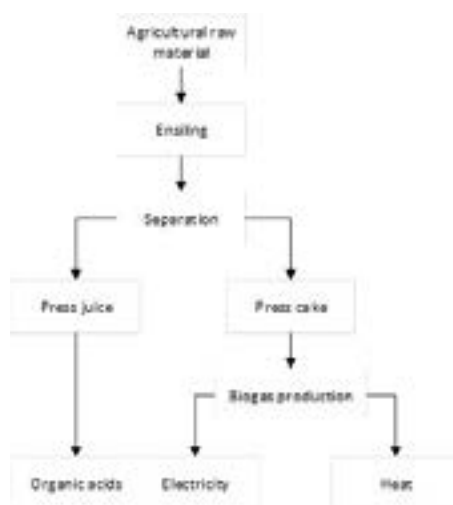


Production of organic acid and biogas: Effects of ensiling treatments and temperature on organic acid production in grass silage and methane formation potential

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In a green biorefinery system, the production of organic acids, fibers and biogas is in focus. The ensiling process and anaerobic digestion of different silages is well described in literature. During ensiling, different organic acids like lactic acid, acetic acid and butyric acid can occur, depending on the used substrate and ensiling treatment. The idea of this research is to increase contents of organic acids in the silage, separate the silage into press juice and press cake and determine the biogas yields of the different fractions. Fresh grass was ensiled in 1.5 liter glass jars and treated with carbonated lime, water, manure and ethanol. Every treatment was done in triplicates and stored for 3, 14, 30 and 90 days at mesophilic and psychrophilic conditions (20 °C, 37°C). Samples were taken from every glass and analyzed for organic acids, alcohols and sugars with GC and HPLC. Furthermore the dry matter and organic dry matter content was determined. The ingredients of the original fresh grass were measured with Weender van Soest analysis. The ensiling experiment was performed according to the standard of the German Agricultural Society (DLG) for ensiling experiments. After 90 days of storage, the most promising variations for organic acid production was selected and the material separated with a tincture press at 200 bar into a press juice with high contents of organic acids and a presscake with high fiber contents. The specific methane yield potential of the press cake was determined with Hohenheimer Biogas Yield Test (HBT).



Biography

Joerg Steinbrenner has completed his Bachelor of Science and Master's degree in Biobased Products and Bioenergy from University of Hohenheim, Stuttgart, Germany. Presently he is pursuing his PhD at State Institute of Agricultural Engineering and Bioenergy, University of Hohenheim, Stuttgart, Germany.

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