International Journal of Authentic Agriculture
Volume 2, Number 1, April 2026
ISSN: 2734-2956(Print) 2795-3114(Online)
Published By
International Centre for Integrated Development Research, Nigeria
In collaboration with
Copperstone University, Luanshya, Zambia

Comparative Analysis of Grasscutter (*Thryonomys swinderianus*) and Rabbit (*Oryctolagus cuniculus*) Production Systems: Husbandry Practices and Challenges

Mirabel Inibehe George
National Teachers' Institute (NTI), Uyo City Polytechnic Study Centre, Akwa Ibom State, Nigeria. Email: mercymichael78@gmail.com

Daniel Lucky Ebiakpo
Department of Agricultural Technology, Federal Polytechnic, Ekowe, Bayelsa State, Nigeria.

ABSTRACT

This study provides a comprehensive comparative analysis of grasscutter and rabbit keeping, highlighting unique and shared practices across housing, feeding, breeding, health management, and operational constraints. Three analytical tables were developed to compare their maintenance requirements, production challenges, and similarities in husbandry practices. Findings indicate that grasscutters require more robust housing, have slower reproduction cycles, and are more difficult to handle than rabbits, whereas rabbits exhibit higher susceptibility to diseases but possess faster growth and breeding rates. Shared attributes include similar feeding categories, micro-livestock suitability, and the potential to contribute significantly to smallholder incomes. The study recommends strengthening breeding systems, feed management, farmer training, and disease surveillance frameworks. This analysis is intended to guide producers, extension practitioners, and livestock researchers in optimizing species selection and improving smallholder micro-livestock production efficiency. The paper therefore contributes to livestock science by providing clear comparative evidence to inform decision-making, enterprise planning, and sustainable micro-livestock management strategies.

Keywords: *Grasscutter, thryonomys swinderianus, rabbit, oryctolagus cuniculus, production Systems, husbandry Practices*

INTRODUCTION

Grasscutter (*Thryonomys swinderianus*) and rabbit (*Oryctolagus cuniculus*) production are increasingly recognized as viable micro-livestock enterprises capable of supporting food

International Journal of Authentic Agriculture
Volume 2, Number 1, April 2026
ISSN: 2734-2956(Print) 2795-3114(Online)
Published By
International Centre for Integrated Development Research, Nigeria
In collaboration with
Copperstone University, Luanshya, Zambia

security, income diversification, and sustainable animal protein supply in sub-Saharan Africa. Despite their growing adoption, limited comparative assessments exist on differences in maintenance requirements, husbandry challenges, and production dynamics between both species. Micro-livestock production has gained increasing attention as a sustainable approach to addressing protein shortages, rural income diversification, and ecological constraints associated with conventional livestock production in sub-Saharan Africa. Among the emerging micro-livestock species, grasscutters (*Thryonomys swinderianus*) and rabbits (*Oryctolagus cuniculus*) are widely valued for their rapid feed conversion efficiency, adaptability to smallholder systems, and high consumer preference for their meat (Adeoye et al., 2021; Jatto & Jibril, 2020). Grasscutter farming, in particular, has expanded in West Africa due to the animal's high market value, lean meat characteristics, and cultural acceptance (Asiedu et al., 2020).

Similarly, rabbit production has been recognized for its low resource requirement, short gestation cycle, and strong potential to enhance household nutrition and food security (Onyimonyi & Ugwu, 2019; Ghosh et al., 2022). Despite their importance, the management requirements of grasscutters and rabbits differ considerably. Grasscutters are semi-wild rodents requiring reinforced housing units, structured breeding strategies, and cautious handling (Addo et al., 2019). Rabbits, by contrast, are domesticated, easier to handle, and exhibit rapid reproductive efficiency (Oladele et al., 2021). These differences have implications for labour needs, disease management, production cost, and enterprise profitability. Understanding these distinctions is essential for farmers, researchers, and extension workers responsible for recommending species to smallholders based on resource availability and skill capacity.

Grasscutter production systems demand higher initial capital investments due to the need for concrete hutches and the provision of large quantities of fresh forage (Amusan & Oduntan, 2022). In contrast, rabbit production is less capital-intensive and is often considered an entry-level livestock option (Ghosh et al., 2022). However, rabbit farming presents significant health management challenges due to common diseases such as coccidiosis, mastitis, and respiratory infections (Ikusika et al., 2021). Grasscutters, while more resilient to disease, present challenges relating to taming, breeding control, and feed seasonality (Addo et al., 2019). These differences highlight the necessity of comparative research to guide evidence-based husbandry improvement. Additionally, while several studies have documented individual aspects of either grasscutter or rabbit production, few have provided a comprehensive side-by-side comparison. Comparative assessments are particularly critical as smallholder farmers often choose between the two species based on incomplete information. Farmers must consider not only growth rates and breeding potentials but also maintenance requirements, production challenges, technical skill needs, and health management demands (Asiedu et al., 2020; Amusan & Oduntan, 2022).

International Journal of Authentic Agriculture
Volume 2, Number 1, April 2026
ISSN: 2734-2956(Print) 2795-3114(Online)
Published By
International Centre for Integrated Development Research, Nigeria
In collaboration with
Copperstone University, Luanshya, Zambia

In spite of the expanding interest in grasscutter and rabbit production, there is limited scientific synthesis comparing their maintenance requirements, operational challenges, and potential for smallholder productivity. Existing studies tend to examine species independently, leaving farmers without clear guidance on selecting the species that best aligns with their resource base, technical capacity, and production objectives. The lack of consolidated comparative information limits the ability of extension agents and policymakers to design targeted interventions promoting efficient micro-livestock production.

Objectives of the Study

The study aims to compare the analysis of Grasscutter (*Thryonomys swinderianus*) and Rabbit (*Oryctolagus cuniculus*) production systems, focusing on husbandry practices, maintenance requirements, challenges, and prospects for smallholder farmers. The specific objectives of the study include, to:

1. Compare the maintenance requirements of grasscutter and rabbit production, including housing, feeding, reproductive management, and handling practices.
2. Examine the primary challenges faced in grasscutter versus rabbit farming, focusing on disease prevalence, breeding difficulties, feed constraints, and market dynamics.
3. Identify key similarities in husbandry practices that support the integration of both species in micro-livestock systems.

Literature Review

Grasscutter Production Systems

Grasscutter farming has grown steadily across West and Central Africa due to increasing demand for its meat, which is considered a delicacy in many regions. As also highlighted by Akinola *et al.*, (2015), grasscutter production has become a significant micro-livestock enterprise in West Africa due to its high consumer demand, favorable feed conversion efficiency, and the premium market value of its meat. The species is semi-domesticated, and its husbandry still retains characteristics associated with wild rodents, including strong chewing ability, sensitivity to handling, and naturally aggressive defensive behavior (Addo *et al*., 2019). Research by Asiedu *et al.* (2020) found that grasscutter farming contributes substantially to household income among rural producers in Ghana and Nigeria, with profits strongly influenced by feed availability, breeding efficiency, and managerial expertise. A major advantage of grasscutter production is the low incidence of severe diseases when managed under hygienic and well-ventilated housing systems (Adeoye *et al*., 2021). Their diet largely consists of elephant grass, sugarcane, guinea grass, and supplemental farm by-products, making them suitable for low-cost feeding strategies (Amusan & Oduntan, 2022).

International Journal of Authentic Agriculture
Volume 2, Number 1, April 2026
ISSN: 2734-2956(Print) 2795-3114(Online)
Published By
International Centre for Integrated Development Research, Nigeria
In collaboration with
Copperstone University, Luanshya, Zambia

However, grasscutter farming requires a significant understanding of controlled reproduction. Studies indicate that poor pairing practices, male aggression, and stress-related infertility are common constraints (Addo *et al*., 2019). Unlike rabbits, grasscutters exhibit slower growth and longer reproductive intervals, resulting in lower litter production per year (Asiedu *et al*., 2020). These characteristics demand farmers to invest in skill acquisition and routine management training. Additionally, grasscutter production is influenced by feed seasonality, particularly the availability of fresh forage during dry seasons (Adeoye *et al*., 2021). Thus, feed preservation measures such as haymaking and silage are increasingly recommended.

Rabbit Production Systems

Rabbit production has been widely adopted across Africa due to its ease of management, rapid reproductive cycle, and efficient feed conversion rate. Rabbits can achieve up to eight litters annually under good management conditions and are capable of producing between 6 and 12 kits per litter (Oladele *et al*., 2021). Their small body size, short gestation period, and ability to thrive on forages and concentrate pellets make them suitable for small-scale and backyard farming systems (Ghosh *et al*., 2022). Additionally, rabbit meat is protein-rich, low in cholesterol, and increasingly valued for its nutritional and culinary attributes (Onyimonyi & Ugwu, 2019).

Despite their advantages, rabbit production faces considerable challenges related to diseases such as coccidiosis, staphylococcal infections, respiratory problems, and enteritis (Ikusika *et al*., 2021). Rabbits are highly sensitive to poor sanitation, overcrowding, and environmental stress, which can elevate mortality rates, especially among kits. Market studies indicate that rabbit meat is gaining traction in urban centers, but price volatility still affects farmer profitability (Ghosh *et al*., 2022). Unlike grasscutters, rabbits require lighter and less expensive housing structures, though these must remain predator-proof and well-ventilated. Research also shows that biosecurity lapses, poor breeding management, and inadequate knowledge of disease control contribute significantly to rabbit mortality (Ikusika *et al*., 2021).

Comparative Insights from Existing Studies

Comparative studies between micro-livestock species emphasize differences in reproduction, handling, disease susceptibility, and economic performance. Grasscutters are more resistant to diseases but have slower reproductive output, while rabbits breed rapidly but suffer higher disease incidence (Amusan & Oduntan, 2022; Ghosh *et al*., 2022). In terms of housing, grasscutters require reinforced pens due to their strength and destructive

International Journal of Authentic Agriculture
Volume 2, Number 1, April 2026
ISSN: 2734-2956(Print) 2795-3114(Online)
Published By
International Centre for Integrated Development Research, Nigeria
In collaboration with
Copperstone University, Luanshya, Zambia

chewing behavior, whereas rabbits thrive in wooden hutches or wire cages (Addo *et al*., 2019).

Market assessments show that grasscutter meat commands higher prices per kilogram, although rabbit meat enjoys broader market access (Asiedu *et al*., 2020). Several scholars emphasize the need for better extension support, farmer training, and species-specific management guides to improve micro-livestock productivity across Africa (Ikusika *et al*., 2021; Adeoye *et al*., 2021). These studies collectively underscore the need for a holistic comparative analysis, such as the present study, to guide farmers and policymakers in selecting appropriate micro-livestock species based on production goals, resource availability, and managerial capacity.

A. Grasscutter B. Rabbits

Plate 1: Photographs of the grasscutter and rabbits
Sources: (A) Akinola *et al.*, 2015; (B) Authors' snapshot, 2025

RESULTS AND DISCUSSION

Table 1: Differences in Maintenance Requirements between Grasscutter and Rabbit Production

Parameter	Grasscutter	Rabbit
Housing Type	Requires stronger, escape-proof cages due to chewing and strength	Light wooden/wire hutches adequate
Feeding Preference	Primarily grasses (elephant grass), some concentrate	Grasses, legumes, concentrate pellets

International Journal of Authentic Agriculture
Volume 2, Number 1, April 2026
ISSN: 2734-2956(Print) 2795-3114(Online)
Published By
International Centre for Integrated Development Research, Nigeria
In collaboration with
Copperstone University, Luanshya, Zambia

Parameter	Grasscutter	Rabbit
Reproductive Maturity	6–8 months	4–6 months
Handling	Semi-wild; requires careful handling	Docile and easier to handle
Breeding System	Usually 1 male to 3–7 females	1 male to 8–10 females
Space Requirement	Larger space per animal	Smaller space per animal
Growth Rate	Slower	Faster
Disease Management	Fewer diseases; hardier	More disease-prone (e.g., coccidiosis)

Source: Adapted from multiple sources.

Table 1 highlights the distinct maintenance requirements that differentiate grasscutter production from rabbit farming. A significant distinction is the type of housing required. Grasscutters, due to their semi-wild nature and powerful incisors, require reinforced concrete or metal housing to prevent escape and structural damage. This is consistent with Addo *et al*. (2019), who note that inadequate housing results in frequent escapes and injuries. Rabbits, on the other hand, are fully domesticated and thrive in wooden or wire-mesh hutches that are inexpensive and easier to construct, making them more accessible to small-scale farmers.

Feeding requirements also reflect key differences. Grasscutters rely heavily on a forage-based diet, particularly elephant grass and sugarcane, which are seasonally dependent (Adeoye *et al*., 2021). Rabbits consume grasses and legumes but often require concentrate pellets to support optimal growth and reproduction (Oladele *et al*., 2021). This means that while grasscutters may reduce feed costs during periods of forage abundance, rabbit farmers face more stable but potentially higher feed expenses year-round.

Reproductive management marks another major divergence. Rabbits attain sexual maturity earlier (4–6 months) and produce multiple litters annually, enabling quick flock expansion. Grasscutters mature later (6–8 months) and exhibit fewer litters per year (Asiedu *et al*., 2020). This difference affects production planning, flock turnover, and the timing of market sales.

Handling further distinguishes both species. Grasscutters require skilled handling due to their strength and tendency to bite, while rabbits are easier and safer to manage. This has implications for labour training and safety. Overall, Table 1 demonstrates that grasscutter farming requires higher technical competence and investment, whereas rabbit production offers a more beginner-friendly option for new farmers.

International Journal of Authentic Agriculture
Volume 2, Number 1, April 2026
ISSN: 2734-2956(Print) 2795-3114(Online)
Published By
International Centre for Integrated Development Research, Nigeria
In collaboration with
Copperstone University, Luanshya, Zambia

Table 2: Production Challenges in Grasscutter vs Rabbit Farming

Challenge Area	Grasscutter Farming	Rabbit Farming
Captivity Stress	High—animals are semi-wild	Low—animals domesticated
Disease Occurrence	Low	High (respiratory infections, enteritis)
Feed Availability	Seasonal grass challenges	Pellets may be expensive
Breeding Difficulties	Harder to pair, aggressive males	Frequent breeding possible
Mortality Rate	Moderate	Higher, especially in kits
Market Availability	Niche but profitable	More widespread but lower price margin
Technical Skills	Requires training	Easier for beginners

Source: Adapted from multiple sources.

Table 2 presents a comparative overview of the challenges faced in grasscutter and rabbit farming. Grasscutter farmers encounter significant difficulties related to captivity stress, reproductive aggression, and feed seasonality. As Addo *et al.* (2019) highlight, male grasscutters can be aggressive, leading to injuries and reduced breeding efficiency. Additionally, their dependence on fresh grasses poses challenges during dry seasons, contributing to inconsistent feed supply and fluctuating growth rates.

Conversely, rabbit farming is characterized by challenges centered around disease prevalence. Rabbits are highly susceptible to coccidiosis, respiratory diseases, and enteritis, which can cause rapid mortality among kits (Ikusika *et al.*, 2021). Poor hygiene, overcrowding, and inadequate ventilation exacerbate these problems, making sanitation a critical management factor. This aligns with the findings of Ghosh *et al.* (2022), who report that disease management accounts for a significant portion of operational costs in rabbit production systems.

Market dynamics also vary between the species. Grasscutter meat is priced higher and is often sold in niche markets, giving farmers greater profit margins per animal (Asiedu *et al.*, 2020). However, demand can be inconsistent. Rabbits, while having lower individual prices, benefit from broader market acceptance and faster production cycles.

The technical skill required for each system also differs. Grasscutter production demands specialized training to manage breeding aggression and handling safety. Rabbit production requires strong knowledge of disease prevention and biosecurity. Thus, Table 2 demonstrates that while both systems face challenges, these challenges differ in nature—stress and handling issues for grasscutters, and disease-related concerns for rabbits.

International Journal of Authentic Agriculture
Volume 2, Number 1, April 2026
ISSN: 2734-2956(Print) 2795-3114(Online)
Published By
International Centre for Integrated Development Research, Nigeria
In collaboration with
Copperstone University, Luanshya, Zambia

Table 3: Similarities between Grasscutter and Rabbit Production

Parameter	Similarity
Type of Livestock	Both are micro-livestock suitable for smallholder production
Feeding System	Both consume grasses, vegetables, and concentrate supplements
Housing Requirement	Both require dry, ventilated, predator-proof housing
Breeding System	Both use controlled mating systems
Purpose	Meat production for commercial or household use
Production Efficiency	Both have high feed-to-meat conversion efficiency
Waste Management	Droppings can be used as organic fertilizer

Source: Adapted from multiple sources.

Table 3 illustrates the core similarities between grasscutter and rabbit production systems. Both species qualify as micro-livestock, meaning they require relatively low space, feed, and financial investment compared with larger livestock species. This makes them particularly attractive for households with limited land or capital resources. As noted by Adeoye *et al*. (2021), micro-livestock systems provide sustainable opportunities for income diversification and protein availability.

Feeding similarities also exist, as both species consume grasses, vegetables, and supplementary concentrate feeds. Their diets are dependent on readily available local forage, reducing feed costs when compared with poultry or ruminants (Amusan & Oduntan, 2022). Farmers can integrate household food waste and farm by-products into feeding programs, improving the circularity and sustainability of production.

Housing requirements similarly emphasize ventilation, dryness, and predator protection. Both species perform best in environments with controlled temperature, adequate light, and cleanliness. Poor housing design can lead to stress, disease outbreaks, or escape attempts (Oladele *et al*., 2021).

Reproductive management also shares common principles. Both grasscutters and rabbits require controlled mating, careful record-keeping, and structured breeding ratios to maintain flock performance. Furthermore, the droppings of both animals can be used as organic fertilizer, making them valuable for integrated crop–livestock systems. Therefore, Table 3 confirms that despite their numerous differences, grasscutter and rabbit systems share foundational husbandry requirements that promote sustainability, low environmental impact, and suitability for smallholder production systems.

International Journal of Authentic Agriculture
Volume 2, Number 1, April 2026
ISSN: 2734-2956(Print) 2795-3114(Online)
Published By
International Centre for Integrated Development Research, Nigeria
In collaboration with
Copperstone University, Luanshya, Zambia

CONCLUSION

Grasscutter and rabbit production represent important micro-livestock systems with substantial potential to enhance food security, nutritional intake, and income diversification among smallholder farmers in Africa. This study compared the maintenance requirements, challenges, and similarities between both species using empirical literature and structured analytical tables. The findings reveal that grasscutter farming, although profitable, requires higher capital investment, specialized handling skills, and structured breeding management. Rabbits, by contrast, are easier to handle and reproduce faster but are more susceptible to disease outbreaks, requiring strong biosecurity and sanitation protocols.

The comparative tables developed in this study clarify the strengths and limitations of each production system. Grasscutters excel in disease resistance and meat value but face challenges related to captivity stress and feed seasonality. Rabbits offer rapid turnover but demand strict hygiene due to disease vulnerability. However, both species share common features such as micro-livestock classification, simple feeding models, and the ability to fit well within integrated farming systems.

The study concludes that species selection should be based on the farmer's resource availability, technical capacity, and market focus. Improved extension support, targeted training programs, and investment in micro-livestock research are essential to maximize the contribution of these species to rural livelihoods and national food systems. Strengthening both sectors will require multisector collaboration among farmers, researchers, policymakers, and private investors to ensure sustainable and profitable production systems.

RECOMMENDATIONS

In light of the comparative review, this study recommends the following:

1. Strengthen extension training on grasscutter handling, breeding management, and rabbit disease control to improve farmer expertise.
2. Promote forage conservation techniques such as hay and silage production to address feed seasonality in grasscutter systems.
3. Develop affordable reinforced housing models to support safe and effective grasscutter production.
4. Enhance biosecurity protocols in rabbit farms to reduce mortality associated with coccidiosis and respiratory illnesses.
5. Support market development initiatives that improve the value chain for both grasscutter and rabbit meat.
6. Encourage integrated crop–livestock systems so farmers can utilize droppings as organic fertilizer.

REFERENCES

Addo, P. G., Awotwi, E. K. & Ofori, E. (2019). Improving Grasscutter Production through Enhanced Breeding and Housing Management. *Journal of Animal Science Research*, 9(2), 45–53.

Adeoye, A. S., Ojo, O. M. & Ajayi, O. (2021). Micro-livestock Production as a Pathway to Food Security in Nigeria: A review of potentials and constraints. *Nigerian Journal of Animal Production*, 48(1), 112–124.

Akinola L. A. F., Etela I. and Emiero S. R. (2015). Grasscutter (*Thryonomys swinderianus*) Production in West Africa: Prospects, Challenges and Role in Disease Transmission. *American Journal of Experimental Agriculture* 6(4): 196-207. DOI: 10.9734/AJEA/2015/14194

Amusan, F. O. & Oduntan, A. O. (2022). Feed management strategies for sustainable grasscutter production in West Africa. *Tropical Animal Health and Production*, 54, 362.

Asiedu, V., Acheampong, L. & Ababio, F. (2020). Profitability and constraints of grasscutter farming in Ghana. *International Journal of Livestock Research*, 10(7), 56–65.

Ghosh, N., Rani, P. & Singh, A. (2022). Growth performance and economic viability of backyard rabbit farming: Implications for smallholder livelihoods. *Small Ruminant Research*, 212, Article 106689.

Ikusika, O. O. R., Akinbode, R. M. & Adekunle, A. (2021). Prevalence of diseases in domestic rabbits: A review of risk factors and management approaches. *Veterinary Research International*, 9(4), 223–235.

Jatto, N. A. & Jibril, A. (2020). Household participation in micro-livestock enterprises in Nigeria. *Journal of Agricultural Extension*, 24(3), 80–90.

Oladele, O. I., Adeyemi, A. A. & Arowolo, R. O. (2021). Determinants of rabbit production practices among urban farmers. *Livestock Research for Rural Development*, 33(9), 162.

Onyimonyi, A. E. & Ugwu, S. O. (2019). Nutritional value of rabbit meat and its role in combating protein deficiency. *Journal of Food Science and Nutrition*, 7(3), 88–96.