

## Abstract

*Gilbertella persicaria* (Eddy) Hesselstine and *Rhizopus* spp. are postharvest pathogens of peach (*Prunus persica* (L.) Batsch). This study was done to investigate *Rhizopus* rot which is important in South Carolina. Since *Gilbertella* rot was much more common than *Rhizopus* rot in the field, the study focused on *Gilbertella* rot.

Disease prevalence was determined on the ground in orchards. Effects of temperature on *G. persicaria* were studied by assessing sporangiospore germination in potato-dextrose broth, mycelial growth and sporulation on potato-dextrose agar, and disease development. Sources of inoculum in the field soils and debris and packing systems were identified by isolation techniques. Initiation of infection was characterized. Fungicides were tested against the pathogen on synthetic *Mucor* agar and on peach fruit.

*Gilbertella* rot was more common than *Rhizopus* rot in the field in 1991. Based on 1992 surveys, 0 to 65% (averaged 16%) or 0 to 11% (averaged 3%) of the fruit were infected with *G. persicaria* or *Rhizopus* spp., respectively. *G. persicaria* sporangiospores germinated in the range of 10-40 C, with an optimum from 22 to 34 C, but at 40 C germ tubes and hyphae were abnormal. Mycelial growth rate was highest at 28 and 34 C, lowest at 10 and 40 C, and the fungus did not grow at 4 C. Cardinal temperatures for sporulation were 16-34 C with an optimum of 28 C. Disease developed at a temperature range of 22 to 34, with an optimum of 28 C. *G. persicaria* occurred in 91 and 100% of soil and debris samples, respectively. *Rhizopus* were detected in 9% soil sample and 22% debris samples. *Rhizopus*, but no *G. persicaria*, were recovered from air in a peach orchard with Andersen sampler. Viable propagules of both fungal genera were commonly detected in soils or debris taken from harvest bins before and during harvest. Inoculum of both pathogens also were detected in hydrocooling and dump water and from packing lines. Germination of *G. persicaria* sporangiospores required an external nutrient source. Wounding was necessary for the pathogen to penetrate peaches and initiate infection. Both mature and green fruit were susceptible. Single spores were able to initiate infection. Dicloran and iprodione were the two most efficacious fungicides against *G. persicaria* in vitro, followed by vinclozolin and captan. Triforine or fosetyl-Al had almost no effect on the pathogen. However, no fungicides were effective for controlling the disease.