Choosing co-substrates to supplement biogas production from animal slurry - A life cycle assessment of the environmental consequences - DTU Orbit (02/04/2019)

Choosing co-substrates to supplement biogas production from animal slurry - A life cycle assessment of the environmental consequences

Biogas production from animal slurry can provide substantial contributions to reach renewable energy targets, yet due to the low methane potential of slurry, biogas plants depend on the addition of co-substrates to make operations profitable. The environmental performance of three underexploited co-substrates, straw, organic household waste and the solid fraction of separated slurry, were assessed against slurry management without biogas production, using LCA methodology. The analysis showed straw, which would have been left on arable fields, to be an environmentally superior co-substrate. Due to its low nutrient content and high methane potential, straw yields the lowest impacts for eutrophication and the highest climate change and fossil depletion savings. Co-substrates diverted from incineration to biogas production had fewer environmental benefits, due to the loss of energy production, which is then produced from conventional fossil fuels. The scenarios can often provide benefits for one impact category while causing impacts in another.

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