Abstract

Date palm (*Phoenix dactylifera* L.) is a crop of increasing importance in the Elx area (Southeast of Spain). Since in this area date fruit are commercialized for fresh consumption, the most important problems limiting their storability are irregular ripening, weight loss, and postharvest decay. Postharvest treatments to uniformly accelerate fruit ripening and avoid more than one harvest are economically mandatory for the most important date cultivars in the area. In this work, the incidence of major postharvest diseases was determined for two consecutive seasons on locally grown 'Hayani' and 'Medjool' dates sealed in multi-layer PE bags and cold-stored (CS) at -3°C for up to 3 months before or after exposure of non-bagged fruit to induced ripening treatments of 98% CO_2 at 25°C for 2 or 4 days (CO_2) or air at 25°C for 2 or 4 days (Heat). Determinations were performed after shelf-life of 10 days in an ambient air atmosphere at 20°C. Fungal pathogenic isolates were plated in PDA Petri dishes and incubated at 25°C for further macroscopic and/or microscopic identification. Irrespective of the protocol, all 'Hayani' dates exposed to CS, CO_2+CS, and Heat+CS were infected by *Penicillium* spp. Although with variable incidence depending on the season, other frequent disease causal agents were *Aspergillus niger, Alternaria* spp., and *Cladosporium* spp., generally in this order. *A. niger* and *Alternaria* spp. were significantly less frequent on Heat+CS and CO_2+CS-treated dates, respectively. On 'Medjool' dates, Penicillium spp. and A. niger were isolated from about 100 and 10%, respectively, of fruit treated with either CS+CO_2 or CO_2+CS. Severe microbial fermentation was observed on dates exposed to the sequence CS+Heat.