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EFFECT OF FEEDING REGIMEN ON GROWTH PERFORMANCE, CARCASS ATTRIBUTES AND ECONOMIC OF PRODUCTION OF GROWING RABBITS

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ABSTRACT
This experiment examined the effect of feed regimen on growth performance, carcass attributes and economic of production of growing rabbits. Thirty (30) rabbits of mixed sexes were randomly assigned to five treatment units and replicated six times. The treatments were based on period of feed restriction for 2, 4, 6 and 8 weeks. The rabbits that were fed ad libitum served as the control. There was no significant difference in the growth performance and carcass attributes across the treatment units. Feed efficiency was however best in rabbits with longer period (8 weeks) of feed restriction. The result also revealed that the cost per kilogram of rabbits produced was significantly reduced with increased level of feed restriction. It could therefore be concluded that feed restriction can be adopted for growing rabbits without adverse effect on growth performance and carcass attributes. The strategy could also be key to improving feed utilization efficiency and reduction in cost of rabbit production.

Keywords: carcass, feed regimen, growth, rabbit, utilization

INTRODUCTION
Feed constitutes the main cost in rabbit production (Yakubu et al., 2007) and it is therefore important to consider alternative feeding strategies that will guarantee reduction in cost without any adverse effect on growth performance and carcass quality. Feed restriction can be employed for growing rabbits from one to three weeks after weaning and at different levels (Di Meo et al.,2007) with the possibility of increasing feed efficiency and nutrient digestibility (Tumova et al., 2002). Early feed restriction has also been reported to address issues like increased body fat deposition, metabolic disorders and high mortality that is associated with rabbit development at the early stage of life (Urbaneta-Rincon and Leeson, 2002). The digestive disorders are the main cause of mortality and morbidity in growing rabbits and consequently resulting in great economic loses (Eiben et. al., 2001). It is therefore the aim of this study to examine the effect of feed regimen on the growth performance, carcass attributes and economic of production or rabbits.

MATERIALS AND METHODS
The experiment was conducted at the Rabbit Unit of the Teaching and Research Farm (TRF), Adeyemi College of Education, Ondo, Ondo state.

Experimental unit and housing
Afad commercial rabbit feed were purchased from Ibadan, Oyo state. The rabbits were housed in a large wooden wire-mesh cages that is further divided into 30 separate mini cages that can accommodate a rabbit each. The hutch was constructed in such a way that feaces and urine can easily drop on the floor. The pen was roofed with corrugated iron sheet and adequately ventilated.

Management of experimental animals
The rabbits were allowed a period of acclimatization and managed under intensive system with appropriate vaccination and medication. The initial weight of the rabbits were taken before assigning them into experimental units. The feeders and drinkers were cleaned daily and water was made available at all time during the period of experimentation

Experimental design

Completely randomized design was adopted for the study. Thirty (30) weaner rabbits of mixed sexes with an average weight of 0.83kg were assigned to five experimental units and replicated six times. The treatments include: T1/control (fed ad-libitum), T2 (fed 6 hours for the first 14 days and then ad-libitum for the remaining days) T3 (6 hours of feeding for the first 28 days and *ad-libitum* for the remaining period of experiment); T4 (6 hours of feeding for 42 days and ad-libitum for the remaining period of experiment) and T5 (6 hours of feeding for the 56 days of experimentation)

Data collection and analysis

Data were collected on feed intake, body weight, feed conversion efficiency, weights of primal and external parts and internal offal. Data were subjected to analysis of variance (ANOVA) and means were separated using the Statistical Package for Social Science (SPSS) version 20.

Results and Discussion

Table 1: Effect of feeding regimen on growth performance and economic of production of growing rabbits

Parameters	**Treatments**					
	Control	14days	28days	42days	56days	SEM
Initial weight(kg)	0.84	0.99	0.83	0.77	0.69	0.52
Final weight (kg)	1.88	2.09	1.9425	1.7987	1.95	0.60
Total weight gain (g)	1046.25	1100.00	1107.50	1026.25	1257.50	41.51
Weekly weight gain (g)	130.78	137.50	138.43	128.28	157.19	5.19
Daily weight gain (g)	18.68	19.64	19.78	18.33	22.45	0.74
Total feed consumed (g)	7285.50^{b}	7083.25^{b}	7272.75^{b}	6386.75^{ab}	5803.25^{a}	184.09
Weekly feed consumed (g)	910.69^{b}	885.40^{b}	909.09^{b}	803.34^{ab}	725.41^{a}	23.08
Daily feed consumed (g)	125.89	126.29	243.93	114.76	103.62	22.76
Feed gain ratio	7.09^{b}	6.59^{b}	6.77^{b}	6.23^{b}	4.66^{a}	0.27
Feed efficiency	0.1425^{a}	0.15^{ab}	0.12^{a}	0.16^{ab}	0.22^{b}	0.01
Price per kg of feed (N)	200.00	200.00	200.00	200.00	200.00	200.00
Cost of feed/rabbit (N)	1419.15	1318.35	1354.20	11255.55	933.50	55.84

$^{a-b}$ *Means in the same row with different superscripts are significantly different ($p < 0.05$)*

The result revealed that the body weight (final, weekly and daily) of the rabbits were not significantly ($P<0.05$) affected among the five treatments. Though, the feed intake by rabbits on *ad libitu*m feeding was highest. This is in agreement with the result of Gidenne et.al. (2009) who reported feed intake declination with longer period of restriction. However, feed efficiency was significantly ($P<0.05$) higher in rabbits with longer restriction period (8 weeks) compared to the control group. This implies that restricted feeding favours effective and efficient utilization of feed. This is also in agreement with the findings of Urdanete-Rincon and Leeson (2002) who reported that feed restriction strategy improved feed efficiency while also reducing incidences of feed related problems.

The result showed that there was no significant ($P<0.05$) difference in live shrunk and dressed carcass weight of rabbit placed on feed restriction when compared with those fed ad libitum. The result is in agreement with the findings of Ferreira and Carregal (2002) and Boisot et al. (2004) who also reported that feed restriction had no effect on dressing percentage of rabbits. The percent of loin, thigh, rib and shoulder of rabbits also showed no significant difference across the treatment groups. There was no significant difference in the liver, kidney, pluck and heart percentages of rabbits placed on restricted feeding program compared with those on ad libitum feeding. There was also no significant difference in intestine full of

content and perirenal fat percentages. Among the carcass attributes, there was significant (P<0.05) difference in stomach percentage of rabbit placed on feed restriction when compared with those on ad libitum feeding

Table 2: Effect of feeding regimen on carcass characteristics of production of growing rabbits

Parameters	**Treatments**					
	Control	14days	28days	42days	56days	SEM
Live shrunk weight (g)	1840	2210	2500	2090	2160	0.09
Dress carcass weight (g)	942.50	1127.50	937.50	1016.00	1016.00	30.54
Thigh (%)	37.11	36.69	37.69	37.69	35.87	0.66
Shoulder (%)	26.39	27.69	27.64	26.49	26.06	0.31
Rib (%)	9.45	9.66	10.97	10.36	10.31	0.25
Loin (%)	21.25	23.19	20.35	20.93	22.43	0.43
Kidney (%)	0.35	0.51	0.49	0.51	0.59	0.03
Liver (%)	2.64	2.47	2.38	2.66	2.97	0.12
Heart (%)	0.21	0.27	0.26	0.26	0.28	0.02
Pluck (%)	0.57	0.64	0.60	0.62	0.65	0.31
Head (%)	9.06	8.61	8.45	8.48	8.95	0.13
Pelt (%)	10.13	9.99	9.39	9.72	9.56	0.16
Stomach (%)	2.56^{a}	3.58^{b}	4.00^{b}	3.39^{a}	3.53^{b}	0.18
Fore limbs (%)	0.66	0.66	0.62	0.67	0.73	0.03
Hind limbs (%)	1.65	1.48	1.53	1.64	1.75	0.07
Intestine (%)	13.47	16.63	17.45	15.13	14.08	0.67
Tail (%)	0.38	0.36	0.41	0.45	0.39	0.03
Stomach length (%)	17.75	17.50	18.00	17.05	16.00	0.32
Stomach width (%)	6.35	12.00	6.00	6.75	6.35	1.08
Perirenal fat (%)	1.28	0.61	0.84	0.76	0.69	0.12

$^{a-b}$ Means in the same row with different superscripts are significantly different ($p < 0.05$)

CONCLUSION AND RECOMMENDATION

It can be concluded that feed restriction schedule of 6 hours daily for up to 8 weeks has no significant effect on growth performance and negative effect on carcass attributes of rabbits when compared with those on control. Increased level of feed restriction however has the potential to reduce the cost per kilogram of rabbit. It is recommended that farmers should key into the practice of feed restriction during the period of scarcity in order to reduce the cost of production.

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