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## ***Broccoli, Cole crops: Black rot***

*Use Integrated Pest Management (IPM) for successful plant problem management.*

### ***Biology***

Black rot is a bacterial disease affecting most cultivated and weedy plants in the mustard family. Cabbage and cauliflower are the primary cultivated hosts in Washington. The bacteria enter via wounds or at the leaf margins. Infected leaves turn yellow, with the chlorosis spreading from the infection site toward the base of the leaf and causing a V-shaped area along the main vein. Veins in the affected area turn black and show against the light as a black network. Affected leaves may drop. The disease moves into the tissues of the stem, causing the water-conducting tissues to turn black. The infection becomes systemic after entering the stem and can then cause symptoms on any part of the plant. The bacteria overwinter on plant debris and weeds and in infected seed. They require water to spread.

### ***Management Options***

#### **Non-Chemical Management**

- ~ Plant disease-free seed of disease-resistant varieties. Cabbage cultivars 'Defender' and 'Guardian' are resistant. 'King Cole', 'Roundup', 'Superdane', 'Superkraut', and 'Titanic 90' are reported to have high tolerance.
- ~ Control weeds in and around the garden.
- ~ Rotate crops. Do not plant cabbage or related vegetables in the same location each year.
- ~ Avoid overhead watering.
- ~ Remove plant debris from the garden. Destroy or discard (do not compost) diseased materials.

*Select non-chemical management options as your first choice!*

#### **Chemical Management**

***IMPORTANT: Visit Home and Garden Fact Sheets for more information on using pesticides***

None recommended