## Abstract

Conference pears are usually stored under controlled atmosphere (CA) conditions to prolong their quality and market life. However, storage under low oxygen may result in quality loss and storage disorders such as internal browning and the formation of cavities. The frequency and intensity of symptoms usually increase during storage, resulting in high spoilage losses. The incidence of postharvest disorders varies among countries, breeders, and can even vary between different orchards of the same breeder. Prior knowledge about the storability of pear batches provides an opportunity to identify batches with a short storage life, and thus reduce the loss by spoilage and a]]owing a more standard year-round quality. Therefore, auctions, breeders and distributers would be aided by a diagnostic test which can predict the storage life of pears under CA-conditions.

This research project aimed to identify a set of indicator genes that would predict the duration of storage of pears at the point of harvest.

Various batches Conference pears, harvested during a period of 6 weeks, were assessed for storage disorders after 3, 6 and 9 months of storage under CA-conditions. Tissue samples from 15 pears per batch were taken 1 day postharvest and after 3 weeks of cooling (prior to CA-storage) and were stored at -80°C for later gene expression analyses by microarray technology. Nine batches, varying in their severity of core browning and cavity formation after various periods of CA storage, were selected for comparison with gene expression data. The relative expression values, measured at week 3, are coupled to the physiological data measured after 3 and 9 months of storage. Genes which expression profiles show high correlation with storage quality, are selected as candidate indicator genes.

We have discovered several promising marker genes, involved in ripening- and cell wall related processes, which in addition to an already existing set of quality predicting genes, will be further validated and optimized in the next season.