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### **PRODUCING BIOGAS FROM WINTER BEET: IS IT REASONABLE?**

**La production de biogaz provenant de betteraves automnales est-elle rentable?**

**Lohnt sich die Produktion von Biogas aus Winterrüben?**

#### **ABSTRACT**

The cultivation of winter beet offers a possibility to further increase the yield potential of sugar beet. Winter beet are sown in August and grown until the summer of the following year. This prolonged growing season can result in assets and drawbacks. During winter, the sugar beet plants shift from vegetative to reproductive growth and subsequently they produce bolters. Bolted beets are not suitable for sugar extraction and bolting resistant varieties of sugar beet are not available so far. Producing biogas from winter beet could be an appropriate option for utilizing the shoots and roots.

First results of a current study show that winter beets (three genotypes), which were grown in plot trials in Kiel and Göttingen from 2009 to 2012 and ensiled after harvesting (laboratory scale), achieved lower specific methane yields (330 IN/kgODM) and lower methane yields per hectare (2931 Nm<sup>3</sup>/ha) than conventionally grown sugar beets (373 IN/kgODM; 5529 Nm<sup>3</sup>/ha), whereas the determination is based on the dry matter yield of the plots in each case. These first results reveal that the composition of ensiled winter beet is less suited for biogas production and the dry matter yield is reduced, causing lower methane yields per hectare.

During ensiling of both types of beets dry matter losses up to 31% were observed, which were always particularly high if larger amounts of ethanol could be detected in the silage. In order to avoid additional unnecessary losses it is important to store the silage always gastight and to use the silage effluent for biogas production.

Further improvements for producing biogas from winter beet should comprise increasing the winter hardiness and the dry matter yield, first of all. A second choice would be minimizing the losses during silage process and storage, which is of very high importance for the preservation of sugar beets, too.