

Abstract

An antagonistic yeast, *Cryptococcus laurentii*, alone or in combination with a low dose of imazalil (25 µg a.i./ml) or kresoxim-methyl (50 µg a.i./ml), was investigated for its ability to control *Alternaria alternata* and *Monilinia fructicola* on jujube fruit under different storage conditions. Biocontrol activity of *C. laurentii* against *A. alternata* and *M. fructicola* at 20°C was enhanced significantly by combination with either fungicide. An integrated strategy for control of *A. alternata* and *M. fructicola* was developed that included a combination of *C. laurentii*, a low dose of fungicide, and controlled-atmosphere (CA) storage. Fruit treated with *C. laurentii* plus imazalil at 25 µg a.i./ml or kresoxim-methyl at 50 µg a.i./ml and stored in CA storage with 10% O₂ + 0% CO₂ at 0°C showed a lower disease incidence caused by both pathogens than fruit stored in air at 0°C. Application of imazalil (25 µg a.i./ml) or kresoxim-methyl (50 µg a.i./ml) did not inhibit the growth of *C. laurentii* in wounds of jujube fruit stored in air at 20 and 0°C or in CA at 0°C. The yeast grew rapidly in the wounds of jujube fruit under all storage conditions. The ability of *C. laurentii* to effectively control postharvest diseases of jujube fruit, the resistance of *C. laurentii* to low rates of fungicides, and the adaptability of this yeast to CA storage indicate that *C. laurentii* has great commercial potential as a biological control product.