

Influence of long term storage on the composition of harmful nitrogen in sugar beet

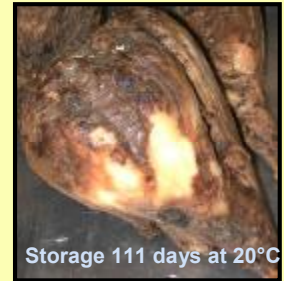
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Introduction

Long term storage of sugar beet during the winter is an option to extend the processing campaign and thereby the capacity of a sugar factory. However, during storage, several changes in beet quality may occur which depend on the storage conditions such as duration and temperature. The study focussed on changes in the N composition of two sugar beet varieties during long term storage.

Material and methods

Two sugar beet varieties were stored under controlled conditions at 7 °C and 20 °C. Three samples were analysed for amino N, betaine, nitrate and total soluble N concentration at harvest and after 25, 85 and 111 days of storage.



Results

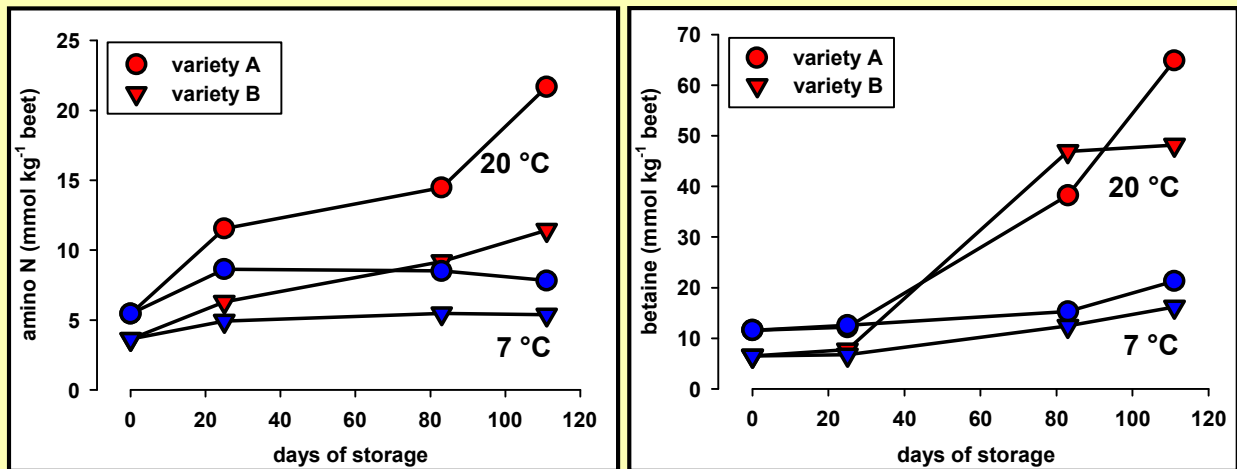


Fig. 1: Concentration of amino N (left) and betaine (right) of two sugar beet varieties during storage, 2003

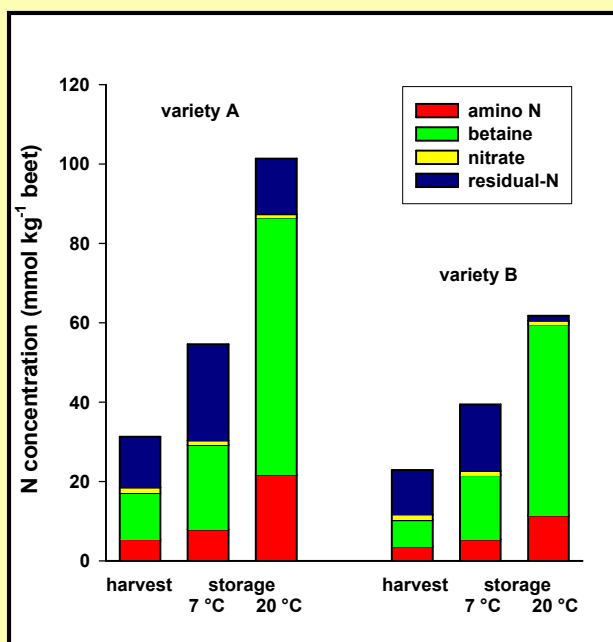


Fig. 2: Composition of total soluble N in two sugar beet varieties after 111 days of storage: amino N, betaine, nitrate and residual N, 2003

Conclusions

During storage, a strong increase in amino nitrogen, betaine and total soluble nitrogen concentration with time and with increasing temperature occurred. By contrast, the concentration of nitrate which was comparatively low at harvest further decreased during storage.

For all N components large differences between the two varieties occurred indicating a considerable genotypic variability for the changes in quality during storage.

In conclusion, beet quality during storage not only declines with regard to sucrose losses but also due to increasing concentrations of soluble nitrogenous compounds that impair sugar recovery.