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Feed Intake and Survivability of Edible Land Snail Species under two Moisture and Temperature Conditions

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Abstract

The effects of moisture and temperature on the feed intake and survivability of the giant African land snails (*Archachatina marginata* and *Achatina achatina*) housed under cage system were investigated, using 60 juvenile (5-month-old) snails of each species. The experiment was based on a $2 \times 2 \times 2$ factorial design with 3 replicates of five snails per replicate, that is, snails (*Archachatina marginata* and *Achatina achatina*), moisture (high moisture defined by 65 ml of water to moisten the soil on daily basis versus 65 ml of water on 2-days intervals) and temperature (ambient versus controlled temperature unit). The temperature, relative humidity of the experimental unit, feed intake and mortality rate in percentage were recorded. The experiment was carried out between the months November and March. From this study, a difference of 6°C was observed between the average daily temperature of the units, with average of 29.40°C and 22.61°C for ambient and controlled units respectively. Average daily relative humidity of 62.7% and 73.3% for ambient and controlled temperature units respectively were observed. Feed intake was significantly affected by temperature and species ($p < 0.05$). The interaction between temperature, moisture and species was highly significant on feed intake of the snails ($p < 0.01$). Feed intake was higher under ambient temperature than under controlled temperature (1.50 ± 0.03 vs. 1.17 ± 0.03 g/snail/week). Different of 0.50 g/snail/week was observed, with *A. marginata* consuming more. Moreover, the overall mortality rate was 23.3%, of which *A. achatina* and *A. marginata* had 4.2 and 19.1% respectively. This result showed higher mortality under controlled unit for *A. marginata* compared to that of ambient unit (46.7% vs. 30.0% respectively). The rate was low with high moisture compared with low moisture either under controlled or ambient temperature unit. In conclusion, this paper relates the significant effects of temperature and moisture on the feed intake and mortality rate of giant African land snails. Thus, low ambient temperature, and moistening the soil with 65 ml of water on daily basis increase feed intake and reduced the mortality rate of these snails, thereby increasing their survivability.

Keywords: *Achatina achatina*, *Archachatina marginata*, feed intake, moisture and temperature, mortality rate, survivability