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## **ASSESSMENT OF EXTERNAL AND INTERNAL QUALITY OF SUGAR BEET VARIETIES WITH REGARD TO ITS HANDLING IN THE PROCESS OF PREPARING THE SUBSTRATE FOR BIOGAS PRODUCTION**

### **ABSTRACT**

Because of their high amount of carbohydrates in dry matter, sugar beets can be an alternative to maize as an energy crop. But to provide sugar beet as a substrate for the process of fermentation and in this context for long term conservation and supply it has to be cleaned and crushed.

In this study twelve different sugar beet varieties were tested with regard to physical properties such as hardness and strength of the texture. Further the influence of each genotype on the amount of adherent soil which stays in the characteristic root groove of the beet after washing was tested.

To assess these criteria the different sugar beet varieties were tested with a material testing machine. The external quality of the beets was tested by a punch test, the “Kramer Shear Cell” was used to determine the internal quality.

Both methods of material testing will be presented with the results of two years experiments. The punch test showed force differences of more than 20 percent between the sugar beet varieties in both years.

With regard to the amount of adherent soil in the root groove it has been determined, that there is a much bigger influence of soil and weather compared to the influence of the genotype.

The results contribute to a better understanding and classification of sugar beets in the process of biogas production. Related to the political goal of sustainable energy production the study improves the use of sugar beets in the biogas process.