

**Title** Effect of application method and rate on residual efficacy of mefenoxam and phosphorous acid fungicides in the control of pink rot of potato

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### **Abstract**

Experiments were conducted to examine the effectiveness of rate and method of phosphorous acid application for controlling pink rot of potato (*Solanum tuberosum*) caused by *Phytophthora erythroseptica*. Replicated small-plot and replicated split commercial field trials were established in commercial production fields in Minnesota from 2006 to 2009. Fungicides were applied in-furrow at planting, or as one, two, or three foliar applications via ground sprayer, irrigation system (chemigation), or fixed-wing aircraft. Phosphorous acid efficacy was compared to mefenoxam, the fungicide commonly utilized to manage pink rot, either by determining natural infections in the field or by inoculating eyes of harvested tubers using a mefenoxam-sensitive and -resistant isolate of *P. erythroseptica* via postharvest challenge inoculation. In replicated small plot trials, both in-furrow and two foliar applications of mefenoxam controlled tuber rot in the field, and significantly controlled tuber rot in storage. Phosphorous acid also reduced tuber rot in the field when applied two or three times to the foliage. Although phosphorous acid was ineffective when applied in-furrow, one, two, and three foliar applications and a postharvest application of phosphorous acid controlled mefenoxam-sensitive and -resistant isolates of *P. erythroseptica* during storage for 187 days, while mefenoxam failed to control the resistant isolate. In replicated split commercial field trials, two aerial applications of phosphorous acid were as effective as three applications in reducing pink rot incidence in tubers inoculated postharvest. Three aerial applications were as effective as three chemigation applications in replicated split commercial field trials in 2008, but provided significantly greater protection than chemigation in 2009.