Farming for Sustainable Livelihood: The Wonders of Snail Farming

INTRODUCTION

The economic recovery programmes of Nigeria demands a radical shift from total dependence on government to provide jobs for the teeming population to self-employment. One way of being self-employed is through snail rearing. Snail farming can be described as keeping snails in a cool, moist and shady environment, supplying artificial dew if necessary that will favour the growth of snails. Snails are invertebrates with soft bodies that are covered with hard calcareous shells. They belong to the phylum Mollusca. There are different breeds of snails but not all are suitable for snail farming. Achatina is a good breed for commercial purposes due to its high rate of returns. Achatina maginata is the most desirable specie for snail farming due to its high yield capacity. They are edible and beautiful land snails which grow fast if supplied with a balanced ration, calcium and housed in well-constructed paddock. Snails serve as food and also a source of revenue. The meat is low in fat, sodium and cholesterol and high in protein, iron, calcium and phosphorus. They are highly prolific. One snail lays up to 80 to 100 eggs 6 times a year. Species like achatina achatina lay about 200 to 400 eggs in one batch 2 to 3 times a year. They have low rate of infection and mortality if adequate sanitary conditions are kept. Snails are medicinal as they are used in the treatment of ulcers, whooping cough, asthma, anaemia and reduction of high blood pressure.

BENEFITS OF SNAIL FARMING

- The cost of feed and materials for housing is cheaper than other livestock. Besides, it does not require much space as it can be sited in a backyard.
- It is easy to manage.
- It is not stressful, not time consuming, has no odour and does not make noise as in poultry farming.
- It provides employment as a result of producing, processing, transporting, storing, financing and servicing snail products.

Rearing of snail for local consumption will reduce the demand for frozen chicken.

It requires low capital investment as the pen can be constructed with locally available materials and also feed on fruits and vegetables.

It is in high demand.

MATING AND EGG LAYING

Snails are hermaphrodites. Although they have male and female reproductive organs, they must mate with snails of similar species before they lay eggs. Some snails may act as males during a particular season as well as a female next season, while others play both roles at once and fertilize each other simultaneously. When the snail matures, mating occurs after several hours of courtship. Mating may occur several times a year especially in the tropics. After mating, the snail can store sperm received for up to one year, however, it usually lays eggs within a few weeks.
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Snails need at least 2 inches depth into the soil to lay their eggs. Pests such as ants, millipedes are kept out of the place. Once snails have laid their eggs, you can remove the adult snails. Since the hatchability of the eggs depends on soil conditions, consisting of 20% to 40% organic material, soil temperature of 65 to 80°F, soil moisture of 80% should be maintained. Sandy-loam that is not waterlogged, not too dry and not acidic should be used to rear snails. The soil should be similar to that of a garden with green leafy vegetables. Weeding should be done regularly. For acidic soils, lime can be added to neutralize it. Ground limestone, crushed bones, egg shells can be added to the soil as a source of calcium. Calcium deficiency in the soil causes fragile shells, hence break easily. Ideally, the soil should be treated before stocking the pen.

Snails take time to mature and within the same snail population and under the same conditions, some snails will grow faster than others. The farmers should therefore select and keep the largest and fastest maturing snails for brooding stock. It is pertinent to note that the differences in growth is due to type of feed, breeding technology used, stocking density, genetic factors as well as environmental factors such as noise, light, vibration, dirty conditions, irregular feedings, constant touch, moisture and temperature.

As the snail grows, the shell is added in increments. Then the shell develops a reinforcing lip at its opening, which shows that the snail is matured and also marks the end of the growth of the snail.

**MANAGEMENT PRACTICES**

**SITE SELECTION**
The farmer should select a suitable site where the snails will be kept. It should not be kept under intense sun, in insect infested area, clay soil or sandy soil. It should not be exposed to wind as it will lead to dehydration. This can be prevented by planting plantain and bananas around the snail farm.

**GATHERING SNAILS**
Besides farming snails, it is possible to gather them from the bush, trees or tree growers who usually do this for a fee. Note that snails bought from the market or gathered in the wild to stock a snail farm may have a high mortality rate. This is because they may have consumed poison baits, agricultural chemicals, poisonous plants, or even exposed to harsh weather conditions and dehydrated. So they should be put in a pen and fed for at least 3 days to purge their systems of any toxin and to give them a chance to die if they have consumed a lethal dose. If by the third or fourth day they did not die, they should be okay for rearing.

**HOUSING**
The purpose of housing is to protect them from danger, prevent them from running and to provide a suitable environment for their growth. A good house should provide protection, good ventilation, and good humid environment. The farmers should choose an appropriate type of pen for the snails. A pen can be constructed in several ways using different materials. The choice of shape and type of pen is influenced by the reason for investment, type of materials available at the farmer's disposal, availability of capital as well as the prevailing climatic condition in the area. For a successful snail farming, there must be the right equipment and supplies. These include snail pens or plastic containers, earthen pots, baskets, wooden cage. Other equipment are: Hygrometer, thermometer, scale, a kit for testing soil contents, sprinkler system, and magnifying glass to see the eggs. However, small scale snail farming depends largely on the available resources. Local materials can also be used. It is better to keep snails of similar species together. It is also advisable to keep the hatchlings in another pen or container.

In a typical snail pen, there should be earthworm (to clean up the droppings), vegetation, feeders, curved perch to provide shelter, shallow troughs for watering with mosquito netting covering the top.

Snail farms may be outdoors, in buildings with a controlled climate or in enclosures such as plastic containers, tyres, drums. Although snails need moisture, the wet and waterlogged soils must be drained to make it suitable for them. About 98 percent of snail activity, including feeding occurs in the cool, dark nighttime with the peak activity occurring about 2 to 3 hours after darkness begins. The cooler temperatures stimulate activity and the nighttime dew helps the snail move easily. They hide in sheltered places during the day. The pen or container should be surrounded with condemned oil to ward off pests and rodents.

Water should be sprinkled on the pen daily especially during...
the dry season as dryness inhibits growth and stops growth. When the weather gets too hot and dry, the snail becomes inactive, seals its shell and aestivates until cooler, moisture weather returns. Some snails aestivate in groups on tree trunks, posts, walls etc.

FEEDING
Snails dig into the soils and ingest it hence good soils favour snail growth and provides some of their nutrition. If adequate feed is not provided for them they can eat one another (Cannibalism) especially when overstocked. The reason why snails should not be overcrowded. Snails are omnivorous animals but require a balanced ration. They feed on vegetables such as cocoyam leaves, pawpaw leaves, cassava leaves, cabbages, lettuce and such fruits as mango, eggplant, pawpaw, banana, pineapples etc. Concentrates can also be fed to them. Snails can even feed on household waste as long as it does not contain salt. The amount of feed eaten by a snail depends on air humidity and the availability of drinking water, temperature, light intensity, food preference as well as the food supplied determine the rate of feeding. Snails prefer juicy vegetables over dry ones. Calcium may also be placed in a feeding trough so the snails can eat at will. Do not place food in one clump so that there will not be enough room for all the snails to get it. Snails eat solid by rasping it away with their tongues. Feeding activity depends on the weather. Snails avoid plants that produce defensive plants that produce defensive chemicals, defensive stem hairs etc. Shallow containers should be used in providing clean water to reduce the risk of drowning.

PESTS AND DISEASES
Parasites, bacteria, nematodes, fungi may attack snails. Predators such as rats, birds, frogs, toads, lizards and insects such as crickets, beetles, centipedes should be prevented from entering the pen by covering it with mosquito net or placing condemned oil round the pen. In serious cases, consult a veterinary doctor. Maintaining a hygienic environment by removing and replacing daily food may prevent the spread of diseases and even improve the health and growth of snails, birds, frogs, toads, lizards and insects such as crickets, beetles, centipedes.