

Abstract

Two studies were conducted to determine the effects of water content (WC) on sporulation on thinned fruit and the effects of wetness duration, inoculum density, and temperature on secondary infection of prune fruit by *Monilinia fructicola*, the main causal pathogen of brown rot in California. In the first study, sporulation intensity and duration of sporulation of the pathogen were tested on inoculated thinned fruit with five levels (67.2, 53.8, 40.3, 26.9, and 13.4%) of WC. Regression analyses showed that both sporulation intensity and duration of sporulation increased as WC of thinned fruit increased. The predicted difference in duration of sporulation between fruit with 13.4 and 67.2% WC was about 3 days. In the second study, three inoculum concentrations (8,000, 16,000, and 24,000 conidia per milliliter) of *M. fructicola* were atomized onto prune fruit on trees in an orchard. Inoculated fruit and shoots were covered with plastic bags to maintain wetness duration for 4, 8, 12, or 16 h. An overnight freezing and incubation technique was used after harvest to determine the proportion of fruit with latent infection. Regression analysis demonstrated that inoculum concentration and wetness duration were significant factors affecting secondary infection. Temperature was less important. Increased inoculum concentration and wetness duration increased the percentage of fruit with latent infections. Increased temperature decreased the percentage of fruit with latent infections.