SCLEROTINIA DISEASE (WHITE MOLD) OF BEAN

White mold or Sclerotinia disease of bean can be serious anywhere in the state, especially under moist conditions.

Bean plants infected with white mold disease first develop water-soaked spots on the stems, leaves, or pods. These spots become soft and may expand rapidly under moist conditions. Most infections occur on the lower parts of the plants. Soon the infected areas are covered with the white, cottony, matlike growth of the fungus. The fungus growth begins to form small mounds or bumps which later become black and hard. These black bodies are called sclerotia, and are BB to pea size or larger (Fig. 1). The fungus may invade the stem and form sclerotia inside the stem (Fig. 2). The white fungus growth may eventually become brownish. Infected areas are badly rotted, eventually becoming dried out and brownish to whitish. Affected plants may turn yellow, wilt, and collapse. Leaves may drop.

This disease is caused by the fungus Sclerotinia sclerotiorum (Whetzelinia sclerotiorum). The fungus lives from year to year by means of the sclerotia on plant debris or in the soil. Moving infected plant debris, seed, or soil containing sclerotia to uninfested (disease-free) areas will spread the disease. The sclerotia may remain in the soil for years. In the spring, threadlike fungus strands emerge from the sclerotia to infect bean plants, or small mushroomlike structures containing spores may develop from the sclerotia. The spores are blown to plants and infect them. The fungus is most active between 60°-70° F., but also grows well when temperatures are as low as 50° F. and as high as 75° F. Continuously moist conditions are ideal for fungus growth and disease development. Such conditions result from fog, rain, or irrigation, or when the plants are large enough to trap humid air under and within them and hold it between wet periods.

Besides infecting bean plants, the fungus also infects many other kinds of vegetables including lettuce, carrot, parsnip, cabbage and other mustard family plants (including broccoli, radish, turnip, etc.), cucumber and other cucurbits (including squash, etc.), tomato, potato, pea, and rhubarb. Many weeds, including chickweed and redroot pigweed, are also attacked. Grasses and cereals are usually not affected by the disease.

Control. There are several cultural practices which help control this disease.

First of all, observations indicate that Sclerotinia disease is not a problem the first year beans are planted in a given location, regardless of weather conditions. However, in the second and following years the disease is a problem if weather conditions are moist. Therefore, don’t plant beans or other susceptible crops year after year on the same soil. Practice crop rotation by using the most resistant crops, such as cereals (including corn), or grasses (including hay) in the rotation. Planting the most resistant crops
will reduce the amount of fungus in the soil so that it may be possible to successfully grow a susceptible crop, such as beans, once every 2 to 3 years. Do not plant beans on land where severely infected crops were just grown. No resistant bean varieties exist. However, open-base varieties such as FM-1 generally escape early-season infections, but they can become severely infected.

Secondly, plant in well-drained areas, orient the rows and adjust row spacing so that wind movement is possible between rows. This promotes drying and makes conditions less favorable for disease. In this regard, avoid overfertilization which promotes lush and tender plant growth. Such growth favors disease because the fungus readily attacks tender plant parts, and because more humidity (water vapor) is held by the plants. In addition, water in the morning to allow the plants to dry before night. When conditions indicate disease is likely, irrigate as little as possible, just enough to keep the plants growing well. Generally the disease starts to become a problem at petal fall, so water sparingly after this time. Heavier, infrequent watering is usually better than light, frequent watering. However, avoid extremely long irrigations.

Thirdly, use good sanitation procedures to avoid spreading the fungus to uninfested (disease-free) areas. Sclerotia, either by themselves or as a part of infected plant debris, as well as soil containing
these materials, should not be moved to uninfested areas. Such movement can occur on farm machinery, home rototillers, shovels, and the like, as well as by irrigation water. Sclerotia may also be mixed with seed, or seed may be infected. Avoid feeding diseased plants or seeds to livestock, since the sclerotia may remain alive after passing through the animals. Thus, the manure would be infested and should not be used on uninfested areas. Where possible, destroy diseased plants and debris by burning or in some other suitable way. Home gardeners may place such materials in the garbage or take it to the dump. Do not add it to the compost pile.

Chemical control is also possible. The fungicides benomyl (Benlate) or DCNA (Botran) may be used. Read the label thoroughly before you buy the product to be sure the specific crop or plant to be sprayed (such as bush beans or pole beans) and the disease are listed on the label. Then carefully reread the label before each use, being sure to follow all directions and precautions carefully.

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