

Tree Fruit Diseases

Biology and Management of Armillaria Root Disease in Pear in California

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Pears have traditionally been considered to be more resistant to Armillaria root disease (causal agent: *Armillaria mellea*). In recent years, however, the incidence of Armillaria root disease has dramatically increased in California, requiring attention by industry and researchers. In 1995-96, several projects were initiated to: 1) discern temporal and spatial patterns of infection in orchards and individual trees; 2) identify interactions between disease severity and cultural practices (e.g., irrigation type and amount, planting density, rootstocks); 3) correlate plant water status with symptom expression; and 4) test the effectiveness of pre- and post-plant treatments using chemical (Enzone®) and biological controls (*Trichoderma* spp.).

Findings to date indicate: 1) within one infested orchard, infection centers up to 200 m apart consisted of genetically identical isolates of the pathogen, suggesting establishment of the fungus on the site for several hundred years; 2) root excavations indicate a major role for rhizomorphs in the infection process; and 3) tree water status, as measured using a pressure bomb, can indicate disease before obvious above-ground symptoms appear. To accompany these experiments, an extensive survey of cultural practices and site conditions will be conducted in pear growing regions to determine why trees (up to 100 years old) have become infected in relatively recent years.