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Effect of Inclusion Levels of Bovine Rumen Content on the Performance of African Land Snail (Archatina marginata)

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Abstract

In Nigeria, wild snail populations have declined considerably as a result of climate change and destruction of their natural habitats. It is against this background of climate change challenge and its impact on natural habitats of snails and resultant threats in food security that this study was designed to investigate the effect of inclusion levels of Bovine Rumen Content on the performance of African land snails (Archatina marginata). One hundred and twenty snails were randomly divided into four treatment groups of 30 snails, each replicated three times with 10 snails per replicate in a Completely Randomised Design (CRD). The groups were fed four diets in which Bovine Rumen Content was incorporated at three levels viz: 7 %, 14 % and 21 % in treatments 2, 3 and 4, respectively for 56 days. Diet one had no bovine rumen content and served as the control treatment, designated as T1. The measurements taken include feed intake, weight gain, shell length and shell width. Results showed that there were significant ($p < 0.05$) differences in feed intake, weight gain, shell length and shell width. Snails fed the control diet consumed more feed (0.61 g/d) than those fed T2, T3 and T4, (0.38 g/d), (0.35 g/d) and (0.4 g/d), respectively. Similarly, the growth rate of snails fed the control diet (1.62 g/d) was higher ($p < 0.05$) than those fed treatments T2, T3 and T4, (1.48 g/d), (1.32 g/d) and (1.24 g/d), respectively. The average total shell length of snails fed the control diet is (89.4 mm) and significantly ($p < 0.05$) higher than those of snails fed T3 and T4, (77.9 mm) and (77.2 mm), respectively. However, there was no difference in the shell length of snails fed the control and T2 diets. The average total shell width of snails fed the control diet (64.5 mm) was higher ($p < 0.05$) than those fed T2, T3 and T4, (53.1 mm), (46.6 mm) and (40.5 mm), respectively. It is therefore concluded that inclusion of 7 % of bovine rumen content, a waste material as it were, in the snails' diet did not show any deleterious effect but rather enhanced growth and reduced cost of production.

Keywords: Achatina marginata, bovine rumen content, growth performance

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