

Title Control of postharvest gray mold of table grapes in the San Joaquin Valley of California by fungicides applied during the growing season

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Abstract

Fungicides applied before harvest were evaluated to control postharvest gray mold of table grapes, caused by *Botrytis cinerea*. The concentrations of thiophanate methyl (THM), iprodione (IPR), cyprodinil (CYP), pyraclostrobin + boscalid (PS+BO), pyrimethanil (PYR), or fenhexamid (FEN) that inhibited the growth of four isolates sensitive to these fungicides by 50% (EC_{50}) were 12.4, 2.5, 0.61, 0.29/0.57, 0.26, or 0.17 mg liter⁻¹, respectively. THM, IPR, CYP, PS+BO, PYR, or FEN were applied to detached ‘Thompson Seedless’ berries at the equivalent of the maximum approved rates of 600, 500, 270, 59/116, 370, or 290 mg liter⁻¹, respectively, except PS+BO, which were used at 54.2% of their current registered maximum rates. The berries were inoculated with *B. cinerea* 48 or 24 h before treatment or 24 or 48 h after treatment. Gray mold 2 weeks after treatment and storage at 15°C was lowest after FEN application, followed by PYR, CYP, IPR, PS+BO, and THM. In commercial vineyards, one application of FEN, PYR, CYP, or PS+BO, all at their current maximum approved rates, 2 weeks before harvest reduced postharvest gray mold by approximately 50%. When fungicides were applied repeatedly after berry set either in mixtures or alternated with fungicides of different mode of action classes, postharvest gray mold was reduced by about 50% using a commercial air-blast sprayer and by 70 to 87% using a hand-held sprayer that was directed into the clusters. The fungicide sensitivity of isolates collected in numerous vineyards indicated those with reduced sensitivity to all of the tested fungicides, except FEN, were common. The efficacy of preharvest fungicide regimes was not sufficient to replace postharvest sulfur dioxide fumigation.