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Long term storage of sugar beet: Belgian experiments in 2008

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A consequence of the European Sugar Regime is the reduction in sugar factories and an increase in the length of the campaign.

Campaign duration was about 100-110 days in Belgium and France and even more in The Netherlands, Germany and the Nordic countries (120 days or more).

In 2006, France encountered a lot of problems with long term storage. A lot of beet had rotten parts, generating many difficulties in the factories during diffusion and filtration of raw sap.

Storage duration and temperature, harvesting quality, type of variety, and cropping techniques were investigated by the French sugar company Tereos in beet clamps in October and November 2007. The conclusion was that above 250-300 degree days outside temperature (350-400 degree days clamp temperature), storage mould appeared and parts of the beet had rotted.

The same experiment was carried out in Belgium by IRBAB during the beet campaign of 2008.

- Beet were stored under normal clamp conditions, in dry or wet containers (± 100 kg beet/sample) and analysed after a storage period from November until January.
- Different topping types were tested in collaboration with ITB (France).
- Beet samples of different varieties were analysed in normal or controlled conditions (12°C during 60 days), in the specific respirometry room of IRBAB, where CO² production is continuously analysed.
- An international field experiment was conducted by IRS and IRBAB, together with IIRB member countries and breeding companies.

Measurements were made on losses due to rotten parts, root weight, sugar content and sugar weight according to the amount of degree day.

- Rotting occurred generally after 300 degree days, independently of the storage conditions (wet or dry conditions, at real outside temperature or by controlled temperature) or of topping quality.
- Between 300 and 550 degree days, sugar weight losses for normally topped beet were less affected than for other topping types: non topped, 'bald' beets and slightly topped beets.
- 12 commercialised varieties were tested, stored in outside conditions or in the respirometry room of IRBAB. Differences in mould development were registered (and consequently CO² production) after 300 degree days.

Confirming the observations of the French group Tereos, a beet delivery calendar, correlated with different beet harvesting dates was made on the basis of 270 degree days (outside temperature) and is now proposed for Belgium, using average temperature data (normal years) during the beet campaign period (if no frost occurs!). Maximal limits are also proposed in the case of a "hot" storage period (like in 2006) and a colder storage period. These experiments will be confirmed in 2009.