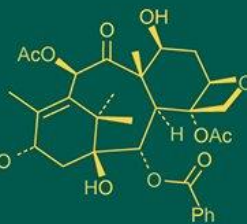
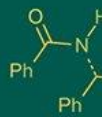


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Productive performance of Gramapriya chickens under backyard production system in the hill ecosystem of Tamenglong district of Manipur

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Abstract

The present study was conducted to evaluate the production performance of improved bird Gramapriya and indigenous chicken under field condition in backyard system of rearing. Backyard poultry production is a vital component of rural livelihood systems in the hill regions of Northeast India. Backyard poultry is one of the age old, handy and promising enterprises to improve the socio-economic status of farmers in rural areas with low-cost initial investment and high economic return along with, it also help in alleviation of malnutrition and empowerment of rural women. The present study evaluated the production performance of Gramapriya and indigenous chickens reared under backyard conditions in Tamenglong district of Manipur. Growth performance, feed efficiency, survivability, age at sexual maturity, and egg production were recorded under field conditions. Gramapriya birds exhibited significantly higher ($p < 0.05$) body weights at all growth stages compared to indigenous chickens. At 16 weeks, Gramapriya attained body weights of 1463.75g whereas indigenous chickens recorded 1197.28g. Feed conversion ratio was superior in Gramapriya (2.23-2.37) compared to indigenous birds (2.67-2.85). Survivability was higher in Gramapriya (86.4%) than indigenous chickens (78.2%). Age at sexual maturity was earlier in Gramapriya (179 days) compared to indigenous birds (210) days. Annual egg production was 151 eggs in Gramapriya and 72 eggs in indigenous chickens. The study confirms the superiority of Gramapriya under backyard systems and its suitability for rural poultry development.

Keywords: Backyard poultry, Gramapriya, indigenous chicken, growth performance, egg

Introduction

Backyard poultry farming plays a crucial role in nutritional security and supplementary income generation in rural and tribal households. Backyard poultry is one of the age old, handy and promising enterprises to improve the socio-economic status of farmers in rural areas with low-cost initial investment and high economic return along with, it also help in alleviation of malnutrition and empowerment of rural women. Backyard poultry farming is characterized by an indigenous night shelter system, scavenging on the natural feed with scant supplementary feeding, natural incubation and brooding of chicks, low productivity of birds, local marketing, and minimal health care practices (Rathod, 2020) ^[4]. Backyard poultry unit consists of rearing 10-20 birds for household purposes and festivals. Native chicken grows slowly and is widely accepted by the rural people across the country (Rajkumar *et al.*, 2021) ^[5]. Indigenous chickens are well adapted to harsh environmental conditions but are characterized by low growth rate and poor egg production. To enhance productivity under low-input systems, improved dual-purpose strains such as Gramapriya have been introduced.

Gramapriya chickens are known for better growth, higher egg production, and adaptability to scavenging conditions. Tamenglong district of Manipur, with its hilly terrain and traditional poultry practices, provides a suitable environment for evaluating the performance of such improved strains. The present study was undertaken to compare the production performance of Gramapriya and indigenous chickens under backyard conditions. Gramapriya is a cross breed, produced by breeding the Rhode Island and the Plymouth Rock. Gramapriya is a multicolored egg purpose chicken variety developed at Directorate of Poultry Research, Hyderabad, for free range and rural backyard rearing. This bird lays more number of eggs than native chickens and eggs are tinted brown in colour and heavier than native chicken

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eggs. Gramapriya has both a laying hen and a broiler property. Backyard poultry farming plays a crucial role in nutritional security and supplementary income generation in rural and tribal households. Backyard poultry farming is characterized by an indigenous night shelter system, scavenging on the natural feed with scant supplementary feeding, natural incubation and brooding of chicks, low productivity of birds, local marketing, and minimal health care practices (Rathod, 2020) [4]. Backyard poultry unit consists of rearing 10-20 birds for household purposes and festivals. Native chicken grows slowly and is widely accepted by the rural people across the country (Rajkumar *et al.*, 2021) [5]. Indigenous chickens are well adapted to harsh environmental conditions but are characterized by low growth rate and poor egg production. To enhance productivity under low-input systems, improved dual-purpose strains such as Gramapriya have been introduced. Gramapriya chickens are known for better growth, higher egg production, and adaptability to scavenging conditions. Tamenglong district of Manipur, with its hilly terrain and traditional poultry practices, provides a suitable environment for evaluating the performance of such improved strains. The present study was undertaken to compare the production performance of Gramapriya and indigenous chickens under backyard conditions.

Materials and Methods

The performance of Gramapriya as a layer variety for rural/tribal areas, was evaluated and compared with local desi bird under free-range conditions. This trial was conducted in Tupul, Likhambi, Namkaolong and Marangching village of Tamenglong district under OFT programme during the year 2018 to 2019 to study the growth and reproductive performance of Gramapriya birds and native birds in backyard system of rearing. Two hundred (200) numbers of DOC birds were distributed to two farmer's groups in different villages of Tamenglong district. Each group consists of 5 farmers and each farmer was supplied with 20 numbers of improved varieties of chicks. Group I was reared with (Gramapriya), Group II with native chicken as control. Birds were maintained under semi-scavenging systems in farmer households. The farmers were selected based on

keeping a native chicken of 10-15 in the backyard. During brooding, chicks were provided with ad libitum starter feed and clean drinking water. All the chicks were vaccinated against Ranikhet disease as per the vaccination schedule. After brooding, the chicks were rear in the backyard and continued feeding starter feed until they were able to feed from the backyard. The native chicks brooded under natural brooding.

Management

Rearing of Gramapriya chickens under a backyard production system in the hill ecosystem of Tamenglong District, Manipur, is highly profitable due to their resilience, moderate body weight (which helps them escape predators like eagles or wild cats), and high egg-laying capacity (180-220 eggs/year). To optimize their productive performance in a hilly terrain, a semi-intensive approach combining early nursery care, daytime scavenging, and strategic evening supplementation yields the best results.

Methods of Data Collection:

The data was collected from farmer's house of the selected villages. Parameters on different Body weight, Age at sexual maturity, Egg production and egg weight, Feed conversion ratio (FCR), Survivability (%) were recorded.

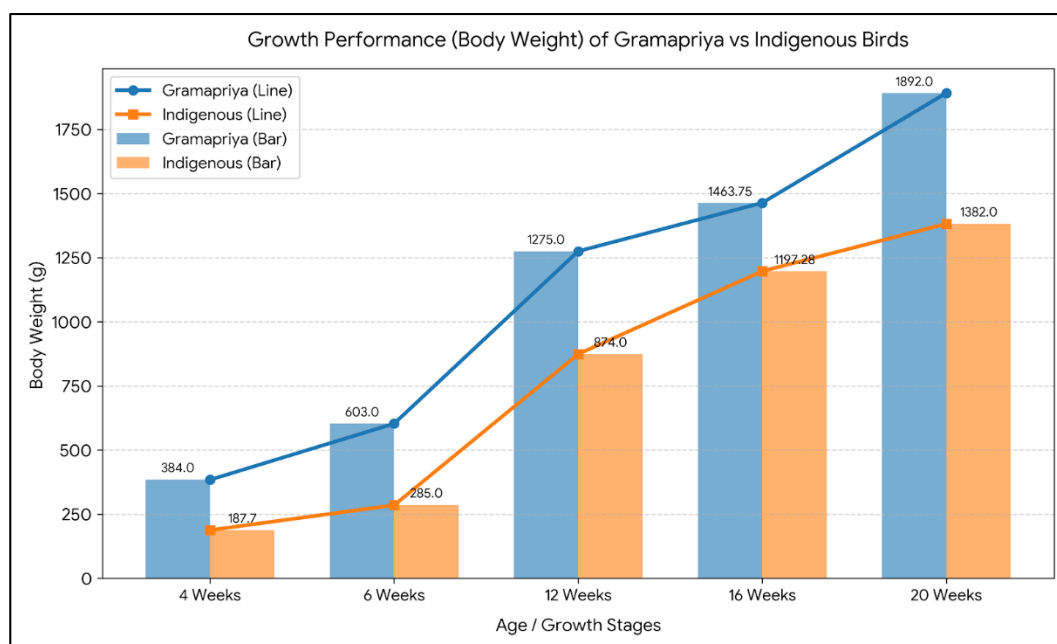
Results and Discussion

Growth performance

Gramapriya chickens showed significantly higher body weight at all ages compared to indigenous chickens.

Performance parameters of Gramapriya birds and indigenous birds

Parameters	Gramapriya	Indigenous
Body weight (g)		
At 4 weeks	384 ± 52	187.7 ± 45
At 6 weeks	603 ± 85	285 ± 91
At 12 weeks	1275 ± 24	874 ± 52
At 16 weeks	1463.75	1197.28
At 20 weeks	1892 ± 27	1382 ± 57
Average age at sexual maturity(days)	179	210
Egg weight at 40 weeks (g)	53	42
Avg. annual egg production (no.)	151	69
Survivability (%) up to 6 weeks	97	92



Survivability

Survivability was higher in Gramapriya (93.4%) than indigenous chickens (87.2%), reflecting better adaptability and disease resistance under village conditions.

Sexual maturity

Gramapriya birds attained sexual maturity earlier (179 days) compared to indigenous chickens (190-210 days), resulting in earlier egg production.

Egg production

Annual egg production was significantly higher in Gramapriya (151 eggs) compared to indigenous chickens (69 eggs), with higher egg weight (53 g vs. 42 g).

Result and Discussions

Gramapriya chickens demonstrated superior performance over indigenous chickens under backyard production systems in Tamenglong district. Their higher growth rate, better feed efficiency, improved survivability, earlier maturity, and greater egg production make them highly suitable for rural poultry development programs in hill ecosystems. The higher growth rate in Gramapriya is attributed to its improved genetic character accretion. In the undulating terrain of Tamenglong, where standard commercial broiler production is restricted by terrain and feed transport costs, the rapid biomass accumulation of Gramapriya presents a highly viable, climate-resilient alternative for meat security. Improved varieties often suffer high mortality in tribal pockets due to harsh weather and a lack of intensive biosecurity. However, Gramapriya's multi-colored plumage provides natural camouflage against predators (like birds of prey), and its strong immune system protects it against common local pathogens. When combined with basic health interventions (such as timely Ranikhet disease vaccination), its survivability ensures low economic risk for backyard poultry adopters.

Conclusion

The introduction of Gramapriya chickens into the backyard farming systems of Tamenglong district bridges the gap between low-yielding traditional poultry and high-input commercial farming. Their superiority across all primary economic traits without requiring sophisticated housing or expensive commercial feeds underlines their potential to alleviate rural poverty, combat protein malnutrition, and drive sustainable rural poultry development in the fragile hill ecosystems of Northeast India.

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