

Performance of Two Strains of Chicken Raised Under Different Production System

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Abstract: Dual purpose chickens like hubbard and Kabir has been used in the country because of its comparable performance and quality to the native chicken, these birds can be readily ranged in open areas to forage and source out available food thus suited to the country's climatic condition. The study determined the performance of two strain of chicken raised under different production system. A total of seventy-two-day old chicks were arranged following a Completely Randomized Design where thirty-six of which are Hubbard colored broiler chicken and the remaining were those of the Kabir chicken. After twenty-five days of brooding, they were initially weighed and randomly distributed to the four treatments which includes T1- Kabir in intensive system, T2- Kabir in a free range system, T3- Hubbard broiler in an intensive system, T4- Hubbard broiler in an intensive system. Each treatment was replicated three times where six birds are allocated per replication. After 60 days of rearing, production performance of the experimental bird was recorded. Statistical analysis showed a highly significant ($P < 0.01$) differences on the final weight, body weight gain, average daily gain and feed efficiency of the two strains raised under different production system. This implies that the two strains of chicken raised under different production system greatly affect the over-all production performance of the experimental birds.

Keywords: dual purpose, hubbard, kabir, free-range, colored broiler

INTRODUCTION

Concern on climate change has brought to the fore the potentials of domesticated animals as an alternative livelihood for small-scale farmers even to produce commercially, and a source of specialty products for niche markets. Having been subjected to a long process of natural and even artificial selection, improved strains of chicken which are like the native ones are recognized for their tolerance to higher environmental temperature and stressors. They can survive and reproduce under natural environments with minimal management and can grow and reproduce well with locally available feed otherwise considered as agricultural wastes and forages.

Current trends in animal production and consumer preference have changed significantly over the past years, from flocks fed-on farm diets to specialized industrial production system to raising of animals under free ranging system under natural environments, with our country not exempted from this trend. It is a reality that people prefer naturally grown chickens as compared to those under commercial setting. Free ranging ways of raising chicken is preferred and are given importance by many consumers specially those who are health conscious and has consumer preference for meat with unique and natural flavor, this also allows producers access to niche markets.

Free range poultry production features the system where chickens have free and unlimited access to fresh available forage and other vegetations in the area and the use of non- synthetic or medicated feeds. The conventionalized way of raising chicken in big and or integrated companies have a routine medication in feeds, thus one of many reasons why consumer may prefer free range products. Thus, the study is conducted to evaluate and compare the production performance of these two strains of chicken in a range system fed with commercial ration supplemented with available pasture grasses, worms, and insects to that in an intensive system where birds are confined protected from adverse environmental conditions and fed solely with commercial feed ration.

Experimental Treatment, Design and Animals

The treatment used in the study were the following: T1-Kabir strain in an intensive system, T2- Kabir strain in a free-range system, T3 – Hubbard colored broiler in an intensive system, T4- Hubbard colored broiler in a free-range system. Each treatment was replicated three time where six birds were allocated for each replication. A total of 72-day old chicks were arranged following a Completely Randomized Design (CRD) where 36 of these birds are Kabir and the remaining were those of the hubbard colored broiler chicks.

Day old chicks were subjected to brooding period for 25 days before exposing to different treatment. Half of the birds were housed inside the conventional pens while the other half was placed in the free-range area. A ranging net was placed around the free-range area for the experimental birds to roam around and to prevent stray animals from going in. A shed was also provided for the chicken to stay at night or during heavy rains.

An approximately 80m² ranging area was thoroughly prepared with two paddocks established corresponding to the number of treatments for thirty-six birds. The other group of birds were raised intensively in pens all throughout the study period. Cages made of wire mesh were used which can accommodate 6 birds/cage giving a space allowance of 1.0 square foot per bird. Feeds and water were always provided including strict sanitation was observed to prevent the entry of possible infection to the birds.

RESULTS AND DISCUSSION

Initial weight

The initial weight of the birds was taken 25 days after brooding. Considering that the initial weight was taken at 25 days, the ability of specific strain like the Hubbard colored broiler performed better than Kabir, gaining heavier weights at this age. This also indicates that Hubbard colored broiler gain weight faster than that of Kabir irrespective of the rearing system.

Final weight

Hubbard Colored Broiler that was raised intensively had the heaviest average final weight of 2178.33g, as compared with those of the same strain of chicken under free range system with a mean of 1861.67g. Kabir raised under intensive system had a final mean weight of 1610g while the lowest was in T2 (Kabir in free range) with a mean final weight of 1451.67g (Table 1). These differences were highly significant which implies that the two strains of chicken are affected by the different production system used in the study. The performance of the Hubbard-colored broilers in this study even exceeded its reported record where at 56-60 days feeding with commercial ration final weights were 1500-1800g (Fernando 2011).

Body weight gain

Hubbard colored broilers are bred for faster gain; thus it is expected that they will perform better whether under complete confinement or free ranging system (Fernando 2011). Kabir on the other hand is an indigenous breed from Israel bred for dual purposes (Meat and Egg) and performing less to that of the colored broiler. Hubbard chicken that were raised intensively (T3) obtained the highest body weight gain of 1678.33g

Average Daily gain

Considering the average daily gain values which derived from the total weight gain and that the same feeding period was implemented, therefore highly and significant differences were still observed in the ADG of the chickens in the four treatment groups. Hubbard colored chickens in intensive system (T3- 47.95) registered heavier in ADG as compared to those in (T4- 38.62). Kabir in intensive system was slightly heavier (T1- 31.75) than that of free range (T2- 27.32).

Feed Efficiency

Feed Efficiency indicates the ability of the birds to convert a kilogram of feeds to a kilogram of weight. The lesser the value, the more efficient are the birds. Highly significant differences were observed in the feed efficiency of the two strains of chicken raised under different production system. Chickens under (T3- 1360) are the most efficient feed converter. The result of the study coincides with (Cheng, 2018) that chickens in a cage free rearing has a better feed efficiency which encourage foraging behavior and promote appetite.

TREATMENT	Initial weight (g)	Final Weight (g)	Body Weight Gain (g)	Average Daily Gain (g)	Average Feed Intake (g)	Feed Efficiency (g)
1- Kabir in intensive System	498.67	1610.00	1111.33	31.75	608.32	1640
2- Kabir in free range System	495.50	1451.67	956.17	27.32	603.85	1890
3- Hubbard in Intensive System	500.00	2178.33	1678.33	47.95	765.18	1360
4- Hubbard in free range system	510.00	1861.67	1351.67	38.62	688.08	1520
F test	ns	**	**	**	**	**
CV%	1.45%	3.67%	5.17%	5.16%	1.06%	4.91%

Table 1. Production performance of two strains of chicken (*Gallus domesticus*) raised under different production system

Conclusion

After 60 days of rearing, production performance of experimental birds was recorded. Statistical analysis showed a highly significant ($P < 0.01$) differences on final weight, body weight gain, average daily gain, and feed efficiency of the birds being studied. This implies that the two strains of dual-purpose chicken raised under different production system greatly affect the all over production performance of the experimental birds. Based on the above findings, the following are hereby recommended, Hubbard colored broiler is highly recommended because of their better growth whether under intensive system or under free range. The high cost of commercial feeds might be a good avenue of utilizing locally available feedstuffs and proves a good follow up study utilizing the Hubbard broiler as experimental animal and serve as additional income for the farmers who are interested in meat production.

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