

Abstract

The aims of this study were to examine the sources and population sizes of *Botrytis cinerea* and *Penicillium* spp. in 'd'Anjou' pear orchards, packinghouses, and storage, and to determine the relationship between population sizes and postharvest decay. Densities of *B. cinerea* ranged from nondetectable to 4.0 CFU/cm² on fruit, nondetectable to 3.1 CFU/liter in orchard air, and nondetectable to 1,167 CFU/g in orchard litter. The majority of packinghouse air and orchard soil samples collected yielded no *B. cinerea* inoculum. Densities of *Penicillium* spp. ranged from nondetectable to 2.7 CFU/cm² on pear fruit, nondetectable to 3.13 CFU/liter in orchard air, nondetectable to 11.8 CFU/liter in packingline air, nondetectable to 3.9 CFU/liter in cold-storage air, 38 to 431 CFU/g in orchard soil, and 131 to 1,128 CFU/g in orchard litter. The mean incidence of gray mold in stored d'Anjou pear fruit ranged from 0.7 to 10.7%. Incidence of blue mold ranged from 0 to 16.5%. Significant positive correlations were observed between decay and fruit surface populations of *B. cinerea* and *Penicillium* spp. In conclusion, inoculum levels of these important postharvest pathogens in orchard and packinghouse air, and orchard soil and litter, cannot be used as indicators of postharvest decay; whereas the inoculum level on fruit surfaces may be a useful predictor of decay.