# LIVING ON APPLES – ANTHROPOGENIC INFLUENCE ON MICROBIAL COMMUNITIES OF APPLE FRUITS

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Microbial communities on non-processed foods are complex with unknown effects on food quality and human health. It is generally assumed that the ecology of the microflora associated with apples reflects the environment of the orchard, handling, harvesting, and storage. We performed a comparative field trial to assess how anthropogenic factors, such as organic and conventional farming practices, influence the microbial community of apple fruits. Apples are an economically important crop in Switzerland. In 2004, we harvested apple fruits cv. Golden Delicious of five pairs of organic/ conventional farms at five different locations in Switzerland. We combined classical microbiological methods and genetic tools to characterize the cultivable and uncultivable microflora of apple fruits. Morphologically distinct mold and yeast colonies were recovered from apple fruit surface (epiphytes) or from underneath the skin (endophytes) and recorded on nutrient agar. We also started to develop culture-independent molecular DNA-techniques (e.g. PCR of internal transcribed spacer region, ITS) for species identification and fungal community studies. Several white and red/pink yeasts and yeast-like fungi were the predominant epiphytes. Morphologically different molds formed almost exclusively the endophytic microflora. The yeast-like fungi were more abundantly and more frequently found on organic apple fruits whereas red/pink yeasts prevailed on conventional fruits. We found higher numbers of endophytic molds and more morphological types in organic fruits. These results suggest that the microbial community of apple fruits adapts to the farming practice, a feature which might be useful for authenticity and food quality.