BLACK ROT

CAUSAL AGENT

*Xanthomonas campestris* pv. *campestris*

IDENTIFICATION

Plants can be affected at any growth stage. Initial symptoms consist of localized wilting at the leaf margin followed by a yellowing. The most characteristic symptom is a yellow "V-shaped" lesion at the leaf margin, with the base of the "V" toward the leaf center. Within the yellow tissue, leaf veins become black. The blackened veins may extend from the leaf to the main stem. One way to identify the disease is to cut or pull off a leaf and examine the leaf scar area on the stem. There will be characteristic black vascular spots at the leaf scar. Black veins may extend into the head. The disease may progress on cabbage in storage making the heads unmarketable. Soft rot bacteria frequently follow black rot bacteria into the heads which reduces storability.

DISEASE CYCLE AND EPIDEMIOLOGY

Black rot bacteria survive on and in seed, and in infested crop debris. Cruciferous weeds may also be a source of black rot bacteria. The bacteria are spread by splashing or running water, by workers handling infected plants, or by insects. Infections take place through hydathodes along the leaf margins, through insect feeding injuries, or through stomata.

MANAGEMENT

Use disease free seed. Hot water seed treatments greatly reduce the risk of black rot development, but do not guarantee black rot free seed.

Choose varieties with resistance or tolerance to the disease.

Choose fields with good air and water drainage, and no history of black rot.

A 3-year rotation using nonhost crops is recommended.

Scout fields, seedbeds or greenhouses beginning at emergence.

Do not dip or water transplants while they are in crates or boxes.

Destroy remaining plants in seedbeds or greenhouses.

Avoid entering a field where black rot is present. If a field must be entered, do not enter until the foliage is dry to avoid rapid spreading of the pathogen.

Avoid frequent irrigation.

Maintain good weed control.

Clean all equipment that is used in infested fields.

Copper compounds are registered for disease control. However, control using copper is marginal.