover the affected area. It may also grow along the soil surface. As the mycelium spreads, stem-to-stem contact within the plant canopy causes the disease to spread rapidly. Sclerotia, black seed-like structures, form inside the stem cavity or externally on the plant. They are generally upon plant death. Sclerotia can rest for weeks or years. Factors such as soil pH, soil temperatures or moisture have little effect on their survival. Contaminated soils, farm equipment and irrigation water can transport sclerotia and spread the disease. In the greenhouse, *Sclerotinia* can also affect the germination of seeds.
causing preemergence and postemergence damping off. Spore germination occurs in 3-6 hours in the presence of free moisture on leaf surfaces and temperatures from 50-66°F.

Management

Reducing disease incidence can be challenging. *Sclerotinia* resistance is not known in current genetics, eliminating variety selection as a tool. In field production, the longevity of sclerotia in the soil eliminates crop rotation as a management strategy. In all production settings, reducing humidity beneath the foliage through wide row spacing and trellising to minimize contact with the ground may lessen infections. Sanitation, as well as weed management, are effective cultural practices used to limit spread of the pathogen.

Disease management in the greenhouse focuses on moisture and humidity. Supply adequate air circulation to reduce the relative humidity. Lower humidity creates unfavorable conditions for the pathogen to develop. Maximize space between plants for improved airflow. HAF fans have proven to be valuable in mixing the air and reducing the relative humidity in the plant canopy. If drip irrigation is not available, limit overhead watering to the morning to allow leaves to dry before night.

Chemical controls of foliar fungicides are required prior to conditions that favor *Sclerotinia* epidemics. Sites that provide infection entry into a plant include the pedicel (flower stalk) region of excised flower petals, wounded and mechanically damaged stems, or even frost damaged tissue. Once fungal growth has taken place in these dying or dead tissues, a healthy stem can then become invaded provided continuous wetness of 16-72 hours remain present. Soil fumigation is a known effective method to destroy sclerotia in soil but requires licensed applicators and conditions.

Although biological control is used less extensively than chemical and cultural methods, antagonistic fungi such as *Coniothyrium minitans*, *Gliocladium virens*, and *Trichoderma viride* have been shown to reduce the severity of *Sclerotinia sclerotiorum* by inhibiting growth of the fungus and preventing formation of new sclerotia.

Chemical Options:

- **Cleary’s 3336 WP** - (EPA Reg. # 1001-63)
  - Active Ingredient: Thiophanate-Methyl
  - Drench rate is 8-16 oz per 100 gal. May be repeated at 2-4 week intervals as needed. 12 hr REI. 0 hr REI for drenches if label conditions are met. MOA 1. Restricted use pesticide in NY and CT.

- **Pageant Intrinsic WG** - (EPA Reg. # 7969-251)
  - Active Ingredients: Boscalid and Pyraclostrobin
  - Drench rate: 12-18 oz per 100 gal. Supplemental label allows for use on greenhouse grown tomato transplants. Good plant safety. Do not apply to wintercreeper, nine-bark. Flower spotting has occurred on impatiens and petunias. 12 hr REI. MOA 7 & 11. Restricted use pesticide in NY.
Terraclor 400 – (EPA Reg. #5481-8992)
Active Ingredient: Pentachloronitrobenzene (PCNB)
Drench rate: 4-8 oz per 100 gal. Labeled for use in greenhouse, nurseries, and landscape plantings. Certain edible crops are on the label. 12 REI. MOA 14.

References
http://www.extento.hawaii.edu/kbase/crop>Type/s_scler.htm
http://www.sclerotia.org/links/
http://www.cals.ncsu.edu/course/PP728/Sclerotinia/S_sclerotiorum.html
Compendium of Flowering Potted Plant Diseases, APS Press 1995