Abstract:

The effectiveness of Candida sake strain CPA-1 as a natural antagonist for the control of fungal rot in apple cv. 'Red Delicious' was investigated for two years always in combination with diphenylamine (DPA). The pathogens applied were Penicillium expansum, Botrytis cinerea and micro-organisms contained in the treatment water from a commercial DPA drenching equipment. After 60 days of storage in controlled atmosphere damage frequency and severity were evaluated. Only in the first year of this study B. cinerea was almost completely controlled. As regards P. expansum, the best result was a 19% reduction in the frequency of infections. Infection frequency caused by pathogens present in the drencher water was reduced in the first year by 43% using 108 CFU/ml of C. sake CPA-1, compared to the lower dosage of 107 CFU/ml. In the second year almost total infection was caused mainly by Mucor spp. The variable effect of C. sake CPA-1 observed in our work compared to other might have been caused by a greater virulence of the pathogen strains used. The lesions were well colonised by C. sake CPA-1 in presence of DPA (7x105 CFU/lesion), but DPA may have interfered with cytotoxic or plant defence inducing action of C. sake. Improvement of biocontrol activity may be obtained by the selection of autochthonous strains or additional physical measures of sanitation, nutritional enhancement and by the combination with other micro-organisms.