

Title Culturable Fungi of Stored ‘Golden Delicious’ Apple Fruits: A One-Season Comparison Study of Organic and Integrated Production Systems in Switzerland

Author José Granado, Barbara Thürig, Edith Kieffer, Liliane Petrini, Andreas Fließbach, Lucius Tamm, Franco P. Weibel and Gabriela S. Wyss

Citation Microbial Ecology, 56, Number 4, 720-732, 2008

Keywords

Abstract

The effects of organic and integrated production systems on the culturable fungal microflora of stored apple fruits from five matched pairs of certified organic and integrated ‘Golden Delicious’ farms were studied at five representative production sites in Switzerland. Isolated fungi were identified morphologically. Colonization frequency (percentage of apples colonized), abundance (colony numbers), and diversity (taxon richness) were assessed for each orchard. The standard quality of the stored fruits was comparable for both organic and integrated apples and complied with national food hygiene standards. Yeasts (six taxa) and the yeast-like fungus *Aureobasidium pullulans* were the dominant epiphytes, filamentous fungi (21 taxa) the dominant endophytes. The most common fungi occurred at all sites and belonged to the “white” and “pink” yeasts, yeast-like *A. pullulans*, filamentous fungi *Cladosporium* spp., *Alternaria* spp., and sterile filamentous fungi. Canonical correspondence analysis of the total fungal community revealed a clear differentiation among production systems and sites. Compared to integrated apples, organic apples had significantly higher frequencies of filamentous fungi, abundance of total fungi, and taxon diversity. The effects of the production system on the fungal microflora are most likely due to the different plant protection strategies. The incidence of potential mycotoxin producers such as *Penicillium* and *Alternaria* species was not different between production systems. We suggest that higher fungal diversity may generally be associated with organic production and may increase the level of beneficial and antagonistically acting species known for their potential to suppress apple pathogens, which may be an advantage to organic apples, e.g., in respect to natural disease control.

<http://www.springerlink.com/content/65n5411085p24357/fulltext.pdf>