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### **EFFECT OF GENOTYPE AND ENVIRONMENT ON THE DEVELOPMENT OF ROOT ROTS DURING LONG-TIME STORAGE OF SUGAR BEETS**

**Influence du génotype et de l'environnement sur le développement de pourriture lors d'un stockage de longue durée de betteraves sucrières / Einfluß von Genotyp und Umwelt auf die Entwicklung von Lagerfäulen bei der Langzeitlagerung von Zuckerrüben**

#### **ABSTRACT**

Severe root rots are a serious problem during storage of sugar beets by causing a loss of sugar and accumulation of invert sugars (glucose + fructose). Beside the temperature, it is supposed that the development of root rots during storage is mainly influenced by the genotype and the environment (e.g. harvest technique, soil, weather), but relatively little is known about the variance caused by each of these factors.

To proof this hypothesis, three sugar beet cultivars were grown in five different environments and stored after harvest at different temperatures (20°C, 8°C, outdoor) for 13 weeks. At the end of storage, the percentage of rotten surface was rated and the amount of recoverable sucrose (white sugar yield) and invert sugar (glucose + fructose) was determined.

The results clearly show that temperature and environment are the major factors influencing the severity of root rots. Furthermore, a genotype effect could also be observed but it was influenced by an interaction with the environment. Nevertheless, artificial storage conditions as well as root rot rating will allow breeders to select cultivars with less susceptibility to storage root rots. Additionally, the white sugar yield decreased and the invert sugar content increased along with an increasing root rot rating.

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