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**EXPERIENCES OF A RESEARCH INSTITUTE ON GRASSCUTTER FARMING IN  
GHANA**

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**ABSTRACT**

Though grasscutter farming has positive impact Scientific research with the view to transforming the budding grasscutter farming industry so as to realize its full environmental, public health and social potential, particularly for poor smallholder farmers in Ghana had had to confront a number of issues grouped into political, biological and social issues. However with strategic research and information dissemination, coupled with partnership with farmers, NGOs and development agencies, the Animal Research Institute, has achieved a number of successes in the area of husbandry, reproductive and health management of captive grasscutters.

It is believed that interest in the grasscutter, particularly for breeding animals as well as technical information, is bigger than any single organization has the capacity to deliver, and the development of strong partnership between all stakeholders is called for in order to transform the industry into a viable agricultural venture.

## INTRODUCTION

Many Ghanaians have known the art of grasscutter farming for several decades. The ordinary man, in an attempt to ensure continued supply of his delicacy learnt to keep the animal in boxes, empty drums, PVC pipes, and various enclosures. Though the animals did breed productivity under such conditions was very low. Scientific intervention was however slow in coming, and was also not sustained, as more attention was given to the conventional species such as cattle, sheep, goats, and pigs. Africa has been grappling with hunger and its attendant consequences and the thinking had been that the bigger the species being worked on the better. Species such as cattle sheep and goats were seen as food for a lot more people at a time.

Again many scientists with the capacity to research into animal agriculture had either trained in the developed world or were citizens of those countries and were more interested in the species of conventional agriculture. The grasscutter industry was thus to remain at the primitive stage for a very long time.

In 1992 however, the Animal Research Institute, in response to her national mandate decided to generate and offer the scientific support needed to transform this budding industry. This decision was largely informed by a number of issues emanating from the traditional hunting of grasscutter:

1. Grasscutter hunting has been blamed for a number of bushfires with its attendant negative environmental impact.
2. The increasing use of chemical poisons in the trapping of the animal was beginning to attract attention as a public health issue
3. The Institute had speculated that smallholder grasscutter farming could provide some solutions to the intractable issue of poverty in the country. Several authorities had

proposed that backyard animal husbandry using microlivestock such as grasscutter (e.g. National Research Council, 1991; Ehui, 1999) could provide an important source of part-time job opportunities, particularly for landless women and children.

## **THE RESEARCH APPROACH**

Research into grasscutter farming at the Animal Research Institute is pivoted on the philosophy that all technologies developed should meet the needs of the smallholder farmer for whom they were developed as a first priority. A survey was therefore undertaken in 1992 before beginning any on-station work, with the view to understanding the issues confronting grasscutter farmers in Ghana (see Adu *et al.*, 1999) and to develop partnership with the farmers in trying to transform grasscutter farming into a viable commercial venture.

Strategies for addressing rural poverty have been reported to include the commercialization of smallholder agriculture (Anandajayasekeram, 1999). The majority of smallholder farmers are however poor and have neither the institutional nor economic power to ensure that their technology needs are met by public sector research. Non- Governmental Organisations (NGO) and development agencies have therefore become major players in adaptive research and extension for poorer smallholder farmers. The Animal Research Institute has therefore viewed partnership arrangements with NGOs and development agencies as paramount to her work on the grasscutter.

## **CHALLENGES**

The research effort into grasscutter farming at the Animal Research Institute has however not been without problems. These can be grouped into the following:

## **Political**

In the 1980s agricultural research in Ghana was given a major boost by Ghana's development partners in the form of a programme referred to as the National Agricultural Research Programme (NARP). Authorities at the NARP office however had very little political will to support grasscutter work. The grasscutter was seen as very insignificant with regard to meat production and did not deserve much attention. Grasscutter work at the Animal Research Institute, and for that matter, Ghana, therefore remained at the periphery of research activity for close to a decade.

This attitude was however changed with a strategic feature article, by the Animal Research Institute, in one of the most popular National dailies. However a video documentary by the Institute in 1998, which was shown several times on National TV, was to have the major impact in this attitudinal change.

## **Biological**

The paucity of information was to prove one of the major challenges for grasscutter work in Ghana. The grasscutter had peculiarities unknown to the scientific world and many things had to be learnt first hand. Comparative application of research results in similar species have been very helpful in our information generation. However there are indications that these cannot be applied wholesale and there is still the need for the generation of species-specific data peculiar to the grasscutter.

So far our knowledge in feeding standards for the grasscutter remains rudimentary and the feeding strategies used have been demonstrated to be inadequate for growth and reproduction (Adu *et al.*, 2000, Adu & Wallace, 2001).

We are still grappling with animals at the early stages of domestication with the attendant low productivity levels. Coupled with this is our inability to meet the incessant demand of farmers for breeding stock: we seem to have generated more interest in the grasscutter than we have the capacity to deliver!

### **Social**

Grasscutter research in Ghana has been targeted at the poor. However some of the technologies developed have tended to be too expensive for easy adoption. Of particular interest in this regard is the specialized housing design for grasscutter farming. Though much liked by farmers, the cost is usually beyond the reach of most farmers. Here the role of NGOs and development agencies as major players of adaptive research and extension for poorer smallholder farmers becomes critical. We believe that the new trend of partnership with NGOs and development agencies will go a long way to addressing some of these issues.

Our partnership with the farmers has resulted in the formation of a Grasscutter Farmers Association as a channel for information exchange. This also gives us access to and some use of farmers' animals for research we are therefore able to multiple research results with the least input. We also believe that this strategy helps us in shaping the farmers' attitude as well as the attitude of NGOs and development agencies towards our work.

## ACHIEVEMENTS

### A. General Husbandry

#### *Housing*

One major the grasscutter farmers faced prior to our work was knowledge on an appropriate housing design for grasscutter farming (Adu *et al* 1999). The Institute has since then come out with a design that has proven to be popular with farmers (Adu, 1999). Among the features of this design is the ease of cleaning and handling the animals, which is good for the manipulation of the animals under farming conditions.

#### *Feed and Feeding*

The institute has compiled a list of feed items for the grasscutter based on indigenous knowledge (Table 1, Adu *et al.*, 1999). However our experiences indicate that certain varieties of cassava could be poisons to the animal, particularly when fed fresh. Leguminous plants such as *Centrosema pubescens* and *Leucaena* spp could also be poisons when fed in large quantities.

Table 1. Food items fed to captive grasscutters in southern Ghana (Adu *et al.*, 1999)

Type	English name	Scientific name
Leafy materials	Cassava	<i>Manihot utilissima</i>
	Guinea grass	<i>Panicum maximum</i>
	Elephant grass	<i>Pennisetum purpureum</i>
	Spear grass	<i>Heteropogon contortus</i>
	Plantain pseudo-stem	<i>Musa paradisiaca</i>
	Fresh groundnut tops	<i>Arachis hypogea</i>
	Fresh maize stover	<i>Zea mays</i>
	Job's tears	<i>Croix lacryma jobi</i>
	Centro	<i>Centrosema pubescens</i>
	Spurge weed	<i>Euphorbia heterophylla</i>
	Sandpaper tree	<i>Ficus exasperata</i>
	Paspalum	<i>Paspalum polystachyum</i>
	Sweet potato	<i>Ipomea batatas</i>

	African giant star grass	<i>Cynodon nlemfuensis</i>
	Cane sugar	<i>Saccharum officinarium</i>
	Oil palm seedlings	<i>Elaeis guinensis</i>
	African marigold	<i>Aspilia africana</i>
Tubers and underground stems	Spear grass	<i>Heteropogon contortus</i>
	Cassava	<i>Manihot utilissima</i>
	Yam	<i>Dioscorea spp</i>
	Sweet potato	<i>Ipomea batatas</i>
Fruits and grains	Mango (unripe)	<i>Mangifera indica</i>
	Oil palm	<i>Elaeis guinensis</i>
	Pineapple	<i>Ananas sativa</i>
	Maize	<i>Zea mays</i>
Miscellaneous	Wheat bran	-
	Bread	-
	Kitchen leftovers	-
	Salted corn cobs	-

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Our research has also indicated that the practice of farmers in Ghana not giving their animals water (Adu, *et al.*, 1999) could be responsible for the high still-birth rate (12.3% *v.* 1.5 %) and the lower birth weight (129 g *v.* 98 g) registered in Ghana compared to Benin where water is provided (Schrage and Yewadan, 1999; Adu, 2002). The provision of water has been found to have positive effects on feed utilisation, growth rate, health and reproductive performance of rabbits (Aitken and Wilson, 1962). H. M. Bruce (1950 cited by Ediger, 1976) also indicated that the mortality rate in guinea pigs is significantly increased when the animals are deprived water, with pregnant and lactating females being the most affected, followed by young, rapidly growing animals. In the grasscutter itself, lack of drinking water has been reported to be partially responsible for digestive disorders leading to enterotoxemia (Schrage and Yewadan, 1999). The practice of not giving animals drinking water in Ghana is therefore being discouraged.

## ***B. Reproduction and reproductive management.***

### *Sex determination*

At the beginning of work at the Animal Research Institute, over 30% of grasscutter farmers could not determine the sex of their animals. Most farmers also relied on the shape and/or size of the head to distinguish between the sexes; the use of the ano-genital distance was the second most popular method of sex determination. (Adu *et al*, 1999). Our research has however led to the promotion of the use of the ano-genital distance as the gold standard of sex determination in the grasscutter (Table 2; Adu *et al*, 2002).

*Table 2. Success rate of the two most popular sex determination techniques in the grasscutter (Adu et al., 2002)*

	Success rate (%)			
	Adults		Juveniles	
	Male	Female	Male	Female
Ano-genital distance	-	-	100.0	100.0
Head shape and/or head size	50.0	62.5	70.0	60.0

### *Sexual maturity in the male grasscutter*

Knowledge of sexual maturity in the male grasscutter is a key management factor in the grasscutter. Male animals housed together can engage in fatal fights, particularly in the presence of females. Sexual maturity in the male is usually determined using the presence of the ano-genital region stain (Adu, 1999). Males are usually housed singly or castrated on attainment of sexual maturity. Our experience has however indicated that certain animals may not develop the ano-genital region stain on attainment of sexual maturity (Adu and Yeboah, 2002). It is therefore

suggested that males be separated before 4 months of age without regard to the development of the ano-genital region stain.

#### *Weaning and post-weaning management*

Economic and management factors influencing efficient animal production include the length of time between successive births. Our breeding programme is to attain two littering a year. With the gestation length of 152 days (Schrage and Yewadan, 1999) the grasscutter has only a one-month window within which to achieve the next pregnancy if there is going to be 2 littering in a year. This implies that the animal should be weaned within one month after birth. Schrage and Yewadan (1999), however, suggested a weaning age of 6 weeks based on the high post weaning mortality when animals were weaned at 4 weeks. Our research has however indicated that animals could still be weaned at 4 weeks of age with still a lower post-weaning mortality rate.

Factors influencing the post-weaning mortality include the number of animals per unit space (Schrage and Yewadan, 1999). Hemmer (1990) indicated that rodents under stress cuddle themselves into corners and may suffocate each other to death in the process. It has been possible to reduce the post-weaning mortality to 1.4% for animals weaned at 4 weeks (Adu, 2002) compared to 11% for those weaned at 6 weeks (Schrage and Yewadan, 1999) by keeping not more than five (5) animals are kept per unit space post-weaning.

#### *Pregnancy diagnosis*

Early pregnancy diagnosis allows for early identification of animals not conceiving at first mating. It also allows for specialised management of pregnant animals so as to minimise the incidence of abortions and dystocia. Though needing further research the vaginal plug formation

after mating has been shown to have some merit as a pregnancy diagnostic tool (Adu and Yeboah, 2000)

### ***C. Causes of death and health management***

The grasscutter, unlike many livestock species such as rabbits, sheep and goats, requiring an appreciable drug input, is very hardly, requiring little or no drug inputs if the right management practices are observed. Experiences at the Animal Research Institute however indicate that with newly established colonies, there could be a couple of health problems needing attention. Table 3 indicates that the major cause of death in newly established grasscutter colonies in Ghana is traumatic injuries with pneumonia and gastroenteritis being the least. This implies that our animals are wild, and or knowledge of husbandry is still embryonic.

*Table 3: Causes of death in a newly established grasscutter colony*

Causes of death	Percentage
Traumatic injuries	31.6
Pulmonary congestion	15.8
Sceptic wounds	10.5
Ruptured uterus	10.5
Orchitis with septicæmia	10.5
Gastrointestinal obstruction	10.5
Gastroenteritis	5.3
Pneumonia	5.3

### **CONCLUSIONS AND RECOMMENDATIONS.**

Though grasscutter farming has positive environmental, public health and social impact scientific research with the view to transforming this budding industry into a viable venture, particularly for poor smallholder farmers in Ghana had had to confront a number of issues which can be grouped into political, biological and social issues. Strategic research and information dissemination, as

well as partnership with farmers, on one hand, and NGOs and development agencies on the other, are believed to have crucial consequences in making the grasscutter industry realize its full potentials.

The right applications of these strategies have resulted into a number of achievements by the Animal Research Institute, among which are husbandry, reproductive and health management of captive grasscutters. We believe that interest in the grasscutter, particularly for breeding animals as well as technical information, is bigger than any single organization has the capacity to deliver. Developing strong partnership between all stakeholders would go a long way into transforming the industry into a viable agricultural venture in the shortest possible time.

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