

**Title** Evaluation of onion cultivars for resistance to *Enterobacter cloacae* in storage  
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#### **Abstract**

Sixty-nine storage onion (*Allium cepa*) cultivars (seven white, five red, and 57 yellow cultivars) were evaluated in the Washington State University Onion Cultivar Trials in the semiarid Columbia Basin of central Washington in 2007–08 and/or 2008–09. Each cultivar was inoculated with *Enterobacter cloacae*, cured, stored under commercial storage conditions, and evaluated for bacterial storage rot symptoms approximately 4.5 months after storage. Noninoculated bulbs of each cultivar served as a control treatment in each experiment. In addition, bulbs injected with water served as a second control treatment in the 2008–09 experiment. Inoculation of onion bulbs with *E. cloacae* resulted in significantly higher incidence and severity of *Enterobacter* bulb decay compared to noninoculated bulbs and bulbs injected with sterile water. For bulbs inoculated with *E. cloacae*, mean severity of bacterial storage rot per cultivar ranged from 5 to 19% of the cross-section evaluated for each onion bulb in 2007–08 and from 9 to 29% in 2008–09. For noninoculated bulbs, mean severity ranged from 0 to 1% in 2007–08 and 0 to 3% in 2008–09. For bulbs injected with water in the 2008–09 experiment, severity of bulb rot ranged from 0 to 10% per cultivar, with four cultivars (OLYX05-26, RE-E, Redwing, and Talon) displaying bulb rot ratings significantly greater than 0%. For the 33 cultivars included in both experiments, a significant correlation in bulb rot severity ratings was detected for the 2007–08 versus 2008–09 experiments ( $r = 0.43$  at  $P = 0.013$ ). Redwing, Red Bull, T-433, Centerstone, and Salsa had low severity ratings in both experiments; whereas Montero, OLYS05N5, Caveat, and Granero had severe bulb rot ratings in both experiments. The results demonstrate that it should be possible to select for increased resistance to *Enterobacter* bulb decay in storage onion cultivars.