



ISSN Print: 2664-9926
 ISSN Online: 2664-9934
 Impact Factor: RJIF 5.45
 IJBS 2022; 4(1): 224-226
www.biologyjournal.net
 Received: 24-04-2022
 Accepted: 26-05-2022

N Anandan
 Department of Livestock
 Production Management
 Madras Veterinary College,
 Chennai, Tamil Nadu, India

N Kumaravelu
 Department of Livestock
 Production Management
 Madras Veterinary College,
 Chennai, Tamil Nadu, India

R Venkataramanan
 Department of Livestock
 Production Management
 Madras Veterinary College,
 Chennai, Tamil Nadu, India

S Usha
 Department of Livestock
 Production Management
 Madras Veterinary College,
 Chennai, Tamil Nadu, India

C Bandeswaran
 Department of Livestock
 Production Management
 Madras Veterinary College,
 Chennai, Tamil Nadu, India

S Meenakhi Sundaram
 Department of Livestock
 Production Management
 Madras Veterinary College,
 Chennai, Tamil Nadu, India

Corresponding Author:
N Anandan
 Department of Livestock
 Production Management
 Madras Veterinary College,
 Chennai, Tamil Nadu, India

Growth performance of soviet chinchilla rabbits under different feeding regimes

N Anandan, N Kumaravelu, R Venkataramanan, S Usha, C Bandeswaran and S Meenakhi Sundaram

DOI: <https://doi.org/10.33545/26649926.2022.v4.i1c.113>

Abstract

A trial was conducted to assess the performance of Soviet Chinchilla rabbit under different feeding regimes at Livestock Farm Complex, Madhavaram Milk Colony, Chennai-51. Thirty Soviet Chinchilla weaned bunnies of both sex aged around six weeks were randomly selected and divided into three groups namely T₁(Guinea grass + Concentrate), T₂ (Hydroponic Maize + Concentrate) and T₃ (Hydroponic Cowpea +Concentrate). All the trial animals were reared under similar intensive system of management. Statistical analysis revealed that at start of the trial there was no significant difference in body weight between groups, however rabbits fed hydroponic maize had numerically higher body weight than other two groups. The overall weight gain was significantly higher ($p \leq 0.01$) in hydroponic maize fed rabbits followed by hydroponic cowpea and guinea grass fed rabbits. The average daily gain of rabbits highly significant ($p \leq 0.01$) gain in T₂ group followed by T₃ and T₁. It is concluded from this experiment the rabbits fed with hydroponic maize gained significantly ($p \leq 0.01$) higher body weight followed by guinea grass and hydroponic cowpea.

Keywords: Rabbits, Guinea grass, hydroponic maize, hydroponic cowpea, body weight

Introduction

Rabbit rearing is one of the avenues that can give livelihood and food security to our people. Among various categories of meat animals that are augmenting the percapita availability of meat, the main emphasis has been made to the chicken, sheep, goat, cattle and pigs. In this direction broiler rabbit farming is gaining momentum and becoming popular as a meat animal. Rabbits have short generation interval, high prolificacy, good mothering ability, easy management, ability to utilize waste and other unconventional feed sources and ability to thrive well on forage. Rabbit meat is high in protein (22%) low in fat (4%) and cholesterol (5%) and thus possesses health promoting properties [2].

Broiler rabbit production with appropriate technologies can play an important role in scaling up the production traits and thereby economic benefits to the farmer. Quality green fodder is an important input for rabbit production. It is inevitable to produce green fodder by alternative method for feeding livestock including rabbits. Hydroponic fodder production is a boon for farmers whose soil is rocky and infertile. It is viable farmer friendly alternative technology for landless farmers for fodder production [4]. This technology might be very important in regions with limited forage production [5]. The present study will help to understand the benefits of hydroponic fodder and growth performance of Soviet Chinchilla rabbits.

Materials and Methods

The study was carried out at Livestock Farm Complex, Madhavaram Milk colony, TANUVAS, Chennai-51, located between latitudes 12° 9' and 13° 9' N and longitudes 80° 12' 80° 19' E with an altitude of 22m above MSL. The study was conducted for the period of 9 months from April 2021 to December 2021. The total number of thirty Soviet Chinchilla weaned bunnies (comprising of both sex) were selected and divided into three experimental groups namely T₁ (concentrate diet + Guinea grass), T₂ (Concentrate diet + Hydroponic maize) and T₃ (Concentrate diet + Hydroponic cowpea). All the trial animals were reared under similar intensive system of management. Based on the results of proximate analysis of fed and fodders and palatability study of hydroponic maize, hydroponic cow pea and guinea grass, the experimental ration of isocaloric and iso nitrogenous in nature was formulated.

During the study fortnightly body weight, body weight gain and average daily weight gain were recorded to assess the growth performance of rabbits.

Statistical analysis

The statistical analysis was done using Sigmaplot version 11.0 (Systat Software Inc., USA). Data sets were first tested

for normality by Shapiro-Wilk's normality test and analysed by one way analysis of variance (ANOVA) with general linear model (GLM).

Results and Discussion

Body Weight

Table 1: Mean±S.E Fortnight body weight (kg) of rabbits in different feeding regimes

Age (Weeks)	Fortnightly body weight (kg)			P value
	Guinea grass (T1, n=10)	Hydroponic maize (T2, n=10)	Hydroponic cowpea (T3, n=10)	
At start(6)	0.82±0.06	0.70±0.06	0.77±0.07	.401 ^{NS}
6-8	1.09±0.06	0.93±0.07	1.06±0.07	.237 ^{NS}
8-10	1.40±0.07	1.23±0.09	1.32±0.08	.329 ^{NS}
10-12	1.56±0.07	1.45±0.11	1.49±0.10	.707 ^{NS}
12-14	1.73±0.07	1.65±0.11	1.67±0.10	.796 ^{NS}
14-16	1.82±0.07	1.83±0.11	1.77±0.09	.910 ^{NS}
16-18	1.90±0.07	1.94±0.10	1.89±0.09	.923 ^{NS}
18-20	1.98±0.08	2.06±0.10	1.98±0.10	.784 ^{NS}
20-22	2.07±0.08	2.21±0.11	2.06±0.10	.485 ^{NS}
22-24	2.15±0.09	2.37±0.11	2.16±0.10	.237 ^{NS}

NS – Non Significant

Mean ± S.E fortnightly body weight (kg) of rabbits between experimental groups fed guinea grass, hydroponic maize, hydroponic cowpea fodder is given in Table 1. At the start of the trial the body weight (kg) under groups fed Guinea grass (T1), hydroponic maize (T2) and hydroponic cowpea (T3) were 0.82±0.06, 0.70±0.06 and 0.77±0.07 respectively. At the end of the trial 24 weeks the body weight of T1, T2 and T3 group was 2.15±0.09, 2.37±0.11 and 2.16±0.10 kg respectively.

Statistical analysis revealed that at start of the trial there was no significant difference in body weight between groups, however rabbits fed hydroponic maize had numerically

higher body weight than other two groups. The result of the present study was in accordance with [7]. The better body weight observed in rabbits fed with hydroponic maize may be attributed to the enhanced nutritional value of sprouted grain which is due to modification of heterogenous compounds into essential form by minimizing the effect of antinutritional factor while sprouting. Earlier workers have also showed an increase in body weight by feeding different sprouted grain for rabbits [6, 8] and different grass and leguminous forages [9].

Body Weight Gain

Table 2: Mean ± S.E Fortnightly weight gain (g) of rabbits in different feeding regimes

Age (Weeks)	Fortnightly weight gain (g)			p-value
	Guinea grass (T1, n=10)	Hydroponic maize (T2, n=10)	Hydroponic cowpea (T3, n=10)	
6-8	278.20±5.21	236.60±23.39	289.70±15.15	.072 ^{NS}
8-10	307.20±28.45	295.60±24.91	257.30±21.03	.350 ^{NS}
10-12	159.00±30.31	223.10±31.86	177.80±28.12	.318 ^{NS}
12-14	173.70±15.55	194.80±13.42	178.60±11.48	.525 ^{NS}
14-16	86.30 ^b ±10.50	181.70 ^a ±14.90	101.60 ^b ±17.51	.000 ^{**}
16-18	79.20±11.07	112.60±15.56	119.60±18.72	.161 ^{NS}
18-20	82.70±14.12	120.90±26.57	87.00±17.22	.350 ^{NS}
20-22	92.00 ^b ±18.84	152.40 ^a ±17.97	83.00 ^b ±13.69	.015 [*]
22-24	74.80 ^b ±14.59	156.10 ^a ±27.16	96.00 ^{ab} ±20.60	.033 [*]
Overall 6-24	1333.10 ^b ±54.84	1673.80 ^a ±83.82	1390.60 ^b ±62.95	.003 ^{**}

** - Significant at $p < 0.01$; * - Significant at $p < 0.05$; NS – Non Significant

Means with different superscript in the same row are significantly different from each other

Mean ± S.E fortnightly body weight gain of rabbits in experimental groups were given in table 2. The weight gain (g) during first fortnight of the trial under groups fed Guinea grass (T₁), hydroponic maize (T₂) and hydroponic cowpea (T₃) were 278.20±5.21, 236.60±23.39 and 289.70±15.15 respectively which did not differ significantly between groups. The statistical analysis revealed significant difference ($p \leq 0.05$) in treatment groups during 20 to 24 weeks and highly significant ($p \leq 0.01$) difference at 14 to 16 weeks of age. The overall weight gain was significantly higher ($p \leq 0.01$) in hydroponic maize fed rabbits followed by hydroponic cowpea and guinea grass fed rabbits. [7] also

observed similar trend in growth performance of feeding hydroponic maize fodder with replacement of concentrate mixture in New Zealand white rabbits. Sprouted grains are rich in enzymes and enzyme rich feeds are generally alkaline in nature and therefore feeding of hydroponic grain fodder improves animal productivity by developing a stronger immune system due to neutralization of acidic condition. Besides help in the elimination of the antinutritional factors such as phytic acids of grains, hydroponic fodder are good source of chlorophyll that improves the performance of livestock. Earlier findings also support that

the weight gain in rabbits were improved by feeding sprouted grains and leguminous forages ^[1, 3].

Average daily gain

Table 3: Mean \pm S.E Average daily gain of rabbits in different treatment groups

Age (Weeks)	Average daily gain (g/day)			P value
	Guinea grass (T1, n=10)	Hydroponic maize (T2, n=10)	Hydroponic cowpea (T3, n=10)	
6-8	19.87 \pm 0.37	16.90 \pm 1.67	20.69 \pm 1.08	.072 ^{NS}
8-10	21.94 \pm 2.03	21.11 \pm 1.78	18.38 \pm 1.50	.350 ^{NS}
10-12	11.36 \pm 2.17	15.94 \pm 2.28	12.70 \pm 2.01	.318 ^{NS}
12-14	12.41 \pm 1.11	13.91 \pm 0.96	12.76 \pm 0.82	.525 ^{NS}
14-16	6.16 ^b \pm 0.75	12.98 ^a \pm 1.06	7.26 ^b \pm 1.25	.000 ^{**}
16-18	5.66 \pm 0.79	8.04 \pm 1.11	8.54 \pm 1.34	.161 ^{NS}
18-20	5.91 \pm 1.01	8.64 \pm 1.90	6.21 \pm 1.23	.350 ^{NS}
20-22	6.57 ^b \pm 1.35	10.89 ^a \pm 1.28	5.93 ^b \pm 0.98	.015 [*]
22-24	5.34 ^b \pm 1.04	11.15 ^a \pm 1.94	6.86 ^{ab} \pm 1.47	.033 [*]
Overall 6-24	10.58 ^b \pm 0.44	13.28 ^a \pm 0.67	11.04 ^b \pm 0.50	.003 ^{**}

** - Significant at $P < 0.01$; * - Significant at $p < 0.05$; NS – Non Significant

Means with different superscript in the same row are significantly different from each other

Mean \pm S.E fortnightly average daily gain of rabbits fed with experimental diet are presented in table3. Statistical analysis revealed highly significant ($p \leq 0.01$) gain in T₂ followed by T₃ and T₁. The results also comparable with the findings of ^[7].

Conclusion

Among the three treatment groups rabbit fed with hydroponic maize gained significantly ($P \leq 0.01$) higher body weight followed by guinea grass and hydroponic cowpea. Overall weight gain and average daily gain was significantly higher in the rabbit group fed hydroponic maize followed by hydroponic cowpea and guinea grass grown on land. Palatability of hydroponic cowpea by rabbits were comparatively lower than guinea grass and hydroponic maize.

References

1. Abdullahi U, Yusuf HB, Wafar RJ, Mijinyawa A, Abubakar A, Shuaibu US, *et al.* Growth performance, carcass characteristics and internal organ weights of weaner rabbits fed replacement levels of sun-dried soyabean milk residue. Nigerian Journal of Animal Production. 2021;48(3):93-99.
2. Aduku AO, Olukosi JO. Animal products processing and handling in the tropics. 1st Edn, GU publishers, Abuja. 2000, p. 52-117.
3. Jayesh Shesh, Santosh Kumar Jha, Ritesh Kumar Singh, Swati Kunjam. Effect of de-topping and nitrogen levels on yield and nutrients uptake of maize (*Zea mays* L.). Int. J Res. Agron. 2020;3(1):45-48.
4. Bakshi MPS, Wadhwa M, Makkar HPS. Hydroponic fodder production: A critical assessment. Broadening horizons. 2017;48:1-10.
5. Fazaeli H, Golmohammadi HA, Tabatabayee SN, Asghari-Tabrizi M. Productivity and nutritive value of barley green fodder yield in hydroponic system. World Applied Sciences Journal. 2012;16(4):531-539.
6. Fuentes Carmona FF, Poblete Pérez CE, Huerta Pizarro MA. Productive response of rabbits fed with green hydroponic oats forage as partial replacement of commercial concentrate. Acta Agronómica. 2011;60(2):183-189.
7. Jemimah ER, Gnanaraj PPT, Muthuramalingam T, Devi T, Bharathidasan A, Sundaram AS. Growth

performance and economics of feeding hydroponic maize fodder with replacement of concentrate mixture in New Zealand white rabbit kits. J Anim. Health Prod. 2018;6(2):73-76.

8. Mohsen MK, Abdel-Raouf EM, Gaafar HMA, Yousif AM. Nutritional evaluation of sprouted barley grains on agricultural by-products on performance of growing New Zealand white rabbits. Nat. Sci. 2015;13:35-45.
9. Udeh NP, Okeke JJ, Okeke OP, Obudulu C, Okafor KP. Comparative Studies of Growth Performance of Rabbits (*Oryctolagus cuniculus*) Fed on Rabbit Feeds and Diverse Foodstuff in Captivity. Asian Journal of Research in Zoology. 2021, 9-17.
10. Akuru EA, Ani AO, Orji JA, Oyeagu CE, Osita CO, Idamokoro ME, *et al.* Nutrient digestibility, growth, carcass, and bio-marker traits of weaner rabbits fed diets containing graded levels of cowpea (*Vigna unguiculata*) hull meal. Journal of Applied Animal Research. 2021;49(1):39-45.