

Title Biology and sources of inoculum of *Geotrichum candidum* causing sour rot of peach and nectarine fruit in California

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Abstract

Geotrichum candidum causes sour rot of fresh-market stone fruits such as peaches and nectarines. Since 2001, the incidence of sour rot has increased in California, a semi-arid production area, which is considered atypical for the occurrence of the disease. In this study, sour rot developed at significantly higher incidence on wounded fruit as compared to unwounded fruit, and disease severity increased as fruit matured. In packinghouse surveys, sour rot was found on up to 4% of non-fungicide-treated peach and nectarine fruits. In laboratory assays, sour rot developed when fruits were inoculated with a minimum of 20 conidia per inoculation site. Inoculum of *G. candidum* could be detected in California orchard soils at depths of up to 10 cm. The amount of inoculum in the soil was positively correlated with that on leaf and fruit surfaces of trees growing at a specific site. Moreover, inoculum of *G. candidum* was detected at different areas of packing lines in seven packinghouses. There were significant differences among the packinghouses evaluated, and these differences could be attributed in part to different sanitation practices used. Nitidulid beetles and fruit flies were found to play a role in disease transmission. These insects acquired sour rot inoculum in the orchard and 25% of nitidulid beetles and 26% of fruit flies collected were positive for the pathogen. Spore survival in the soil over a twelve-month period decreased significantly when soil depth increased from 10 to 20 cm. This study identified sources of inoculum of *G. candidum* in orchards and packinghouses, and provides information to guide development of disease management programs under the semi-arid conditions of California.