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## Rye Whole Plant Silage and Maize: A High-Yield Mix for Biogas Production – Laboratory findings

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Due to the geographic circumstances it is planned that biomass will form the basic raw material in the renewable energies industry in Poland. The gradual introduction of the Ministry of Economics' Programme "Innovative Energetik – Energielandwirtschaft" (Innovative Energy – energy from agriculture) could lead to every district with enough biomass resources on average having one agricultural bio-gas plant by 2020.

The main raw materials currently used for typical agricultural biogas plants are natural fertilisers (slurry, urine) and silage. Of all the silages used, corn silage is the most common. German empirical findings and exact trials show that rye WPS (whole plant silage) is also an interesting alternative for the production of biogas.

Apart from its high drought resistance, rye also has low location-related and nutrients requirements. This makes rye an attractive energy crop. Compared to other cereal types, rye produces the highest yields on weaker soils.

In September and in October 2010 the Laboratory for Environmental Technology at the Poznań University for Natural Sciences (Institute for Agrarian Technology) conducted a trial entitled: “**Analysis of the Biogas and Methane Yield from Rye WPS, Corn Silage and various Mixtures of these Substrates**”. 8 substrates were examined with regard to the biogas yield.

**The highest biogas yield was achieved with a mixture of 60% corn silage and 40% rye WPS.** Compared to the mono-fermentation of corn silage, the substrate mixture (60% corn silage and 40% rye WPS) produce approx. 27% more biogas yield.

**Looking at the methane yield, the most productive input again was a combination of 60% corn silage and 40% rye WPS.** With this substrate mixture the methane content was approx. 40% more than that produced by the mono-fermentation of corn silage.

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