TRANSMISSION OF LATE BLIGHT IN CUT POTATO SEED

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Of the three sources of inoculum that begin late blight epidemics, volunteers, cull piles and infected seed, the least understood and the most difficult to manage is infected seed. Seed infections are difficult to see because infections are often masked by soil adhering to the seed or the russeting of the periderm. We know that seed becomes infected primarily in the field when sporangia fall to the ground, cleave into zoospores and swim through soil moisture to infect the new tubers. Because seed is stored cold, this low temperature arrests the continued development of late blight and decay by secondary soft rot, in effect preserving late blight infection in the seed until warming. The majority of seed planted that is infected with late blight from the previous season decays after it is warmed and planted and never emerges, and is not considered important as inoculum. Most infection of seed with late blight occurs during the cutting operation. As infected seed is cut and handled, spores or mycelial pieces of the late blight fungus contact fresh cut surfaces and other injuries, where they establish infection, and thrive in the cool moist environment of the soil. If the infection is close to an eye, the late blight fungus grows with the emerging sprout and emerges with the plant where it can sporulate at the soil line and start late blight in a field. In addition, spores produced by old infections are dislodged during handling and can infect seed even without cutting or other injury. Precutting seed may make late blight infection more serious. Management of seed-borne late blight includes avoiding late blight affected seed (difficult), careful seed grading, and seed treatment. There is no comprehensive test that can be used to determine the infection level of a seed lot with late blight. Treatment of fresh cut seed with a fungicide is recommended to reduce spread and infection of seed during the cutting operation. Seed treatments for late blight are only protectants, not curative. The most effective registered seed treatment appears to be TOPS-MZ. Effective seed treatments currently undergoing registration for late blight include TOPS-MZ plus Curzate, and Maxim MZ. Chlorine dioxide and similar compounds are being evaluated as seed piece treatments.

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