

CONSTRUINDO SABERES, FORMANDO PESSOAS E TRANSFORMANDO A PRODUÇÃO ANIMAL

ROUGHAGE: CONCENTRATE RATIO ON THE PERFORMANCE OF BEEF CATTLE WASTE ANAEROBIC DIGESTION PROCESS

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Beef cattle under feedlot usually generate large amounts of waste, such as leftover food and manure, which may be deposited improperly into the soil and degrading the environment. The objective was to evaluate the performance of the anaerobic digestion process of manure from beef cattle under feedlot fed different roughage:concentrate ratios, with and without virgiamicina. Manure was collected from entire males beef cattle Nelore fed diets 20:80/N; 80:20/N; 20:80/V; and 80:20/V (% of roughage:concentrate; N: no additive; V: virginiamycin). It was used corn silage as the source of roughage, and a commercial concentrated formulated with corn, soybean meal and urea with 14% of crude protein, provided *ad libitum*. Sixteen experimental batch digesters (2.0 L) were operated for 120 days. The influents for supplying the digesters were formulated with the diluted waste in water to approximately 5% of total solids. The following analyses were performed: pH; total ammoniacal nitrogen (TAN); and partial alkalinity (PA). The average levels of pH to the influents and effluents ranged from 5.82 to 7.80. Influent and effluents for the treatments 20:80/N, 80:20/N and 80:20/A performed within the range recommended for the proper functioning of the anaerobic process. The influent 20:80/A filed bankruptcy in the process right from the initial supply, with pH 5.83, probably occurred by the accumulation of organic acids arising from the acidogenesis. The highest pH average values were found in the effluents, raised by the natural mechanism of digester tamponade. The greatest concentration of the TAN was observed in the influent 20:80/N. TAN concentration were below of the inhibition threshold of anaerobic microorganisms (1,000 mg L) for all influents and effluents. PA influents concentration has been variations between 72 and 622 mg CaCO₃ L⁻¹. Diets with high amounts of roughage provide better performance in anaerobic digestion process of cattle manure. Virginiamycin in the diet doesn't compromise the performance and efficiency of the anaerobic digestion process.

Keywords: anaerobic digesters, partial alkalinity, total ammoniacal nitrogen, virginiamycin

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