



## **Evaluation of Reactive Nitrogen Soil Flux from Application of Mineral Fertilisers Using Cavity Ring-down Spectroscopy**

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The reduction of gaseous nitrogen emissions is one of prioritised aim of Latvia environmental policy. The aim of this research was to evaluate synthetic fertiliser such as urea and ammonia nitrate application dose impact on ammonia and nitrous oxide emissions. The experiments were designed in laboratories and field. The laboratory experiment was designed with controlled soil moisture 10; 20; 30; 40; 50 %, temperature 5 °C and different doses of urea and ammonia nitrate. The field experiments were designed with following synthetic fertiliser application rates 0; 30; 60; 90; 120; 150; 180; 210; 240 kg N ha<sup>-1</sup> . The automated cavity ring down spectroscopy device Picarro G2508 was used to measure concentrations and calculate soil flux rate. In the laboratory conditions the recirculation system was used to measure ammonia and nitrous oxide emissions. The measurements for each sample were repeated three times. The closed transparent and not transparent chambers with volume three litres and soil coverage 490 square centimetres were used to measure ammonia and nitrous oxide emissions from soil at field conditions. The measurements were made one day before synthetic fertiliser application and five days after. As well as were measured twice month on regularly base. The results show the optimal measurement time of nitrous oxide is from 400 till 600 seconds. The measurement time of ammonia emission have to be calibrated during experimental design and it depends on emission rate of ammonia.