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Substitution of maize in biogas production-Biochemical Methane Potential (BMP) of composites of maize and perennial energy crops

Christoph Emmerling, Axel Schmidt and Ruth Dederichs University of Trier, Germany

The ecological drawbacks of growing maize like soil erosion and the use of large quantities of fertilizers and biocides effected the debate about its use as biogas substrate. Consequently, the investigation of alternative plants for this purpose is subject of many research activities. An auspicious approach is the use of perennial energy crops. The cultivation of such species is associated with ecological (soil protection, biodiversity, no use of biocides) and economical (no sowing and plant protection after establishment, avoidance of work peaks) advantages. In the light of doubts and reservations against new biogas substrates, our approach is to substitute only parts of maize in the biogas feedstock. With growing acceptance, the shares can be raised up to total substitution. In this context, the compability of both substrates is very important. Inhibitional effects that decrease the methane yield of both maize and the alternative energy crop should be avoided. Furthermore, a neutral behaviour of this composites or even better synergetic effects (e.g. compensation of nutrient deficiencies) should be achieved. To investigate the interaction with maize we mixed it with different shares (0, 10, 25, 50, 75, 100%) of diverse alternative energy crops (*Miscanthus giganteus, Sida hermaphrodita, Silphium perfoliatum, Elymus elongatus* as cultivated variety "Szarvasi") and incubated them for 50 days in a batch assay. The biochemical methane potential of these composites was then compared with the theoretical sum of the respective proportion of separately digested substrates to detect interactive effects.

Biography

Christoph Emmerling is an Associate Professor of Soil Science at the Soil Science Department, Faculty of Regional and Environmental Sciences, University of Trier. His main emphases in research and teaching are Soil Biology, Land-use Change, and Renewable Resources. From 2001 until 2005, he was Head of the Commission, Soil Biology of the Soil Science Society of Germany. Recently, he is member of TriCSS – Trier Centre of Sustainable Studies and of the Steering Committee Bioenergy 2.0 of Rhineland-Palatinate, Germany.

emmerling@uni-trier.de

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