

OP-016 [Section II: Structures and Environment]

THE EFFECT OF BIOCHAR COVERING ON THE EMISSIONS FROM ANIMAL MANURE

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Gaseous emissions from manure cause local odour nuisance as well as leakage in the nutrient cycles of agriculture. Cover materials can be used during the storage of manure to reduce both the odour problem and to tighten the nutrient cycles. Peat is known as an effective cover material but its use as a non-renewable resource is questionable whereas biochar could have some additional benefits regarding e.g. the end-use of manure. In a laboratory test two different manures, liquid manure from dairy barn and solid manure from fur production were used. In liquid dairy manure tests the compared covering materials were biochar, peat, straw and light gravel. For fur manure (both mink and fox manure) mixtures of biochar and peat were used. The test period was one week in a climate chamber with three different ambient temperatures and constant relative humidity. The emissions of ammonia and methane gases from the mixtures were measured using an optical gas analyser (Innova™ Multi-gas analyser). During the test week the measurements were performed on a daily basis. The results show that biochar coverings reduced the ammonia emissions from both liquid dairy manure and fur manures. For liquid dairy manure the reduction was as efficient as that of peat and straw. On methane emissions from liquid dairy manure, however, all the compared cover materials had no significant effect. The fur manure acted differently so that all the used biochar mixtures had a significant effect on both ammonia and methane emissions. The magnitude of the reduction was dependent on the amount of biochar used. The more there was biochar in the cover mixture the more the ammonia or methane flux was reduced.

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