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SHORT COMMUNICATION

BODY WEIGHT OF DIFFERENT BREEDS OF RABBITS REARED IN TROPICAL ENVIRONMENT

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Abstract

The study was conducted to determine the effects of breed on body weight and body weight gain of rabbit. Thirty six rabbits 12 per breed were randomly assigned to three treatments (breeds). The rabbits were housed in wooden hutches inside a well-ventilated pen. They were caged individually based on breed type (New Zealand White, Chinchilla and Dutch) and were provided with commercial feed while clean drinking water was provided *ad-libitum*. The rabbits were allowed to acclimatize for 3 weeks before the commencement of measurements of parameters. Data were collected on body weight and body weight gain. Data collected were analyzed using one-way analysis of variance in SPSS version 21. The results revealed that breed had no significant effect ($P>0.05$) on body weight and body weight gain of the three breeds of rabbits. Meanwhile, values of body weight varied from 678.57 ± 15.85 g for Chinchilla breed, 683.57 ± 27.61 for New Zealand and 701.43 ± 15.85 Dutch breed while, that of the body weight gain were 32.14 ± 11.41 g, 32.38 ± 4.52 g and 51.67 ± 15.51 g in (New Zealand White, Chinchilla and Dutch breed), respectively. From these findings, it could be concluded that any of the rabbit breed, could be used for meat production.

Keywords: Body weight, Chinchilla, Dutch, New Zealand, rabbit meat

Introduction

Rabbits are one of the most widely kept livestock species globally, with over 70 breeds developed for various purposes such as meat, fur, and pelt production (FAO, 2017). The growth performance of rabbits is a critical factor in determining their productivity and efficiency, and it is influenced by various genetic and environmental factors, including breed (NRC, 1972). Breed is a significant factor affecting growth performance in rabbits, as different breeds have been developed for specific purposes and have distinct genetic characteristics (Hansen, 2013). For instance, New Zealand White rabbits are known for their fast growth rate and high feed efficiency, making them suitable for commercial meat production (Lebas, 2012). Growth performance in rabbits is a complex trait that is influenced by multiple genetic and environmental factors, including nutrition, health, and management practices (Lebas, 2012). Breed is a major factor that determines the growth potential of rabbits, and understanding the effect of breed on growth performance is essential for improving productivity and efficiency in rabbit production (Lukefahr, 1996). Therefore, understanding the effect of breed on growth performance is crucial for improving productivity and efficiency in rabbit production. The objective of the study was to investigate the effect of breed on body weight and body weight gain in rabbits.

Materials and Methods

The experiment was conducted in the livestock teaching and research farm, Animal Science Department, Faculty of Agriculture Shabu-Lafia Campus. The design of the experiment was completely randomized design. A total of 36 weaned rabbits (6 weeks old), 12 from each breed (New Zealand white, Chinchilla, and Dutch) were randomly allocated to hutches according to breed. Each breed serve as treatments and the 12 rabbits were subdivided into three sub-groups (replicates) with 4 rabbits per replicates. To be sure of the breed purity, the rabbits were purposively purchased from National Veterinary Research Institute (NVRI) Vom, Plateau State of Nigeria. Wooden hutches were used to house the rabbit inside a well ventilated building. Before the arrival of the rabbits, the hutches were thoroughly washed, disinfected and allowed to dry for days. On arrival, the rabbits were administered anti stress vitlylate through drinking water. The rabbits were caged based on breed in clearly marked hutches and were provided with weighed amount of commercial feed while clean drinking water was provided *ad libitum*. The rabbits were allowed to acclimatize in the rabbitry unit for 3 weeks before the commencement of measurements of parameters which was taken every week for 6 weeks.

Data Collection

Body Weight: The body weight of rabbits were determined on weekly basis using sensitive electronic weighing scale. The body weight was calculated using the following formula according to Omar and Salwa (2015).

Average Body weight = Actual body weight (g) at a particular week divided by seven days.

Body Weight Gain: Average daily gains were estimated using the formula according to Omar and Salwa (2015).

$$\text{Body weight gain} = \frac{W_2 - W_1}{N}$$

Where W_2 is the present weight, W_1 is the initial weight and N is the number of days taken from initial weight to the present weight.

Date Analysis

Data collected on body weight and body weight gain were analyzed using analysis of variance of the SPSS statistical software version 21 to test the effect of breed. Significant differences in the mean values were separated using Duncan's Multiple Range Test at a probability level of 0.05.

Results

The effect of breed on body weight of rabbit is expressed in Table 1. It indicated that breed had no significant ($P>0.05$) effects on body weight of rabbits. Meanwhile, it was 678.57 ± 15.85 g for Chinchilla breed, 683.57 ± 27.61 for New Zealand and 701.43 ± 15.85 Dutch breed.

Similarly, effects of breed on body weight gain of rabbit as presented in Table 2, showed that throughout the study, breed had no significant ($P>0.05$) effects on body weight gain of rabbits. Meanwhile, it was 32.14 ± 11.41 g, 32.38 ± 4.52 g and 51.67 ± 15.51 g for New Zealand White, Chinchilla and Dutch breed, respectively.

Table1: Effect of Breed on Body Weight of Rabbit

Week	Body Weight (g)			P-Value
	T ₁	T ₂	T ₃	
Week 1	500.00±18.95	505.48±37.23	496.43±26.08	0.975
Week 2	532.14±29.09	530.83±42.81	533.81±43.81	0.999
Week 3	577.36±43.53	594.76±18.71	599.52±33.26	0.887
Week 4	623.33±19.22	615.14±23.08	623.33±39.05	0.973
Week 5	651.43±30.16	646.19±31.82	649.76±30.96	0.993
Week 6	683.57±29.92	678.57±27.61	701.43±15.85	0.804

T₁= New Zealand breed, T₂= Chinchilla breed, T₃= Dutch breed

Table 2: Effect of Breed on Body Weight Gain of Rabbit

Week	Body Weight Gain (g)			P-Value
	T ₁	T ₂	T ₃	
Week 1	74.29±14.91	79.76±32.17	61.19±23.46	0.863
Week 2	32.14±10.21	25.36±5.89	37.38±19.96	0.822
Week 3	45.21±21.07	63.93±25.24	65.71±19.30	0.775
Week 4	45.98±27.07	20.38±6.19	23.82±6.01	0.526
Week 5	28.10±11.36	31.05±10.85	26.43±9.59	0.953
Week 6	32.14±11.41	32.38±4.52	51.67±15.51	0.435

T₁= New Zealand Breed, T₂= Chinchilla, T₃= Dutch Breed

Discussion

Body weight measurement showed no significant differences across the three breeds of rabbits. The values obtained for body weight in this study strongly agreed with the range of 400g to 700g as reported by Xiccato *et al.* (2015). However, this result is in contrast with the findings of Omar and Salwa (2015) who observed significant breed effects on body weight among rabbits raised under varying protein levels. The observation was attributed to breed-specific genetic factors affecting growth, suggesting that

environmental variations can amplify genetic influences, which might not have been a factor in the current study.

Body weight gain of rabbit showed no statistical significant differences among the three breeds of rabbits throughout the study period. The values obtained for body weight gain in this study agreed with the range of 30g to 70g reported by Szczerbal (2017) and concluded that dietary quality and environmental stability are critical to achieving optimal weight gain. This assertion agreed with the current findings of non-significant breed effects in a controlled environment. Attia and Al-Harthi (2017) reported that specific breeds demonstrated higher growth rates, particularly under free-range or semi-intensive systems, where genetic potential for growth may be more pronounced. Attia and Al-Harthi (2017) observed that New Zealand White rabbits often out-performed other breeds in weight gain, due to their selective breeding for meat production. The lack of a significant difference in this study could reflect the standardized management and environmental conditions applied equally across all breeds, which might have minimized the expression of breed-specific growth traits.

Conclusion

The results obtained from this study showed that, breed had no significant effect on body weight and body weight gain of rabbits thus, breeds studied may excellently perform well. Consequently, farmers may focus on optimizing management practices, such as diet, housing, and regular health monitoring, to enhance overall growth performance.

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