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CONSTRUINDO SABERES, FORMANDO PESSOAS E TRANSFORMANDO A PRODUÇÃO ANIMAL

USE OF ADDITIVES IN POULTRY PRODUCTION FOR MITIGATION OF GASEOUS N LOSSES THROUGH AMMONIA VOLATILIZATION – PRELIMINARY RESULTS

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The aim of this study was to evaluate the effect of feed and litter additives (organic, mineral and chemical) on gaseous N losses through ammonia volatilization. Sixteen airtight pavilions with controlled temperature and ventilation were used for growth of Ross broilers during 35 days. Each pavilion (ca. 2 m^2) received 7kg of rice hulls as litter material (3.8 kg m^{-2}). A Control and the following 7 additives were used, matching the 8 treatments applied: no additive in feed or litter, Control; clinoptilolite in the litter (1.6 kg m^{-2}), CliCama; clinoptilolite in the feed (2%), CliAli; aluminum chloride (40 g kg^{-1} litter) + calcium carbonate (60 g kg^{-1} litter) in the litter, ClAl; De-Odorase® in the feed (0.16%), DeOd; soybean oil in the litter (5 mL m^{-2}), OS; aluminum sulfate in the litter (8%), SulAl, and; magnesium sulfate in the litter (8%), SulMg. In the beginning of the experiment (day 0) 26 broilers chicks were randomly allocated per pavilion (0.07 m^2 per broiler) and, at 10 days age, the groups were numbered down to 22 broilers per pavilion (0.082 m^2 per broiler). Ammonia concentrations in the air at the inlet and outlet airflow of the pavilions were measured using acidic traps (containing 150 ml of H_3PO_4 0.02 M) in gas washing bottles. Air was sampled at a flowrate of 1.5 L min-1 and the acid solution in each bottle was changed every 24 hours. The ammoniacal N content of the solution was analysed by automated segmented-flow molecular absorption spectrophotometry to determine the daily average NH3 concentration in the air and ammonia volatilization in each sampling period was calculated taking into account the real ventilation rate of each pavilion. Cumulative NH_3 emission in the 35 days of the experiment was derived by summing emissions for each sampling period. Ammonia emissions increased over time; In average, less than 3% (10.4 mg NH_3-N kg^{-1} live weight (LW)) of the total emissions were observed in the first 3 weeks; about 12% (45.4 mg NH_3-N kg^{-1} LW) were observed in the fourth week and more than 85% of the total emissions occurred in the last week. Statistical analysis revealed no significant differences between treatments, possibly due to the limited number of repetitions. Although, SulAl (272.7 mg NH_3-N kg^{-1} LW) and SulMg (238.6 mg NH_3-N kg^{-1} LW) treatments presented the lowest values of cumulative ammonia emissions. On the other hand, Control (501.8 mg NH_3-N kg^{-1} LW) and CliCama (489.6 mg NH_3-N kg^{-1} LW) treatments showed the highest values. At the moment, more experiments (repetitions) are under progress to improve statistical evaluation.

Keywords: acid trap, concentrations, chicks, NH3 abatement measures, NH3 emissions,

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