
Feed Marketing and Feeding Strategies in Snail Production Among Snail Farmers in Southwestern Nigeria

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Popoola Y. A; Idowu, A. B; Amadi, C. P. O; Ajayi, O.T; Ajayi, S.R and Omole A. J . (2022) Feed Marketing and Feeding Strategies in Snail Production Among Snail Farmers in Southwestern Nigeria, *European Journal of Agriculture and Forestry Research*, Vol.10, No.4, pp. 1-10

ABSTRACT: *A study was carried out in selected States of Southwestern Nigeria to gather information about feed and feeding management for snail among snail farmers and other stakeholders in snail production-value chain. A total of 150 snail farmers were selected from south west part of Nigeria (Ogun, Ondo and Oyo state) while 125 questionnaires were retrieved. Information was gathered through questionnaires observations from the field and scheduled interviews from the purposively selected States. Questionnaires were carefully drafted and administered to elicit information from the farmers about feed and feeding management in snail production. Data were analyzed using descriptive statistics. The results indicated that 60.8% of the respondents were males while 39.2% were females. A larger (20.8%) percentage of the farmers were between the age range of 46 to 55 while 20.5% and 18.6% fell between the age range of 56 to 65 and above 66. respectively. Archachatina marginata (68.9%) was the most reared snail. About 20% of the farmers fed snails with conventional feed comprising leaves, fruits, flowers and peel of tuber crops while average of 29 farmers fed snails with compounded feed combined with tubers, leaves and household waste. Majority of the respondents (60.8%) fed snail in the evening. A larger percentage (64.5%) of the farmers preferred compounded feed to conventional feed and also preferred Retail purchases based on the size of their farms. Finely ground compounded snail feed (57.8%) was the most acceptable form. Wrong perception about snail, dearth of information about feed formulation, low educational levels, high cost of feed ingredients and inadequate market are major reasons for unavailability of snail feed in the market. Farmers agreed that the use of compounded feed in snail are for improvement of growth rate, meat quality, enhance early market weight, ease of transportation and longer storage.*

KEY WORDS; compounded feed, conventional feed, snail, feed formulation, feed marketing.

INTRODUCTION

Snails are bilaterally symmetrical invertebrates with soft segmented exoskeleton in the form of calcareous shells. They belong to the phylum Mollusca. In West Africa, snails dwell mostly in

humid forest areas from where they are gathered by villagers for consumption and other uses (Akinnusi, 2016). Aluko and Adisa (2014) reported that snails are highly rich in protein and iron but low in fat content. Akinnusi (2016) noted that snails contain almost all the amino acids required by man. Snail farming (heliculture) is a potentially lucrative business in Nigeria. Slow growth of snail attributed to feeding, genetic make-up, climatic variants among others are factors affecting increased snail production (Omole *et.al.*,2012; Aluko and Adisa,2014). Feed is one of the major factors of production in livestock industry. Feed constitutes about 70% of total cost of production. Feed formulated to meet snail's specific nutritional requirements has great effects in enhancing the growth performance of snails (Omole *et. al.*, 2012). Majority of macro livestock have standard feed in the market but snail feed is not commonly found in the market. This study was designed to establish baseline information about snail production, snail feed and feeding management, constraints to availability of snail feed in the market and possible interventions for a sustainable snail production enterprise.

MATERIALS AND METHODS

The study was carried out in the southwestern part of Nigeria. The population for the study comprised Snail farmers. However, a representative sample of the farmers was selected using multistage sampling technique. Stage one involved the purposive selection of the three states (Ogun, Ondo and Oyo state, respectively) based on the availability of snail farmers in those States. The second stage was the random selection of one community from the selected States based on their predominance in snail production. The final stage was the random selection of 50 snail farmers each from the selected communities. A total of 150 snail farmers were selected in all for the study. This was to ensure that only farmers who have experience of snail production were selected. Information was gathered through questionnaires, field observations and schedule interviews. Interviews were conducted on a one-to-one basis with farmers. The collected data were grouped as follows: (1) Farm and farmer information included age of the farmer, level of education of the farmers, sources of income, year of establishment etc., (2) Types of feed given (conventional or compounded feed), use of compounded feed, reason for using or not using compounded feed, (3) Merits and demerits of using compounded feed, challenges of using compounded feed in snail production, (4) Feeding management (when, how to feed snails, forms of presentation of feed), (5) Availability of snail feed in the market, alternative feed used in the absence conventional feed, Reasons for non-availability of snail feed in the market and way-forward. The questionnaires were carefully drafted to elicit information from farmers through interview schedules and discussions. Data were analyzed using descriptive statistics.

RESULTS AND DISCUSSION

Majority of the respondents were male (60.8%) while 39.2% were female. A larger percentage of the farmers (20.8%) were between the ages 46 and 55, 20.5% were between the ages of 56 and 65 and 18.6% were between the ages of 66% and above (Table 1). Data on age of the farmers (Table 1) implies that the study area was dominated by young farmers and this could promote the adoption of improved feeding technologies. More than 90% the respondents had formal education while

5.5% had no formal education. About 51.5% had secondary school education, 32.7% had tertiary education and 10.3% had primary education. The acquisition of formal education could enhance the adoption of improved feeding of snails and improved technology than illiterate farmers because they are less conservative, hence could embrace new technologies. Moreover, they could be more inquisitive in accessing agricultural information from various sources to improve the management practices of snail production. Most of the farmers (40.2%) started the farm between 6 and 10 years, 34.0% less than 5 years while only 25.8% established their farm over 11 years ago (Table 1). This confirmed the reports of several authors that snail farming is a new enterprise compared to poultry, cattle, sheep and goat (Odeyinka, 2014; Akinnusi, 2016). All the farmers combined snail farming with other occupation as their source of income. None of the farmers depend solely on snail farming as source of income. The reasons might be due to the slow growth rate of snail which discouraged the rearing of snails in large scale for commercial purpose (Aluko and Adisa, 2014). *Archachatina marginata* (68.9%) was the most reared snail. Others were *Achatina achatina* (10.4%), *Achatina fulica* (3.8%) or both *A. marginata* and *Achatina achatina* (16.9%) (Figure1). These results corroborated the finding of Omole *et. al.* (2010) and Akinnusi (2016) that *Archachatina marginata* is the most commonly reared snail which could be due to the bigger size compared to other breed of snail. It has also been established that *Archachatina marginata* are more adapted to Southern Nigeria (Okpeze *et.al.*, (2007). The farmers fed snails with conventional snail feed comprising leaves, fruits and flowers (20.1%), peels and tubers crops (8.5%) (potatoe, yam, plantain). About 8% fed their snail with compounded feed only while 28.5% fed snails with a combination of compounded feed, tubers, leaves and household waste. This result also aligned with the findings of Okoli (2006) and Okon (2016) who concluded that African Land Giant snails do better and grow faster when offered combinations of different feed containing calcium, protein, carbohydrates and other vital nutrient necessary for growth and development at the right proportion. Majority of the farmers fed snail in the evening (60.8%) while 25.5% fed snail at any time of the day. Only 8.5% fed their snail in the morning. This also confirmed the reports of different authors that snails are nocturnal animal that feed only at night or at dusk (Odeyinka, 2014; Akinnusi, 2016). Almost all the farmers (94%) fed snail once in a day while less than 4% fed snail two times per day (morning and evening) (Figure 2 and 3). About 90% of the respondents observed that compounded feed have longer shelf life in storage than the conventional feed (10%). Majority (64.5%) of the farmers preferred compounded feed. About 16% of the farmers compounded the feed by themselves. Other sources of the compounded feed were from open market (4.5%), Agricultural development programme offices (10.5%) and Research institutes. Majority of the farmers (76%) observed that snail feed cannot be found in the open market while only 15.5% observed that it is occasionally available. while 8.5% observed that that the feed is readily available. Above 65% of the respondents preferred compounded feed to tubers, and leaves if available (Figures.4, 4b and 5). The alternative snail feed used by farmers were layer mash (35.4%), Grower mash (20.5%). Chick mash (23.8%) and broiler starter (12.1%). The forms of presentation of the compounded feed to snail were finely ground (57.8%), Mash (38.5%) and coarse (3.7%) (Figure6). This is in agreement with the findings of Omole *et.al.* (2012) who reported that the snails performed better when fed compounded feed especially of small particle size. The major reasons for unavailability of snail feed in the market were marketing problem (10.5%) lack of sufficient information about feed formulation (12.5%) high cost of feed ingredients

(10.5%) and 50.6% combinations of wrong perception about snail, lack of sufficient information about feed formulation, low level of education, high cost of feed ingredients and poor market (Figure7). According to (Omoyakhi, *et. al.*, 2017), there is a wrong perception about eating of snail by pregnant women due to erroneous believe that it has negative effect on health of the foetus and baby. The farmers agreed that compounded feed will improve the growth rate (7.5%), meat quality (12.5%) and that it stored for a longer period (15.5%). About 37.7% also agreed that the growth rate, meat quality and shortening of age to reach market weight, easy of transportation and longer storage were the major effects of using compounded feed (Figure8). On the other hand, majority of the farmers (39.2%) preferred Retailer outlets to purchase the feeds due to number of stocks and purchasing power while only 3.2% said they will prefer buying from the producers directly because of the market access to such producers. However, 32% of the farmers believed the wholesalers was a good source to buy their preferred compounded feed due to the price margin that they'll get on their purchases. These findings however may vary based of pricing which is a key determinant of their preference aside from the market location. (Figure 9)

CONCLUSION

Baseline information about type of feed, conventional and non-conventional feed of snail, time to feed, availability of compounded feed in the market, challenge of using compounded feed, reasons for low patronage or unavailability of compounded feed and possible Intervention on the use of compounded feed for snail were established. Problem and fear of insecurity during the collection of data, wrong perception about Snail farming in general, discouragement in terms of slow growth and some of the farmers interviewed did not keep appropriate written records needed for the study while some were reluctant to give out vital information were the major challenges encountered during the study

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Table 1: Demographic Characteristics of Respondents

	Frequency	Percentage
<u>Sex</u>		
Male	76	60.8
Female	49	39.2
Total	125	100
<u>Age (Years)</u>		
1 – 25	13	10.1
26 – 35	17	13.8
36 – 45	20	16.2
46 – 55	27	20.8
56 – 65	25	20.5
Above 66	23	18.6
Total	125	100

<u>Educational Background</u>		
No formal education	7	5.5
Primary School	13	10.3
Secondary School	64	51.5
Tertiary Institution	41	32.7
Total	125	100
<u>Years of Establishment</u>		
Less than 5 years	50	34.0
6 – 10	43	40.2
More than 11 years	32	25.8
Total	125	100
<u>Occupation</u>		
Primary occupation	0.0	0.0
Secondary occupation	125	100.
Total	125	100

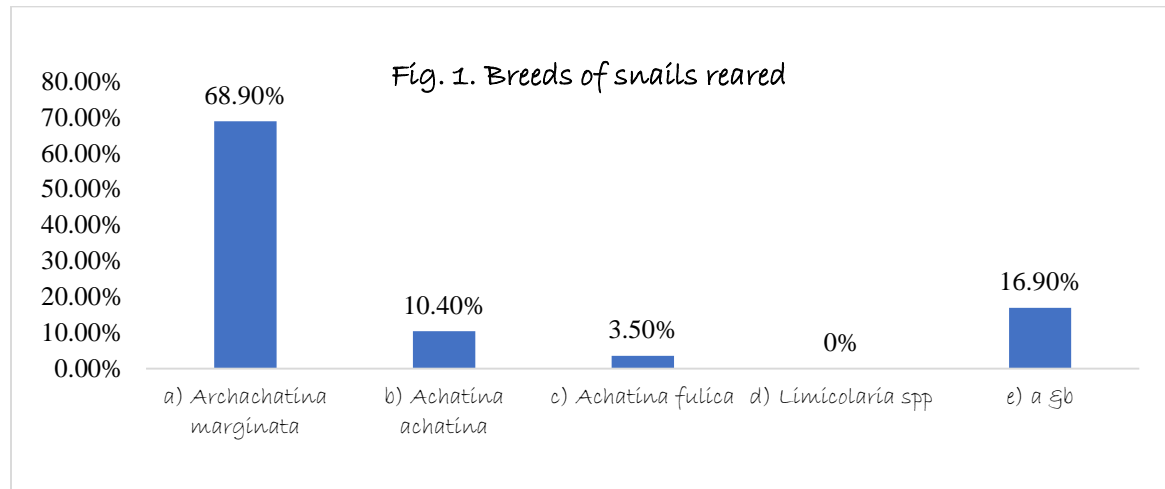


Fig.2. Feeds given to snails

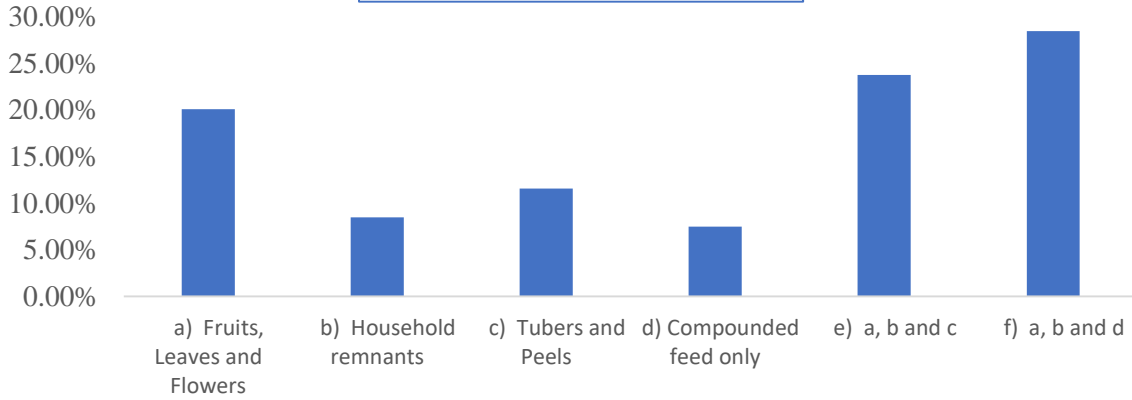


Fig.3. Time of Feeding snails

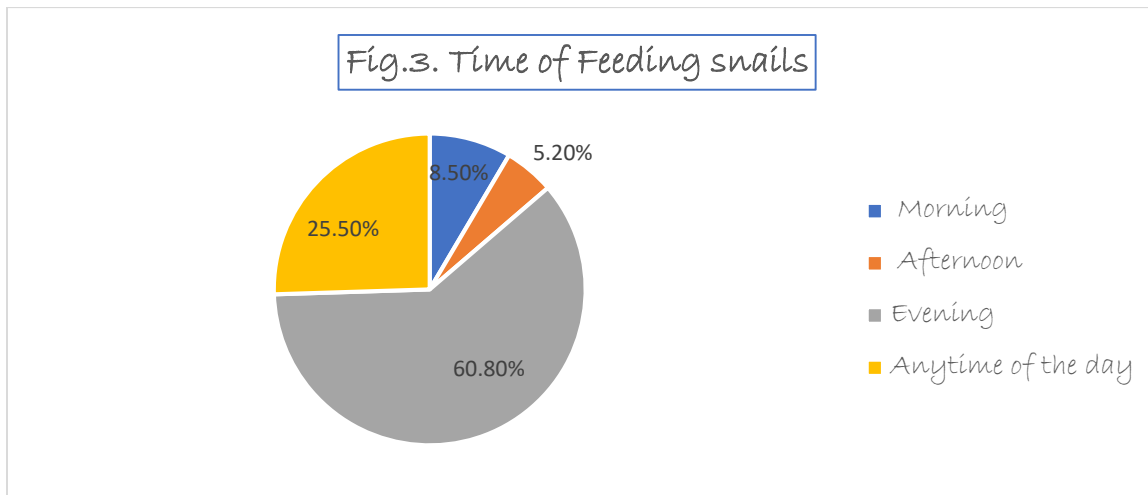


Fig.4. Preferred feed

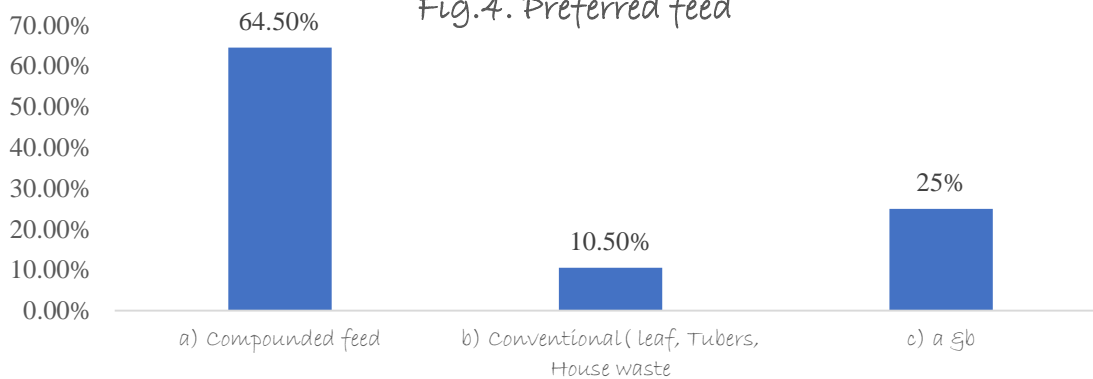
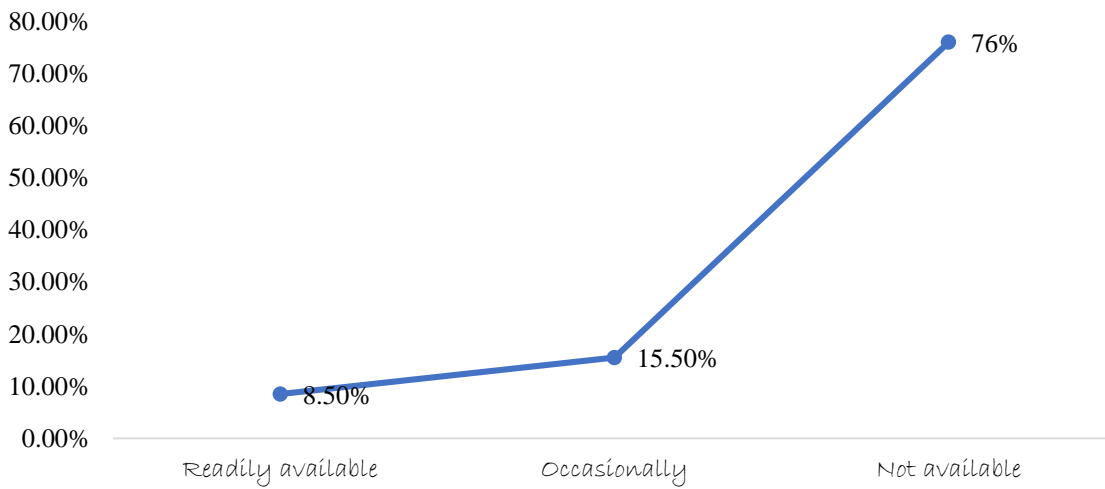


Fig4b. Longer length of Storage



Fig.5 Availability of snail feed in the market



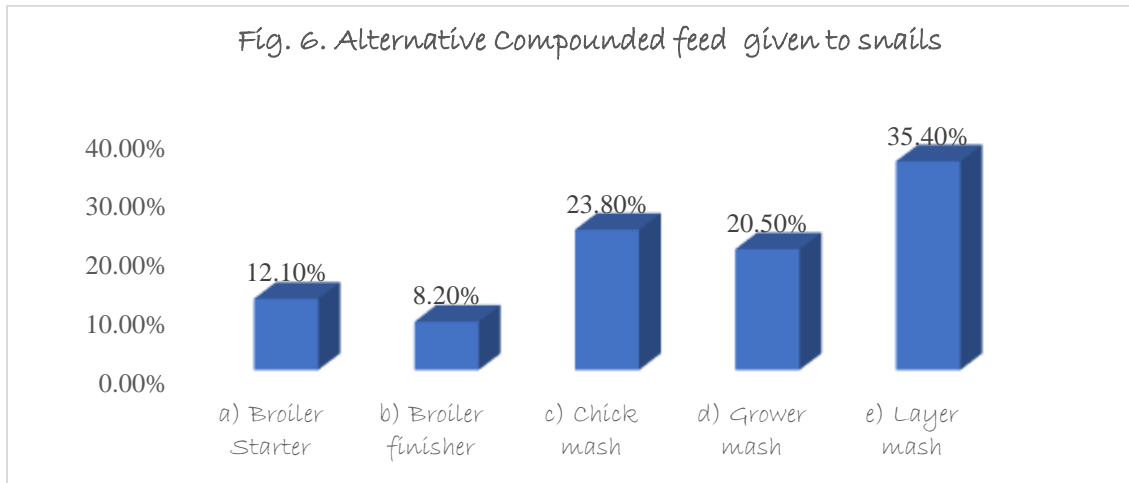


Fig. 7. Reasons for unavailability of snail feed in the market

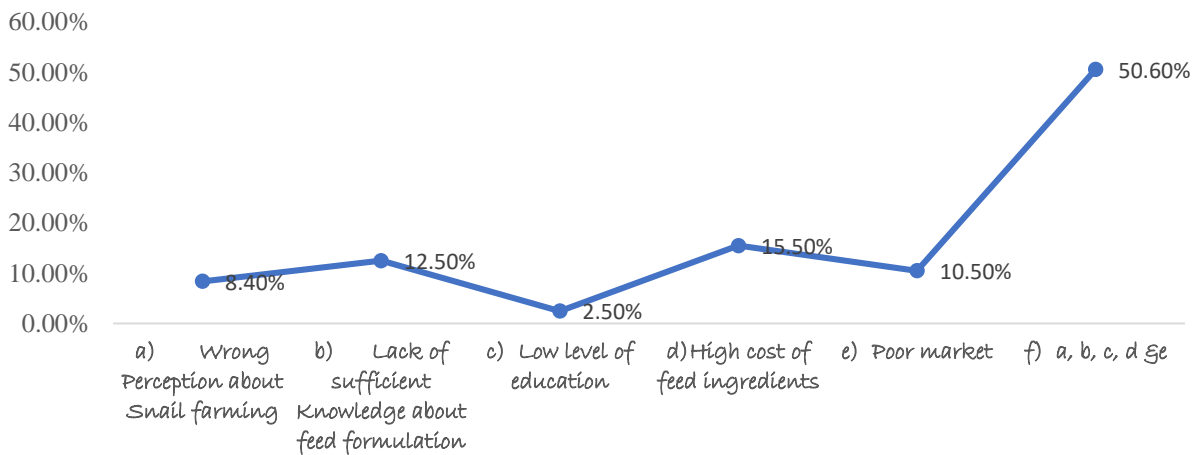


Fig.8. Effects of Compounded feed

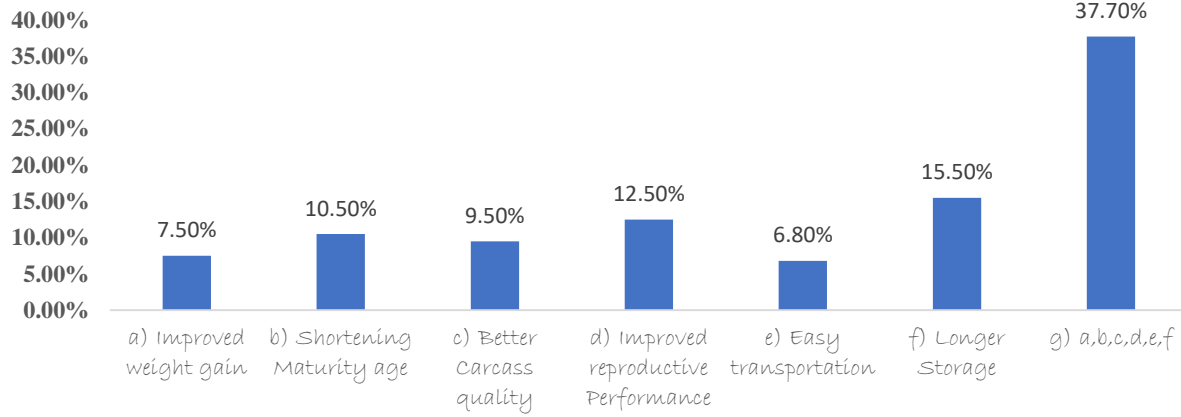


Fig.9. Feed Marketing Channel Analysis Preference

