



Guinea Pig (*Cavia Porcellus*) as an Untapped Protein Source for Man: The Potentialities, Opportunities and Challenges

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Abstract

Nigerians are among the least consumers of animal protein in Africa, consuming less than the World Health Organization's recommended 67g per day. The larger conventional livestock species (cattle, sheep, goat and poultry) cannot meet the protein deficiency gap because their multiplication rate is not commensurate with the rapid increase in human population. Guinea pig (*Cavia porcellus*) is a promising micro-livestock which though is indigenous to South America, is also well adapted to the Nigerian ecosystem. The meat is nutritious, with a protein content of about 21% - which is higher than that of poultry, pork, mutton or beef. 65% of its meat is edible with a low fat content and low cholesterol, making it the ideal meat in an increasingly health-conscious population. The animal has a short gestation period (67-72 days), low cost of production, matures early, easy to manage and requires relatively little capital to set up. In Nigeria, if the challenges of availability of quality concentrate feeds, problem of numerous pests and diseases, problem of excessive heat and problem of obtaining fast growing species of pups can be overcome, then guinea pigs farming has the potential of bridging the present protein deficiency gap in Nigeria.

Introduction

That there is a protein challenge facing the Nigerian population is no longer news: it is on record that Nigerians are among the least consumers of animal protein in Africa (Egbunike, 1997), consuming less than 67g of protein as recommended by the World Health Organisation (Akintola *et. al.*, 1999). It is evident also that this deficit most probably come about because the larger and more conventional livestock species (cattle, sheep, goat and poultry) have not been able to meet the expectation of the populace. There is an increasingly high demand for animal products in the country principally because of increase in population as well as awareness of the role of animals in bridging the protein gap. This situation calls for increased rearing of animals that would cushion this increasing demand for animals and their products. Exploiting and engaging in the keeping of the so called unconventional or micro- livestock becomes necessary and handy in this circumstance.

The guinea pig (*Cavia porcellus*) is an animal indigenous to the South American Andes especially Ecuador, Peru, and Bolivia (Morales, 1995), but is well adapted to the Nigerian ecosystem. The production of this animal can be integrated effectively into the rural economy because of its short gestation period (68-72 days), low cost of production, need for limited space, early maturity and ease of management. The common culturable guinea pig is a domesticated descendent of a closely related species of *Cavia* such as *Cavia asperca*, *C. fulgida* and *C. tschudii*, and do not naturally exist in the wild. It is classified scientifically as follows:

Kingdom: *Animalia*

Chordata

Class: *Mammalia*

Rodentia

Family: *Caviidae*

Caviinae

Phylum:

Order:

Sub family:

Genus: *Cavia*

C. porcellus

Species:

Guinea pig measures, on the average, between 20-40cm from head to rump; it does not have tail (Nowak, 1999). It has four toes on each front paw and three toes on each hind paw (Alderton, 1999). Adult guinea pigs usually weigh between 500-1500g, but the National Agrarian Research Institute of Peru has developed a "super cavy" that weighs up to 3kg (Nowak, 1999; Economist, 2004). Females weigh less than males.

Guinea pig, if well fed, reaches reproductive age very quickly. Females can start reproductive activity at the age of 12 weeks or when they reach 60% of their adult body weight. Males mature a bit later (5-7 months). For optimum result however, sustained production and not to have weak offsprings, females should be at least 3-4 months and males 5-7 months of age before breeding is initiated. The guinea pig has a production life span of 6-8 years.

Potentialities and Opportunities

The following advantages are derivable from guinea pig farming:-

- It is considered a very promising micro-livestock species for rural development because it requires relatively little capital and equipment. Guinea pigs farming do not require expensive equipment to begin. So it is relatively easy to start a small profitable guinea pig business.
- Guinea pig farming is not labour intensive, and due to their docile nature, guinea pigs can easily be managed by women and children.
- Due to limited space in urban environments and limited space requirements, they can relatively be easily produced in urban areas.
- Guinea pig has the potential of high return on investment (ROI) with low level of input. A

well fed guinea pig can reach its reproductive age at 12 weeks, females give birth 5-6 times/year with a litter size of 5-7 guinea pig pups. Under very high intensive management, 7-8 births/year is achievable.

- With adequate feeding and management, guinea pigs can be kept by farmers in many parts of the country.
- The consumption of its meat has no taboo (religious or otherwise) attached to it.
- The meat of the guinea pig is nutritious. It has a high protein content of about 21%, which is higher than that of poultry, pork, mutton or beef. It has a low fat content (about 8%) and low cholesterol, making it an ideal meat in an increasingly health conscious and mobile population.
- It has a high dressing percentage (about 65%).

Acceptability and Demand for its Meat.

The main product of the guinea pig is its meat. The meat is used as an important source of protein because of its excellent quality and high biological value. It is high in protein (21%) and low in fat (8%) compared to other meat (Numbela and Valencia, 2003). The meat is described as being similar to rabbit and to the white meat of chicken (Vecchio, 2004; Mitchell, 2006). Also more than 65% of the meat is edible which include skin, heart, kidney and liver. The meat is not linked to any taboo (religious and cultural). The meat is quite acceptable and is increasingly becoming a source of easily available protein in parts of the country where it is reared. Most people who are not familiar with the meat associate it with the rat probably because of its small size. Its size is actually advantageous since it can be eaten with little or no wastage. The meat can be eaten cooked, fried or barbequed and served with other varieties of food.

Challenges

The major challenges to profitable guinea pig production in Nigeria are:

- ❖ Availability of quality feed: - The guinea pig is a monogastric herbivore with a large capacity for forage consumption. It can also be given concentrate feed. Combining forage with concentrate is also good for the animal. The challenge is in the production of quality feed mostly concentrates to meet the nutritional requirements of the animal. Commercial feed millers can be encouraged in this regard to consider looking into this area of production particularly now that the interest seems to be on the increase in the exploitation of the animal as a source of protein. Such feed need to be of high quality, digestible, readily available and at affordable price.
- ❖ Diseases and Pests: - This is a great challenge for prospective guinea pig farmers. The animal is attacked by a plethora of diseases and pests. Infection easily leads to reduced productivity. Some of the diseases affecting guinea pigs are: - Salmonellosis, *Bordetella* pneumonia,

Streptococcal pneumonia, antibiotics induced enterotoxemia, haemorrhagic typhlitis, cervical lymphadenitis (lumps), pod dermatitis (bumble foot), mastitis, dermatophytosis, tyzzels disease, coccidiosis and scurvy. It is also affected by external parasites such as flies, mites, lice, mange and bedbugs; internal parasites such as nematodes and *Fasciola hepatica*. The challenge is to know how to prevent, treat or cure such diseases or pest infestation. Adequate feeding and sound sanitation could be of help while veterinarians can assist farmers through education and enlightenment campaigns.

- ❖ Problem of excessive heat, especially in the Northern part of the country. Due to its stout and compact conformation, the animal more easily tolerates excessive cold than excessive heat (Wagner and Manning, 1976). Guinea pig normal body temperature is 38.5-40°C (Terril and Clemons, 1998) and its ideal ambient air temperature is similar to that of humans, which is 18-24°C (Wagner and Manning, 1976). Consistent ambient temperature in excess of 32°C has been linked to hyperthermia and death, especially in pregnant sows (Wagner and Manning, 1976). Extreme of humidity outside the range of 30 - 70% is also not suited to the guinea pig. The maintenance of ideal temperature and humidity in the farm is therefore of paramount importance for good production (Wagner and Manning, 1976; Terril and Clemons, 1998).
- ❖ Obtaining correct breeds or species of pups that are fast growing and can attain market weights early is also a challenge. Most, if not all, of the guinea pigs currently reared in the country are of mixed parentage and hence of no pedigree. This is a great challenge for animal breeders. There is the need to meet this challenge in order to produce breeds that can be more tolerant to the hotter parts of the country; that are disease or pest resistant and at the same time highly productive.

Conclusion

To bridge the protein deficiency gap in Nigeria, guinea pig farming need to be highly encouraged. If properly harnessed, it can help in no small way to improve the animal protein consumption in Nigeria. Apart from income generation to farmers within the shortest possible time, due to the short generation interval of the animal, protein intake will be greatly enhanced especially among the poor and downtrodden.

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Introduction

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