Changes in sugar beet tissue strength during storage

Gunnar Kleuker, Christa M. Hoffmann

Institute of Sugar Beet Research, Göttingen

Institute of Sugar Beet Research

Objectices

In recent studies, genetic variation in tissue strength of sugar beet roots were found. There is evidence that tissue strength influences the susceptibility to damage and the storability of the beet. However, it is not known to which extent tissue strength is altered during storage.
The aim of this study was thus to analyze the influence of storage on differences in tissue strength by genotype and environment.

Conclusions

- Tissue strength changed during storage depending on the growing environment, but independently of the genotype.
- Genotypic tissue strength before storage thus determines the strength after storage.
- Estimates of genotypic influence on susceptibility to damage after storage and behaviour during processing are therefore possible on basis of fresh roots.
- In variety testing, tissue strength can be determined on fresh roots as the other quality parameters.

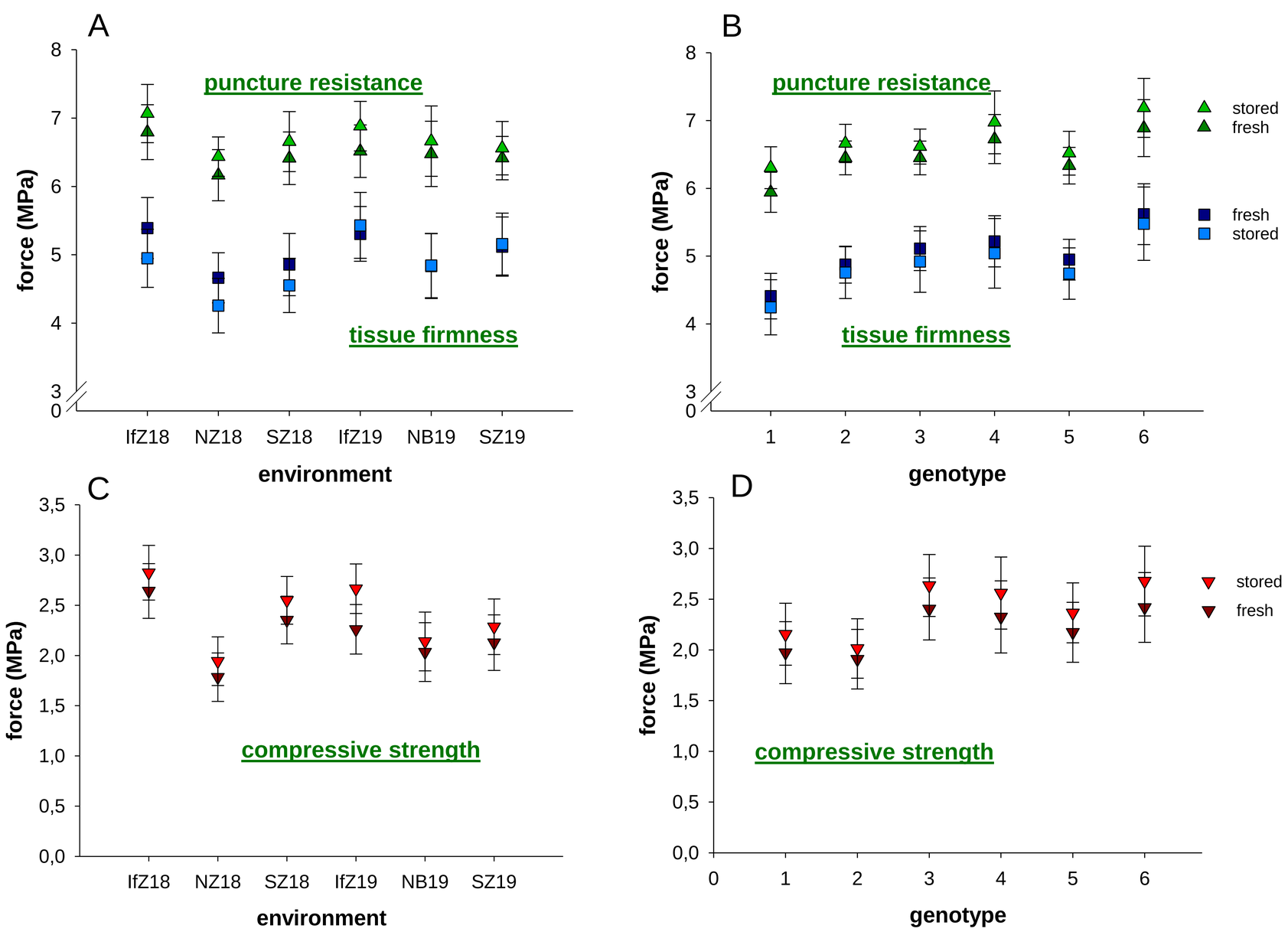
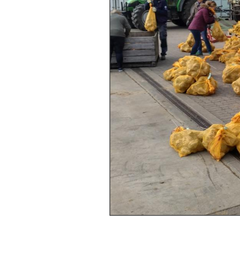


Fig. 1: Puncture resistance and tissue firmness (A, B) and compressive strength (C, D) of sugar beet roots in different environments (A, C) and for different genotypes (B, D). Field trials in Germany 2018, 2019.



Material & methods

Field trials with 6 genotypes at 6 sites in 2018 and 2019 (IfZ, NZ, SZ) in a randomized block design with 4 replicates, storage in a climate container at 9°C for 10 weeks.
Beet texture analyzed with texture analyser (TA.XTplus100 (Stable Micro Systems).
puncture resistance: force required to penetrate the skin; tissue firmness: mean value of the force needed to penetrate the underlying 5 mm; compressive strength: force needed to compress a tissue cylinder of 2 cm heigth and 18 mm diameter.

… a Project of the ***Industrial Collective Research (IGF)***

supported by/via:

IGF Industrielle Gemeinschaftsforschung

Bundesministerium für Wirtschaft und Energie aufgrund eines Beschlusses des Deutschen Bundestages

AiF Forschungsnetzwerk Mittelstand

FEI FORSCHUNGSKREIS DER ERNÄHRUNGSINDUSTRIE E.V.