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A SURVEY OF SNAIL FARMING IN AKWA IBOM STATE, NIGERIA

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ABSTRACT

Threats posed by snail disappearance and the continuous decline in mean daily protein consumption per person in Nigeria are alarming. This study therefore surveyed snail farming in Akwa Ibom State, Nigeria with the aim of updating information on heliculture in the study area. Eleven Local Government Areas were randomly selected from Akwa Ibom State and all the snail farms in these selected Local Government Areas were identified and studied using pre – tested structured questionnaires and in-depth interview of people knowledgeable about snail farms in the State. Results obtained were analysed using descriptive statistics in the form of percentages and frequency of counts. Results revealed that Akwa Ibom State Government has established snail farms in ten out of the eleven studied local government Areas in the State to ensure geographical spread of benefits. However, the impact of these farms including the private snail farms (concentrated in Uyo and Uruan) is not felt in the study areas. The government farms which were supposed to be for training, demonstration and source of viable stocks were underutilized due to lack of awareness on the benefits of snail farming. This resulted to non adoption of the technology in many Local Government Areas. The number of snails in these farms ranged between 600 (Linnem farm) and 3500 (Etinam Farms). A total of 24650 snails were reared in the area, with a cumulative mortality of only 1.4% (356) recorded before harvesting. At this low production scale, 93.3% of the respondents still claimed to be producing at commercial scales. *Archachatina marginata ovum* was reared by all the respondents. About 66.7% of the respondents used locally sourced feed while 33.3% could afford to use compounded feed. Pest infestation (53.5%) and lack of capital (46.7%) were identified as major constraints of snail farming in Akwa Ibom State.

KEYWORDS

Sail farming, Rural empowerment, Akwa Ibom State.

INTRODUCTION

Snail farming is a potential lucrative business in Akwa Ibom State. It can provide a sustainable solution to some common economic, nutritional and health challenges in Southern Nigeria, including the Niger delta; where the youths are known for restiveness. It can bring about economic empowerment, self employment and rural development. Snails could be reared at both subsistence and commercial scale. Snail farming is an environmentally friendly practice as snails have no repulsive odour like pigs. It can be started with little capital and space depending on the scale. It can be combined with other businesses and even reared at the backyard. Snails can survive wholly on local feeds. Snail meat is a delicacy (Fagbuaro et al, 2006) and trade in snail is as old as man (Ayodele and Ashimolowo, 1999). The bulk of snails sold in African markets (including Nigeria) are procured from the wild, which makes it difficult for the sellers to meet up with the demand. Consequently, the price of snail increases particularly during dry season.

Irrespective of the cost of snail, consumption of snail meat is continuously increasing because many Nigerians consume snails for various reasons. Among the Yoruba speaking people of the South Western Nigeria, snail is a requirement in several preparations in traditional medicine. (Ayodele and Ashimolowo, 1999). At household level, a nursing Yoruba mother depends on the snail mucus for treating wounds from the umbilical cords. Snails are believed to enhance youthfulness among the Yorubas (Ayodele and Ashimolowo, 1999).

Among the Ibo speaking people of South Eastern Nigeria snail is a delicacy. The low content of fat (1.3%) and low cholesterol level make snail meat a good antidote for vascular diseases such as hearth attack, cardiac arrest, Hypertension, stroke, high blood pressure and other fat related ailments (Akannusi, 2002), which are common in the tropics. According to Ogbeide (1974) snails are source of Iron (18%) (Ajayi et al, 1978) and have been recommended for use in the treatment of iron – deficiency anaemia which is also common in tropical countries. Calcium from snail meat contributes immensely to the building of strong bones especially for the baby. Snail is one of the cheapest sources of protein in rural areas (Awusu, 1980). The glandular substance from edible snails caused agglutination of certain bacteria, which implies that it could have curetical value against a variety of ailments including whooping cough (Nwadukwe, 2000). The mucus of *Helix pomatia* favours the action of penicillin (Cardart, 1955). The curative substance extracted from the snail, ortho – calcium phosphate (Mead,1961) is claimed to cure kidney disease; improve constipation and hemorrhoids; prevent influenza; restore vitality and virility; perpetuate beauty and clears the skin and have been recommended for those who sing and those in need of hormonal injections (Ogogo, 2004).

Snails are rich in vitamin A and vitamin B. Mead (1961) reported that the amino acid profiles of snail meals contain one and half times lysine than that of whole egg. Not only is the flesh of snail a valued delicacy but the shells and offals have also gained considerable value in the manufacturing of feed for animals of different types (Ayodele and Ashimolowo, 1999). The time and labour input (including risks) involved in the traditional practice of harvesting snails from the wild does not yield commensurate output (harvest). This puts the harvester at high economic disadvantage. Profit from the business is hardly optimized and business opportunities are underutilized due to shortage of supply. This could be the plausible reason why many snail gatherers in rural areas are poor.

The traditional practice of capturing snails from the wild will eventually be out of vogue because the wild environments which serve as habitat for snail is gradually being lost due to various human activities. Besides, the probability of exhausting the wildstock is inevitable. Effiong (2007) discovered a rapid decline in the size and number of snails collected from Akwa Ibom State due to unchecked collection and deforestation. It was on this basis that heliciculture, which involves manipulation of the environment to make it suitable for a large scale and all season production of wholesome and desired species of snails was introduced. The study therefore surveys snail farming in Akwa Ibom State to give information on the farm ownership, sizes, distribution, and the problems militating against snail farming therein.

MATERIALS AND METHODS

STUDY AREA

Akwa Ibom State lies between latitude 40301 and 50331 and longitude 70351 and 80150 East of the equator. About 75% of the population are farmers. The State has an income poverty level of 39.86% in 2004; food poverty less than 2,900 calorie intake percent of 31.60%; with HIV and AIDS prevalence rate of 7.1 in 2003 (Adeyemo, 2008).

METHOD OF DATA COLLECTION

Eleven (out of thirty one) Local Government Areas in Akwa Ibom State were randomly selected. With the assistance of the State Agricultural Department, all the snail farms within the selected eleven local government areas were visited and studied. The snail farms comprised of ten State government owned farms and five private farms. In all, fifteen snail farms were studied. Information were elicited from the management of the farms through pre-tested structured questionnaires and indepth interview of people knowledgeable about the snail farms in Akwa Ibom State. Information obtained were analysed using descriptive statistics in the form of percentages and frequency of counts.

RESULTS DISCUSSION

LOCATION AND SIZE OF SNAIL FARMS

Table 1 shows that snail farms have been established by the Akwa Ibom State Government in ten out of the eleven surveyed local government areas. However, more private farms are concentrated in Uyo; being the capital city. This cannot be unconnected with the fact that the level of awareness is always higher in cities due to the high literacy level among urban dwellers. These high literacy levels make city dwellers ready to take risks, and are therefore early adopters of new technologies. This agrees with the findings of Benjamin *et al* (2006) that the adoption of grasscutter farming technology in Oyo State was initially highest in Ibadan , the capital city. Establishment of two snail farms in both Uruan and Ibesikpo Local Government Areas can be ascribed to the closeness of these areas to the city. Though Government - owned snail farm is yet to be located in Uruan, the snail rearing technology has already been adopted by two firms. With creation of more awareness and introduction of incentives by the government, individual adoption in the rural areas (target groups) may

exceed those of the city, as many rural people are late adopters, but do so in mass when willing and convinced of the effectiveness of new technologies.

The size of private farms ranges between 0.0144 hectares and 0.064 hectares while the Government owned farms ranges between 0.016 hectares and 0.09 hectares (Table 1). This can be attributed to the fact that the State Government farms (which are more) were meant to act as demonstration farms and sources of stock for would be private farms that are yet to adopt the technology.

Table 1: Location, size and ownership of snail farms in selected Local Government of Akwa Ibom State

Name of farm	Location	Size(hectar)	Ownership
Linnem Farm	Uruan	0.064	Individual
Domita farms	Uyo	0.0025 0.0144	Individual
Enobong Farms	Uyo	0.0144	Individual
Nseobong Farms	Nwamba road, Uruan	0.02	Individual
Little Stream Farms	Ibesikpo	0.04	Individual
Itu Farm	Itu	0.09	Akwa Ibom State Government (AKSG)
Etinan Farms	Etinan	0.06	AKSG
Okobo farms	Okobo	0.04	AKSG
Eket Farm	Eket	0.07	AKSG
Ikot Abasi Farm	Ikot Abasi	0.016	AKSG
Ikot Ekpene Farm	Ikot Ekpene	0.024	AKSG
Oron Farm	Oron	0.08	AKSG
Ibesikpo Asutan Farm	Ibesikpo Asutan	0.06	AKSG
Abak Farm	Abak	0.04	AKSG
Uyo Farm	Uyo	0.06	AKSG
Total	-	0.69	-

STOCK AND MORTALITY ASSESSMENT IN SNAIL FARMS

The number of snails and results of mortality assessment in respective farms are presented in Table 2. Out of 3500 snails procured in Etinam farms, 70 mortalities (2.0%) were recorded before harvesting. Enobong farm with 3000 snails had 0.5% mortality before harvesting. The least mortality of 0.2% was recorded by Ibesikpo Asutan and Eket farms while Uyo farm had the highest mortality of 3.0%. In all, 24,650 (98.6%) of snails survived for harvesting while only 1.4% of snails died before maturity. This shows that snail rearing in Akwa Ibom State will be a profitable venture as the survival rate of the snails is high. It also shows that the study area could be suitable for rearing of snails even at large scale.

Table 2: Mortality of snails in selected snail farms in Akwa Ibom State

Name of farm	Number of snails in farms	Mortality	Mortality percentage
Linnem farm	600	12	2.0
Domita farm	(a) 250 (b) 700	(a) 3 (b) 4	1.2 0.5
Enobong Farm	3000	15	0.5
Nseobong Farm	700	14	2
Little Stream Farm	1700	34	2
Itu Farm	1500	30	2
Etinam Farm	3500	70	2
Okobo Farm	700	7	1
Ikot Abasi Farm	800	8	1
Ikot Ekpene Farm	1700	34	2
Oron Farm	1600	48	3
Eket Farm	2500	5	0.2
Ibesikpo Asutan Farm	1000	2	0.2
Abak Farm	2000	-	0
Uyo Farm	2400	72	3
Total	24650	357	-

SCALE OF SNAIL PRODUCTION

Table 3 reveals that 93.3% of snail farms claimed to produce for commercial purpose. This implies that snail farming is still new in Akwa Ibom State as the total number of snails reared in all the 15 farms within eleven local government areas (both private and government owned) were not up to 30,000; not withstanding that the farmers are producing for commercial purpose. The scale of production is low. However, the farms could expand their capacity.

Table 3: Perceived scale of snail production among selected farmers in Akwa Ibom State

Scale of production	Frequency	Percentage
Commercial	14	93.3
Subsistence	1	6.7
Total	15	100

SPECIES OF SNAILS REARED BY FARMERS

Table 4 shows that *Archachatina ovum* is reared by all the farmers because of its high prolific rate. The fact that all the farmers reared combination of species shows that the farmers are still experimenting to know the best output that could be realized from AD and AMS. It can also be attributed to the fact that they want to spread risk instead of putting all hopes on a species. This is similar to mixed cropping and mixed farming which are common practice among the farmers in Akwa Ibom State. This also agrees with Effiong (2007) that about 66.6% of the snail farms in Akwa Ibom State are owned by the Akwa Ibom State Government.

Table 4a: Species of snails reared by selected farmers in Akwa Ibom State

Species reared	Frequency	Percentage
<i>Archachatina marginata ovum</i>	15	100
<i>Archachatina marginata saturalis</i>	12	80.0
<i>Archachatina degneri</i>	14	93.3

Table 4b: Combination of species reared by selected snail farmers in Akwa Ibom State

Species reared	Frequency	Percentage
AMO,AMS and AD	11	073.3
AMS and AMO	1	6.7
AMO and AD	3	20.0

Key: AMO represents *Archachatina marginata ovum*
AMS represents *Archachatina marginata saturalis*
AD represent *Archachatina degneri*

ASSESSMENT OF SNAIL ENCLOSURES

Eighty percent of the farmers used concrete trench and wire guaze fence, 2(13.3%) combined raised wooden cage, concrete trench and wire guaze while 6.7% used raised wooden cage and wire guaze as enclosures for snail (Table5). All the farms combined housing systems; which could be attributed to the fact that they are still trying and studying the technology to ascertain the profitability, compatibility with local environment; and the financial requirement to use each system. The type of housing system used depends on the scale of production. Akinnusi (2002) documented that old tyres, earthen pots and baskets can be used for small scale backyard snail farming; the wooden and concrete cages for medium scale type of snail farming; while the wire guaze pen is specifically for large scale commercial snail rearing.. This also agrees with Rural Link Organisation (2005) that the type of snail pens to be constructed depends on the location of the farmer, size of the farm and the economic might of the farmer.

Table 5: Type of enclosures used by selected snail farmers in Akwa Ibom State

Types of enclosure	Frequency	Percentage
R,C and G	2	13.3
R and C	1	6.7
C and G	12	80.0
Total	15	100

Key: R represent Raised wooden cage
C represent Concrete trench
G represent Wire guaze

FEEDING OF SNAILS

Table 6 shows that 66.7% of the farms uses normal feed such as potatoe leaves, pineapple, banana/plantain, fruits, pawpaw fruits, plantain leaves and cassava/ cabbage while only 33.3% feed their snails with concentrate or compounded feed. The use of normal feed by most farms can be attributed to the availability of the feed stuffs at little or no cost. This agrees with the recommendation of Nwadukwe in Effiong (2007) that leaves, fruits, tubers and flowers devoid of hairs and defensive chemicals are good feed for snails and that baby snails thrive best on leafy vegetables. Also,this is partly in line with recommendation of

Ayodele and Ashimolowo (1999) that young snails should be fed with vegetable leaves, leaves fruits (majorly pawpaw), calcium (from powdered bone or oyster) and water to promote growth. This also agrees with Ayodele (1992) that fresh leaves/ shoots of pawpaw (*Carica papaya*), cabbage (*Brassia spp.*) lettuce (*Lactica sativa*) and fresh ripe fruits of pawpaw and Banana (*Musa sapiantum*) are very highly preferred by snails when offered a multiple choice of food items. This can be related to the availability of these feed materials in Akwa Ibom State and shows that there are much feed to rear snails in all the sampled local government areas.

Table 6: Type of feed used by selected snail farmers in Akwa Ibom

Type of feed	Frequency	Percentage
Compounded feed	5	33.3%
Normal(fruits and vegetables)	10	66.7
Total	15	100

PROBLEMS OF SNAIL FARMING

Pest infestation (53.5%) was identified as the major constraint of snail farming (Table7). This is similar to the report of Akintomide (1997) and Ogogo (2004) that pests are the 'arch enemies' of snails. Lack of capital (46.7%) also militates against production and expansion of snail farms. This could be the reason only 33.3% of snail farmers used compounded feed (Table 6). Though snail rearing is relatively cheap to start when compared to the rearing of livestock such as pigs, poultry, cows, goat and sheep but commercial production of snails requires much capital to embark on

Table 7 : Problems militating against effective snail production in Akwa Ibom State

Problems o identified by snail farmers	Frequency	Percentage
Lack of capital	7	46.7
Pest infestation	8	53.3
Lack of water	4	26.7
Lack of land	3	20.0

CONCLUSION

The people of Akwa Ibom State are yet to fully realize the importance of snail farming. Most of the farms were established by the State Government on the basis of geographical spread And adoption rate of the technology by the people is low. With the low scale of production in most farms the aims for introducing the technology has not been realized. Pest infestation and lack of capital are the major factors militating against snail farming in the areas it is practiced. The extension unit of the State Agricultural Development Programme should intensify awareness on snail rearing. In order to increase adoption of the technology, the government should train interested farmers and assist in establishing snail pens for those trained by extension agents.

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