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Influencing the soil moisture regime by cultivating special crop rotations for biogas production – simulated scenarios of different locations in the FRG

Since there was printed out a new law in the FRG to push the renewable Energy there is a well defined trend to build up biogasplants. In the course of this processing, farmers are forced to cultivate appropriate renewable primary products for biogas reactors.

Today the normal way is monocropping of corn or very narrow crop rotation. The alternative way is to intensify the crop rotation by cultivating a catch crop during the winter period and wheat or grass silage.

If water is not the limiting factor these intensive crop rotations feature a potential advantage as Eder et al. (2004) could demonstrate in the southern part of Germany. They cultivated a combination of intercrops like rye and turnip rape in wintertime and corn.

Establishing such high productive crop rotations is limited in most regions of Germany because of less water. A positive exception is Schleswig-Holstein in the northern part where normally 700 to 850 mm of precipitation is collected.

In the combined project – BIOGAS-EXPERT – the complete N-circulation that is affected by producing the primary products for biogas production is monitored. One main component in the project is observing the influences of cultivating corresponding crop rotations to the soil moisture regime.

In a first step we compare different location factors (climate, soil) and variable crop rotations (monocropped corn, permanent grassland and a crop rotation special for biogas production). We simulate the development of the soil moisture while cultivating different crops within the modelling surrounding of HUME and FOPROG (Herrmann et al. 2005; Kage et al. 2001b, Kage et al. 2001a Kornher und Torssell 1983a, b). There we use special modules to calculate the soil moisture regime in different depths over a long time period of 30 years.

Literatur

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