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DEPARTMENT: PHARMACOLOGY

MATRIC NUMBER: 18/MHS07/017

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COURSE TITLE:

ASSIGNMENT: PREPARE A BUSINESS PLAN ON A CHOSEN AGRICULTURAL ENTERPRISE FOLLOWING THE GUIDELINE IN THE NOTE. SPIRAL BINDED AND SUBMITTED UPON RESUMPTION.MINIMUN OF 5 PAGES, TIMES NEW ROMAN, SIZE 12 DOUBLE LINE SPACING.

**INTRODUCTION**

**NAME** **OF** **BUSINESS**: EXCELLENCE VOCATIONAL SNAILERY

**ADDRESS**: NO 23, OLD ABA ROAD PORTHARCOURT, RIVERSSTATE.

**NATURE OF BUSINESS**: SNAIL FARMING OF 1 MAN BUSINNES.

**STATEMENT OF FINANCIAL NEEDS:**

**STATEMENT OF CONFIDENTIALITY REPORT:**

**TABLE OF CONTENT**

INTRODUCTION

PROFIT POTENTIAL OF REARING SNAILS

SNAIL FARMING SYSTEM

REQUIREMENTS

CHOICE OF BREEDING

SNAIL REPRODUCTION

CONSTRUCTING A SNAILERY

BREEDING, MANAGEMENT, DISEASES, FEEDING AND HARVESTING

INCOME EARNING OPPORTUNITY AND BENEFITS

SUMMARY

**EXECUTIVE SUMMARY:**

Heliculture is a lucrative venture that is yet to be appreciated in the agro industry. very few people know about it and are making a fortune from it. a lot of people see it as meat and also some don’t know how to rear it. it has both the male and female sexual organs. its high in proteins 12-16% and irons 45-50mg/kg, low in fat and contains almost all the amino acids required by humans.

FORM OF BUSINESS AND ITS ESTABLISHMENT

The business is a sole proprietorship business. The idea was

considered lucrative prior to its high income earning capacity and simplicity

of operation.

1.13. LEGAL FORM OF THE BUSINESS

The legal form under which this snail farm business shall be

organized is sole proprietorship. I will serve as the manager and chief

executive officer (CEO) of the business coordinating the labours and day-to-

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LOCATION AND WHY

Location: The 200 capacity snail farm business otherwise named “Evergreen Snail Farm Nigeria Limited” was located at: Koro Farm Garden, Gure Community, Khana Local Government Area, Bori, Rivers State. The above address represented the site of snail rearing while the address below represented the marketing office: No 34 Mayor Street, Off Rivers State Polytechnic Road, Bori, Khana L.G.A, Rivers State.

Reasons for the locations: These two locations were chosen after the SWOT analysis. The former address was selected based on the following reasons:

1. Availability of space

2. Availability of water and humus-rich soil

3. Presence of juicy vegetables and aromatic plants as laurel that are used as feeds for snails

4. Calmness and secure environment

5. Access road and communication network

6. Favorable weather condition for snail breeding

7. Availability of manpower (both skilled and unskilled).

While the later location was selected based on:

1. Large market size

2. Good market potential

3. Less number of competitors

4. Presence of customers, both local and international

5. Availability of labour

6. Presence of inventors

7. Closeness to Bori international market.

MARKET ANALYSIS: Industrial analysis: Industrially, Bori is one of the industrialized cities in Rivers State with good market potential. The city has several markets which ranged in size from 7800x9600cm to 12800x14400cm and 42200cm x 55500cm respectively. Local dwellers, investors and traders from all over south, east and west come to these markets to buy goods and services

MARKETING STRATEGY The marketing strategy adopted includes the “4 Ps” method. The “4 Ps” are: 1. Product 2. Price 3. Place and 4. Promotion

Product: The matured snail shall be sold raw and also in its processed form. The processed snails shall be properly washed using alum and salt and weighed accordingly, refrigerated and supplied to entries, food stores, and place of need.

Price: The price for each adult snail depends on the weight and quality. For example, matured raw snail in-shell cost N 500 to N 600 per one while the same size of the processed snail cost N 600 to N 700 per snail respectively

Place: The main production shall be Koro Farm Garden, where there is no noise but adequate maintenance including security. While the marketing office shall be in an open place, 34 Mayor Street, Bori where all my customers can have easy access.

Promotion: Both advertising and sales promotion shall be use. The nutrition benefit of snails will be made known. Discount shall also be given with respect to quantities purchased. Some dry snails shall be made available to customers who wish to taste the product.

DEMAND AND SUPPLY The demand for snail meat and its products are higher than the supplies as such; the market potential of snail is inexhaustible, locally and internationally. My observation shows that out of 100% snail needed in Bori market for both local and international consumers in a year, only 68% was available. There is, therefore, the need for increased production in other to meet up the 100% snail demand.

**PROFIT POTENTIAL**

Below is a quick assessment of what profit you are likely to make if you had invested in snails like *Achatina achatina.*

It is capable of producing over 300 eggs or more in a growing season.

Assuming you purchase 10 snails @ a cost of N40 each =N400 purchase cost

Each of those 10 snails have 300 eggs each = giving you 300eggs X 3000 snails

Even if you lost 10% snail have to natural causes and illness i.e (10% of 3000=30 snails ) you are still left with 2700 snails with an estimated turnover of 2700 snails sold @ N40 each =N108000

**SNAIL FARMING SYSTEM**:

There are two main systems in snail farming:

Indoor system : involves raising snail indoors in pens located in a building. The snails are fed with a mixture of fresh vegetables, concentrates, and other food materials. It makes use of a little space, it also allows temperature regulation, controlled lightning, regular cleaning, and health care.

Outdoor system: this system, snails are raised outdoor on pastures. The snails may or may not fed usually due to the farmer not having control over the snails performances. The snails move around feeding on natural food materials.

**REQUIREMENTS BEFORE STARTING:**

**Selection of site: a** prospective snail farmer must choose a suitable site for his farm. Important factors to consider are location,soil type, moisture content, wind direction, lime content of the soil and environmental temperature.

**Location of farm: the** snail farm should be preferably be located close to the farmeres house in this way he would be able to watch his snail regularly, detect any problem early, protect them from their enemies and take care of them easily. There should be adequate space for the future expansion.

**Soil type**: the snail farm should be sitied at a place where the soil is rich in humus and other decaying plants and animal materials. The soil should contain sufficient lime or calcium for eggs and shells and snails shell formation. Snails don’t leave in hard soils nor do they live in loose sandy soils. Snails cant dig into hard clayey soils to rest and lay eggs while soils with a lot of sand don’t hold a lot water. The ideal soil for snails should be medium light to allow Air and water to penetrate easily.

**Moisture content of soil**: Snails prefer damp soils. The farmer should avoid very wet and lands prone to flooding in the rain season. Dew and rain keep the land moist so that the snail can move easily and dig into to lay and rest their eggs.

**Wind direction:** snail farms should be situated in sites well protected from the wind. Strong winds during the snail growing season are bad because they lead to dehydration and subsequent drying of the snails.

**Temperature and Humidity**: snails are cold blooded animals and so sensitive to change in atmospheric humidity and temperatures. In west Africa, temperatures in the areas where most edible species are found do not fluctuate greately. However, significant flunctuation in the humidity below 75% induces the snails to aestivate. Snails therefore prefer a habitat that si neither too hot nor cold. When the temperature is too hot or too cold, the snails w2ithdraw into its shell. This is called hibernation. Snails thrive best on temperatures about 10-23 degee.

**FINANCIAL PROJECTIONS: 3-5YEARS**

The analysis of financial projection using financial indicators as NPV,

IRR, PI or BCR, PB; DPB, ARR (ROI) and sensitivity analysis, cash flow plan

are vividly calculated.

**LEGAL AND REGULATORY FRAMEWORK**

The legal responsibilities as I undertook this business included the

following:

• Payment of taxes (e.g., sales or VAT tax, capital gain tax)

• Registration of the business (with the corporate affairs commission,

CAC)

• Getting licenses and permits

• Obeying regulations regarding employees (such as working hours**,**

holidays, sick leave, occupational safety and health; and settling of

disputes among employees).

**PROJECT RISK ANALYSIS:** The systematic risks such as government policies affect all busines

**CHOICE OF BREEDING:**

1. Strong good shell
2. Snails that fill their shell.
3. Fully grown snails
4. Large snails
5. Same kind of snail

Achatina achatina: like the Archachatina marginata, they are native west Africa. They have strong brown shells and grow to full size in 2 years under good management conditions. They lay more eggs per growing size. Achatina achatina lays from 100-300 eggs, once to two times each growing season. They have pointed tails with whitish to grey foot.

**SNAIL REPRODUCTION**:

Snails are hermaphrodites which sexually mature when they are 1 yr and can life for 15 years. Snails don’t self-fertilize and have a long mating ritual. It lasts form up to 12 hours before mating occurs. At that point, they will fertilize each other’s eggs so they basically exchange sperm. That ensures genetic diversity in the snail population. So both snails come away from the mating with up to 100 fertilized eggs. After mating, these eggs are buried in dirt or mud, and the snail will grow inside for about 4 weeks. When they hatch, they would have soft shells and need calcium to harden it. They will be another 3 months before their shell is hard enough. Their shell color starts to clear out then changes it to blue, then the color of their species.

**CONSTRUCTING A SNAILERY**

Hutch boxes: they are square or rectangular, single or multi-chamber wooden boxes with lids, placed on wooden stilts above the ground at a suitable height for easy handling. The stilts should be fitted with plastic or metal conical protectors or aprons, to prevent vermin from crawling or climbing up the silt to attach the snails in the boxes. The protectors could be made from old things or plastic bottles. In the middle of the lid is an opening covered with the wire netting and nylon mesh. The lid should be fitted with a padlock to discourage pilfering. In the floor of the boxes a few holes through which excess water can drain out. The boxes are filled with sieved black soil to a depth of 18-25cm. the boxes should be obviously well protected from scorching sun or torrential rain. Hutch boxes are useful in a semi intensive snail breeding system. They are suitable as hatchery and nursery pens because eggs and young snails can be easily located and observed.

**BREEDING**

After the snails are put in a pen, the farmer should watch them carefully to see that they are eating well, give them the right type of food in adequate quantity, wet the food and shelter plants and moisten the ground regularly. On the dry days during the snail growing season, water the ground daily. Always wet in the evening at sunset. Ensure that the soil is moist and not wet. In areas with dry season, when plants do not grow, snails dig into the ground to rest. They should not be watered at that time, otherwise the snails come out of the ground when they should not. The snails breeding season in Nigeria corresponds to the period if the rainy seasons.

**FEEDING**

Snails should be fed after sunset. The feed must not be stale or moldy. Leftovers should be removed the following morning. Water should be replenished. Snails are voracious eaters and may consume 10 times their body weight of leafy vegetables or materials daily. Snails feed on a wide variety of cultivated and wild plants. Young tender green leaves as well as dead decaying leaves are eaten. Green leaves of amaranthus, cocoyam, cassava, lettuce, cabbage, fluted pumpkin, hibiscus, are all eaten by snails. Before beginning, the farmer should find out what plants the snails like to eat. He can get from an experienced snail farmer in his area. He can also with his lantern watch snails at night and see what they are eating. Different plant materials could be dropped in the pen by trial and error, he could find out which ones the snail would prefer. Some fruit trees provide shelter as well s food for snails. Banana, plantain, mango, pawpaw, sweet oranges, and cocoa, etc. serve dual purpose as wella s fruit. Snails prefer feeding pf overripe fruits of these trees. Ripe oil palmmfriuts, broken pods, seeds and seedlings of cocoa are also consumed by snails. Generally, snails usually hide on shelter plants during the day when its dry and move to food plants to eat at night or early in the morning. When they are all w et with dew. Snails also feed on synthetic diets containing a good amount of protein, calcium, and phosphorus. An example of such diet is poultry mash. Wet poultry droppings, rotten vegetables and dead animals are also consumed by snails. Apart from these items there are many other food in the farmer locality which snails like to eat. As stated earlier, these could be found out by trial or error.

**MANAGEMENT**

**For hatchlings:** they require more humid conditions than adult snails. They should be fed tender leaves, such as pawpaw and cocoyam and a calcium supplement for good shell development. The soil in their pens should be fitted with small gauze wire mesh or nylon mesh: otherwise the small snails will escape. Hatchlings and juveniles may be kept at a density of around 100/m2.

**For breeders**: they lay eggs are sexual maturity, at the age of 10 to 12months. They should be transferred to boxes or pens at a density of 10-15 snails/m2. Soils should to be loosened to facilitate egg laying. The breeders ration must be rich in crude protein and calcium. Any eggs found on the surface must be buried promptly to a death of 1 to 2 cm. before hatching, the soil on top of the clutches might be loosened or removed to facilitate uniform emergence. To avoid cannibalism, the breeders must be removed to their growing pens soon after the hatchlings emerge. Adults no longer required for breeding are kept in fattening pens until ready for sale or consumption. Daily management involves several activities.

**Housing: check** whether wire mesh and mosquito netting are intact; repair where necessary. Clean the pens. Keep doors or cover of the snail pens closed and locked.

**Soil:** keep the soil moist by mulching and watering if necessary in the dry season. Never add fresh poultry dropping to the soil. Change soil in the cages every three months.

**Hygiene:** check pens for any dead snails; remove them immediately. Do not use insecticides or herbicides in your snailery. Handle your snails carefully and wash them with water from time to time.

**Recording:** record input and output of your snail farm daily. Include your own labor or that of family members, and inputs, like food or repairs to the pens.

Farming tools and equipment:

1 small weighing scales for weighing pens and snail

2 measuring tape for measuring pens and snails

3 hand trowel, for digging in and cleaning out the pens

4 water container and watering can, for keeping the soil moist and refilling water troughs.

5 water and feeding troughs or dishes

1. Most important; a notebook, for carefully recording input.

**PREDATORS, PARASITES, AND DISEASES**.

Snail farmers must be aware of several predators, parasites, and diseases if mortality rates are to be kept to be to a minimum. Snails have many natural predators, including members of all major vertebrate groups carnivorous snails, ground beetles, leeches and predatory caterpillars. Humans also pose great dangers to snails in the wild. Pollution and destruction of habitats have caused the extinction of some snail species in recent years. Human poachers pose a great danger to farm grown snails as well!

**PREDATORS**

The major predators a snail farmer may have to deal with are field mice, rats and shrews, frogs and toads, thrushes, crows and domesticated birds such as ducks and turkeys, lizards and snakes, drilid and carabid beetles, and millipedes and centipedes. The frog tends to take only the young snails, while the reptiles eat both eggs and snails of all ages. In areas with high bird predation, it is necessary to place cover nets over the pens. Keeping some of the other predators out may require building fences around the pen. The fences should be between 15 and 30 cm high and dug well into the ground it is also advisable to set a bait or traps outside the snail farm area.Leftover food should be removed daily from pens because some predators, particularly rats and field mice, are attracted by the uneaten food. These predators can decimate a farm in a few days.However, the main predators are humans looking for a nutritious meal at the snail farmer’s expense. Snail farmers must introduce any legal measures they consider necessary to protect the farm against poachers.

**PARASITES**

In Ghanaian studies, the major parasites on snails was found to be a fly, Alluaudihella flavicornis. This species belongs to the same family as the housefly and the adult resembles the adult housefly. A flavicornis lays 20 -40 eggs in the snail shell or on the snail. The eggs hatch and then feed on the tissue until the obdy is reduced to a purifying mass, and then pupate within the shell. After a 10-day incubation period, the adult emerge. The best protection against this flies is cover the pens with nylon mesh. Ectoparasite mites are sometimes found on the snails in hutchboxes. They seem to be secondary parasite, usually occurred in active snails. Some nematodes are known to attack European species of edible snails. However, there are no report of nematodes parasitizing A. achatina.

**DISEASES**

Little is known of diseases which attack Achatina in west Africa. As snail farming increase in the popularity, more research will probably focus on this area. The main disease that has been reported is a fungal disease spread through the snails licking slimes from their bodies. The 2 major diseases affecting the European species might also affect the African species, because of the organism caused this disease do occur in the natural range of Achatina. The first is a bacterial disease, caused by pseudomonas. It leads to intestinal infection which will spreads rapidly, which parasites the eggs of helix aspera. The affected eggs turn reddish brown and development stops. This disease is commonly referred to as a rosy eggs disease. The basic hygiene prevents the spreads of these disease. Pens should be cleaned out regularly to remove excreta and unsterile foods, as well as any other decaying matter that may serve as substance for pathogenic organisms. It is also advisable to sterile the soil in hutch boxes by heating every time they are being prepared for a new batch of eggs clutches.

**HARVESTING**

Generally, snails that are well fed and managed will be ready for harvest within 12 to 24 months from the date of stocking. Also when the farmer sees a lot of snails in the pens, he could harvest the first set he put in the pens. Average weight of a snail of a giant type is 200gram. It takes no long than 2 years of efficient feeding to attain this weight. Growth rate is slow and a lot of patience has to be exercised during g snail. Harvesting is done with the hands and sometimes they hide under the cover of vegetation. Easiest time to find them is when the plants are wet. After it has rained or at night when the dew and they are about eating. The farmer can also put some of the foods that the snails like and then they commend to eat, the farmer can collect them when harvesting snails, should be carefully banded and put in a container such as a basket, or net sacs. Too many snails more than 10kg should be put in one container otherwise those at the bottom will be injured.

**WHAT TO DO WITH HARVESTED SNAILS**

The harvested snails could either be sold or retained for family consumption. Snail meant for sale should have clean, intact shells. They should be carried to the market in suitable containers like basket or box. Snails could be stored alive in containers filled with material such as saw dust or chipped maize husks for as long as 6-8 weeks.

**ECONOMICS OF SNAILS PRODUCTION.**

Unlike other livestock enterprises, housing for snail is cheap to construct. Snails could easily be kept even in make shift housing. The feeding of snails is cheap, snail do not compete with man for food, rather, they feed on waste from man’s kitchen, poultry droppings, leaves and over ripen/rotten fruits. Snails have very high multiplication ratio. The a marginata for example lays up to 80-100 eggs/ growing season while the Achatina lays up to 300 eggs or more in a growing season. Snails hatch within 30 days and in 12 to 24 months are ready for table. One snail can therefore in a snail season give birth to 100-300 snails depending on the breed. Labour requirement in attending to snails is very low. One man per day care for 100 snails. If a man starts with 10 snails N400 in a growing season the 10 snails will give 10 X 300 eggs = N3000 eggs. When hatched and reared, and allowing 10 percent morality in a growing season, the farmer will come up with about 2700 new snails. Feeding on fruit, leaves and kitchen waste, the farmer spends nothing on feed

At maturity, the 2700 snails will set at 2700 x N40 =108,000NAIRA

Internationally, snail’s meat command good market in Europe and north America. The French snail requirement is about 5 million kg/annum, out of these, more than 60 percent is imported. Italy is said to consume about 306 million snails annually. Back home in west Africa cote d’ivoire has an estimated snail consumption of 7.9 millionkg. Although the annual snail consumption for Nigeria isn’t known. One thing is certain that the demand is far ahead the supply. Snail farming in Nigeria has a bright future.

**SUMMARY AND CONCLUSION**

Snail meat is a high protein food. Collection from the wild isn’t sustainable. Therefore, conscious effort should be made to rear snails is captivity. To start a snail, farm the following are required; enough edible life snails, a good site, enough food and shelter plants, and a pen for the snails. Snails require soil that is rich in humus with enough calcium for shells and egg formation. Snails prefer damp soils. Protect snails from wind. Snails are cold blooded. Therefore, avoid sudden changes in atmospheric humidity and temperature. Choose snails for rearing that conform to good strong shells, snails that fill their shells, fully grown and large snails. House only one type of snails, construct pens using materials available and according to your resources. Do not stock more than 15- 25 snails m2. Ensure steady and uninterrupted food supply to snails on dry days, water the ground daily. Keep soldier ant, frog, snail eating bird, other harmful insects and animals away. Avoid common salt in snail farm. Snail mature in 12-24 months. Snail farming is very profitable and recommended even as a hobby.