Cylindrocladium Black Rot (CBR) [caused by *Cylindrocladium parasiticum*]

CBR (Cylindrocladium black rot or black root rot) is found in all peanut counties in North Carolina. Entire plants turn light green or yellow, wilt, and die. Occasionally, wilting and death may be seen in individual limbs. A blackened, rotting root system is characteristic of this disease. The fungus produces numerous brick-red, pinhead-sized structures on crowns, lower stems, and pods, especially following moist weather. However, the absence of fruiting structures does not eliminate the possibility that CBR is present. If no fruiting structures are visible, late season wilting and root rot symptoms of CBR and tomato spotted wilt can be confused. Typically, a gentle tug will pull up or break off CBR-infected plants due to extensive rotting of the crown and taproot.

**Cultural Controls**

**Rotation.** Long rotations help to reduce the amount of fungus in the soil. Non-hosts, such as cotton, corn, sorghum, and small grains, are excellent rotations and will help reduce *Cylindrocladium* populations in the soil. Peanut following peanut or soybean is a formula for disaster and will quickly lead to heavy infestations once disease becomes established. Since *Cylindrocladium* also infects soybean, CBR can be a problem even in a field where peanuts are being planted for the first time if that field has a history of soybean production.

Perry (resistant) on left, and VA 98R (not resistant) on right
**Resistant Cultivars.** Together with rotation, planting a resistant cultivar is the foundation of CBR control. Fields with a history of 1-10% disease should be planted to a resistant cultivar. Even if you plan to fumigate (below), highly susceptible cultivars should not be planted in fields with a history of CBR.

**Tillage.** Tillage practices have little impact on CBR, but small grain cover crops or mulches appear to suppress disease. Always use high quality seed to prevent problems with CBR and other diseases.

**Planting.** Plant fields with a history of CBR on a bed around mid-May to maximize soil warmth. CBR infects during cool, wet periods in the spring and in the fall. Fall infections cause less damage than spring infections. Symptoms seen in mid-summer are usually the result of spring infections.

Root knot and ring nematodes can make CBR problems worse. If CBR has been identified in a field, submit a nematode sample the fall before peanuts are to be planted. Use the nematode assay information to determine which cultivars and chemical treatments are most suitable.

**Chemical Control**
Soil fumigation with metam sodium may be necessary to control CBR in some fields. Both fumigation and a resistant cultivar are needed in fields that have a history of 10 percent or greater disease incidence in prior peanut crops.

The fumigant metam sodium must be injected 12 inches deep (below the top of the bed) at least 2 weeks prior to planting. Apply after soil temperatures reach 60°F at a 4-inch depth, and temperatures of 60° or higher are forecast for the next 5 days. Delay fumigation if an inch or more of rain is forecast within 3 days. Cool and/or wet conditions after fumigation can slow the dispersion of the fumigant, resulting in poor control or damage to young plants. A lettuce seed bioassay can be used to make sure that it is safe to plant. Minimize disturbance of fumigated soil; herbicides can be incorporated prior to bedding and injecting for adequate weed control. Some fungicides applied in furrow or to foliage may suppress CBR. Check the label for details.

**CBR Seed Transmission**
CBR can be transmitted by seed. Infected seed have cinnamon-colored speckles about the size of pencil dots. The speckles are the resting structures (microsclerotia) of *C. parasiticum*, which causes CBR. Most microsclerotia die during winter storage, but any surviving microsclerotia can infect plants as they emerge from the speckled seed and can also infect nearby plants.
To avoid seed transmission of peanut diseases, peanuts produced for seed should be grown in fields with little or no CBR or Sclerotinia blight (which also is seed transmitted). Use long rotations, fumigate prior to planting, and scout late in the season to identify these diseases. Portions of fields heavily infested with either of these diseases should be harvested separately and used as edible peanuts. Screening at the shelling plant to remove speckled seed, and use of commercially applied seed treatments will minimize seed transmission of CBR.

**Methods to Reduce or Eliminate CBR in Seed**
The North Carolina Crop Improvement Association supports the following recommendations that will reduce and/or eliminate seed transmission of CBR.

- Maintain accurate records of field history and maps of CBR incidence.
- Adopt a minimum of 3-year rotations of peanut with non-hosts of CBR (cotton, corn, etc.).
- Select fields with low levels of CBR.
- Fumigate fields with metam sodium after soil temperatures are greater than 60°F at 4-inch depth as reported by your Cooperative Extension center or weather stations ([www.ncclimate.ncsu.edu](http://www.ncclimate.ncsu.edu)) or ([www.ipm.vt.edu/infonet](http://www.ipm.vt.edu/infonet)).
- Consult weather forecasts and delay fumigation if heavy rainfall or cold weather is likely.
Inspect fields at the end of the season. Selectively harvest infested fields to avoid heavily infested areas. Avoid harvesting seed peanuts where disease incidence exceeds 5 percent.

**Determining Percent Disease.**
In most cases, CBR will be clearly above or below the threshold. When in doubt, divide the field into 1-acre blocks, select the worst block, and determine the % disease by stepping off three 100-foot sections of row, and counting the number of feet within each that were diseased. Five feet of diseased row out of 100 is 5% disease. Average the percentages from the three samples. In this manner, you can determine which acres should not be harvested for seed. Field scouts should be careful not to confuse symptoms of CBR and tomato spotted wilt.

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