

## FACTORS ASSOCIATED WITH CHANGE IN PH, AMMONIA AND TOTAL NITROGEN OF MANURE MASS IN HIGH PERFORMANCE DAIRY COWS

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**Abstract.** The purpose of the present study was to monitor the changes in pH, ammonia and total nitrogen contents of manure samples obtained from three populations of dairy cows reared and fed in intensive production systems. The experiments were performed in April–May 2012 with three dairy cows' populations – A, B and C, fed 16, 17 and 18 % dietary crude protein and with 305-day milk yields of 25, 26 and 28 kg, respectively. It was established that the faecal pH of all three populations was between 6.07 and 6.65. The urinal samples showed alkaline values (pH urine 8.47 - 8.62). When urine was mixed with faeces, the ammonia nitrogen content increased correlating with manure mass pH increase. The average manure pH in the three studied populations attained 8.62 (population A), 8.48 (population B) and 8.49 (population C). Field analyses showed increase in manure pH from the beginning towards the end of the manure alley during cleaning. For population A, the respective values were 8.44 in the beginning, 8.88 in the middle and 9.05 at the end of the manure alley. After the passage of the scraper, the pH of manure remaining on the floor was 8.75. For the second population of cows, manure pH in the three manure alley points was 8.30; 8.42 and 8.64, and pH of remaining manure was alkaline (pH=8.50). For the third population, manure pH during scraping was 8.22; 8.52 and 8.78 in the beginning, middle and end of the manure alley respectively, while that of remaining manure on the floor was 8.54. Data showed that dairy cows were in an alkaline environment due to degradation of non-utilised urea nitrogen to ammonia nitrogen.

**Abbreviations:** MM, manure mass; CP, crude protein; TN, total nitrogen; NH<sub>4</sub>-N, ammonia nitrogen; CO<sub>2</sub>, carbon dioxide; NH<sub>3</sub>, ammonia; NH<sub>4</sub>OH, ammonium hydroxide

**Keywords:** pH, NH<sub>4</sub>-N, N, CP, manure mass (MM); dairy cows, total nitrogen