

Ammonia volatilization from cattle and pig slurry during storage and after application in the field

Ammoniakfordampning fra kvæg- og svinegylle under opbevaring og efter udbringning i marken

SVEND GJEDDE SOMMER

Summary

The dissertation is a Ph.D. thesis submitted to the Royal Veterinary and Agricultural University, Section of Soil, Water and Plant Nutrition. Techniques for measuring ammonia losses from slurry are discussed and evaluated. Ammonia losses from cattle and pig slurry during storage and after application in the field are quantified and techniques for reducing volatilization losses are

proposed. It is shown that ammonia losses from slurry applied in the field are related dry matter content, temperature and wind speed. A simple model for predicting ammonia loss from stored slurry was developed. Input variables for the model are TAN concentrations, surface pH, air temperature, wind speed and surface characteristic. There was agreement between model prediction and measured ammonia losses.

Key words: Ammonia volatilization, cattle, pig, slurry, storage, field.

Resumé

Beretningen er en afhandling udarbejdet med henblik på at erhverve en Ph.D. grad fra Den Kgl. Veterinær- og Landbohøjskole, Institut for Jordbrugsvidenskab. I beretningen vurderes, hvilke metoder der er velegnede til bestemmelse af ammoniaktab fra udbragt gødning. Ammoniaktabet fra kvæg- og svinegylle under lagring,

udbringning og efter udbringning kvantificeres, og der anvises mulige tiltag til begrænsning af tabet. Det beskrives, hvorledes faktorerne tørstofindhold temperatur og vindhastighed påvirker tabet fra udbragt gylle og de fysisk-kemiske relationer af betydning for ammoniaktabet fra lagret gylle beskrives, og en model til beregning af tabet fra lagre præsenteres.

Nøgleord: Ammoniakfordampning, kvæg, svin, gylle, lagre, marken.