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Evaluation of the nutritive value of ensiled and fresh Golden Apple snails (*Pomacea spp)* for growing pigs

Lampheuy Kaensombath

Faculty of Agriculture, National University of Laos, Vientiane, Lao PDR

Abstract

Three experiments were carried out to determine the optimum ensiling technique and the nutritive value of ensiled and fresh Golden Apple snails (*Pomacea spp)* for growing pigs.

The first experiment on ensiling the flesh of Golden Apple Snail included 3 different ratios of an additive mixture of rice bran and molasses (9:1, fresh basis) to FGAS: 1:1 (MRS1), 1:2 (MRS2) and 1:3 (MRS3) on a fresh basis. Initially the MRS1 silage had a brown color that was somewhat darker for MRS2 and MRS3. After 7 days the color for all treatments changed to a yellow-brown and each had a good smell. Dry matter (DM) and organic matter (OM) contents decreased with ensiling time in all treatments ($P<0.05$). Crude protein (CP) remained constant in MRS1, but increased with ensiling time in MRS2 and MRS3 ($P<0.05$). The concentration of ammonia-N increased with time of ensiling on all treatments. pH values fell to below 5.0 in the first 7 days of ensiling ($P<0.05$) on all treatments and then remained constant, except for treatment MRS3, in which pH increased to 5.34 at 14 days ($P<0.05$) and then remained constant up to 168 days. It was concluded that fresh Golden Apple Snail flesh (FGAS) can be successfully preserved for at least 24 weeks by ensiling with 1 kg of an additive mixture of molasses and rice bran (1:9) to 1 or 2 kg of FGAS (wet weight).

The second experiment was a trial to evaluate the digestibility of fresh (FGAS) and ensiled (EGAS) Golden Apple Snail by growing pigs. The chopped flesh (FGAS) was made into silage (EGAS) by mixing, on a fresh basis, 2 kg of FGAS with 1 kg of an additive mixture of molasses and rice bran (1:9, fresh basis). The silage was stored for 21 days in sealed plastic bags. The EGAS and FGAS replaced 30% of the dry matter (DM) of a basal diet (B) to give diets ES30 and FS30, respectively. The apparent digestibility of DM was 813, 745 and 735 g/kg ($P<0.05$). CP digestibility were not different among treatments ($P>0.05$). Apparent digestibility of DM and CP in EGAS and FGAS was 586 and 551, and 828 and 809 g/kg, respectively ($P>0.05$).

The final experiment was an on-farm feeding trial to determine the effect on performance, including production economics, of including FGAS and EGAS in diets for F1 crossbred (Mong Cai x Large White) fattening pigs. The trial was carried out with in total 18 castrated male pigs of 30 kg average initial live weight according to a Completely Randomized Design, including three treatments and six replicates per treatment. C was a basal diet consisting of conventional cereal feedstuffs, salt, a mineral-vitamin premix and fish meal as protein source; diets E and F consisted of the basal diet but with all the fish meal replaced by EGAS and FGAS to give equal contents of CP in the three diets. The pigs were fed at 5 % DM of live weight. The feeding trial included two periods, a growing (30-50kg) and finishing period (50-70 kg). Daily DM intake was different among treatments ($P<0.01$) in both periods. DM intake for diet C was higher than for diets E and F ($P<0.01$). Daily weight gain (ADG), feed conversion ratio (FCR) and back fat thickness were not different ($P>0.05$) among treatments for both growing and finishing periods, and overall. Over the whole experimental period ADG was 610, 622 and 566 g, and FCR 3.15, 2.89 and 3.22 kg DM/kg gain for diets C, E and F, respectively. Back fat thickness ranged from 3.3 cm for treatment E and F to 4.1 cm for treatment C. Feed cost per kg weight gain, including labor cost (Kip/kg gain), was lowest in diet E (6,008) compared to C (8,331) and F (8,389).

Key words: Fresh Golden Apple Snail (FGAS), ensilage, additive mixture (molasses and rice bran), pH, growing F1 pigs, ensiled Golden Apple Snail (EGAS), digestibility, feed intake, average daily weight gain, feed cost.