

Washing robot for removal of methane producing inoculum in slurry channels

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Methane emission from pig production facilities consists of ca. 75% manure emission and ca. 25% enteric emission. Abatement technologies with an effect on the manure management chain therefore has a large potential for reduction of methane from pig production. Methane emission from slurry channels in pig houses and from the outside storage is dependent on a continuous population of methane producing microorganism, also referred to as inoculum, to maintain the methane emission from one batch of pigs to the next. The present green transition idea is to develop an existing washing robot technology for pig houses into a technology that can remove inoculum from slurry channels and lower the methane emission due to lower microbial activity in slurry. The effect can be further enhanced if the removal of inoculum is combined with a slurry additive as shown in Figure 1. The vision is to achieve a system where the slurry channels are washed between each batch of pigs to remove the inoculum and if a larger effect is needed additives can be added. It is expected that the removal of inoculum in combination with additives will also influence the methane emission from the outside storage giving an overall effect in the manure management chain.

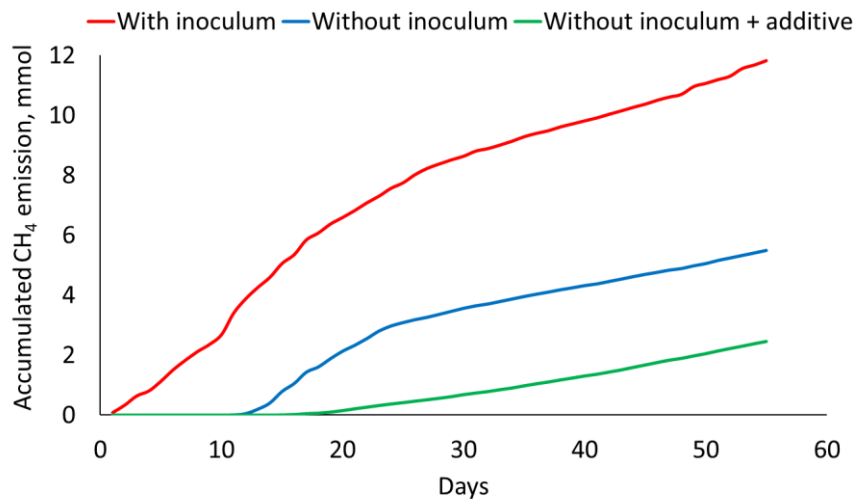


Figure 1. Effect of inoculum removal and additives in a lab study with daily addition of feces and urine.

The development of the washing robot is part of an ongoing GUDP-project “Inoculum removal and inhibition for reduction of greenhouse gases from slurry (GREENSLURRY)”. A prototype of the washing robot has been developed and the effect of inoculum and additives has been investigated in the lab. The next step is a proof of concept in an experimental full-scale facility with pigs and the final step is a full-scale test in a commercial pig production. The project will be completed by the end of 2024.