**Animal manure for biogas production – what happens to the soil?**

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Biogas plants utilize various organic substrates for energy production, commonly a mixture of animal manure, energy crops and food waste from households or industry. The digestates may be good fertilizers and soil conditioners. Attempting to reduce dependency on fossil fuels and emissions of greenhouse gases, farmers consider the biogas technology. However, they need to know how the anaerobic digestion will impact the quality of the animal manure and thereby the soil fertility. Especially in organic farming systems, also aiming at nutrient self-sufficiency, farmers are concerned about reduced input of organic matter to the soil after digestion.

Few studies have examined the long-term impact on soil fertility when part of the organic matter in the manure is converted to methane, and thus escaping the farm carbon cycle. The project “Effects of anaerobically digested manure on soil fertility - establishment of a long-term study under Norwegian conditions” (Soileffects, 2010-2014), includes a field experiment located at an organically managed research farm in Tingvoll, Norway. A biogas plant has been established, from which digested slurry from a herd of 25 dairy cows will be compared with non-digested slurry in two cropping systems - arable crops and perennial ley. In 2011, the crops will be barley and 2nd year grass-clover ley. Low/high fertilization levels, determined by phosphorus (P) concentrations in the slurries as gaseous P losses do not occur, will correspond to 85/170 kg N ha-1 yr-1 in the arable system and 110/220 in the ley. In the slurries, chemical composition, viscosity, infiltration rate in field, smell and colour will be described.

By June 2011, initial characteristics of manure and soil (physical, chemical, biological) will be available for presentation.