RESEARCH ARTICLE

Comparative Evaluation of Slaughter Characteristics and Economic Efficiency in Soviet Chinchilla and New Zealand White Rabbits Reared under Organized Farming Conditions

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Abstract

The present investigation was undertaken to compare the slaughter characteristics, carcass composition and economics of two important meat type rabbit breeds, Soviet Chinchilla (SC) and New Zealand White (NZW), reared under identical management conditions in Kattupakkam (Tamil Nadu, India). Rabbits were slaughtered at six weeks of age and data were recorded on live weight, carcass weight, dressing percentage, edible offals, non-edible components, and primal carcass cuts. Soviet Chinchilla rabbits exhibited significantly higher ($p<0.01$) live weight and carcass weight than NZW rabbits, indicating superior growth potential and meat yield. Dressing percentage did not differ significantly between breeds, suggesting comparable carcass conversion efficiency. Most non-carcass components and all major primal cuts, particularly the loin and hind parts, were significantly heavier ($p<0.05$-0.01) in SC rabbits. The findings revealed distinct breed-related differences in carcass traits, indicating that Soviet Chinchilla rabbits may be more suitable for meat-oriented production systems under tropical conditions, while New Zealand White rabbits exhibit satisfactory carcass efficiency and adaptability. The economics analysis suggested that Soviet Chinchilla rabbits are more economically efficient over NZW for meat production under the prevailing feeding and management conditions. The findings provide valuable baseline information for breed selection, genetic improvement, and sustainable rabbit meat production in tropical regions.

Key words: Carcass traits, Economics, New Zealand White, Rabbit meat production, Slaughter characteristics, Soviet Chinchilla.

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Introduction

Rabbit production has gained increasing attention in developing and tropical countries as an efficient and sustainable livestock enterprise owing to rabbits' high reproductive rate, short generation interval, rapid growth rate, efficient feed conversion, and ability to utilize low-cost agricultural by-products (Lebas *et al.,* 1997). In India, rabbit farming is promoted as a subsidiary occupation capable of generating supplementary income and improving nutritional security among small and marginal farmers under diverse agro-climatic conditions (Singh *et al.,* 2004). Among meat rabbit breeds, New Zealand White (NZW) and Soviet Chinchilla (SC) are the most commonly reared under tropical conditions. New Zealand White rabbits are preferred for their adaptability, early maturity, good reproductive efficiency, and consistent performance under intensive management systems (Thiruvenkadan *et al.,* 2011). Soviet Chinchilla rabbits, in contrast, are characterized by larger body size, faster growth rate, and superior carcass yield, which make them particularly suitable for meat-oriented production systems (Kumar *et al.,* 2006; Chellapandian *et al.,* 2012). Rabbit meat is nutritionally superior, being rich in high-quality protein, low in fat and cholesterol, and possessing a favourable fatty acid composition, which makes it particularly suitable for health-conscious consumers and for addressing protein malnutrition in developing regions (Dalle Zotte, 2002). Breed-specific differences in growth and carcass traits are largely influenced by genetic potential, climatic adaptability, and feeding regime, especially under tropical environments.

Slaughter and carcass evaluation studies provide critical information on the true meat production potential of rabbit breeds. Parameters such as live weight, carcass weight, dressing percentage, distribution of edible and non-edible offals and yield of economically important primal cuts are

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essential indicators of carcass quality and economic value (Blasco and Ouhayoun, 1996). Several studies conducted under Indian conditions have reported significant breed effects on carcass traits, particularly on carcass weight and distribution of primal cuts, while dressing percentage tends to remain relatively stable across breeds slaughtered at similar ages (Jagan Mohan *et al*., 2010; Balasubramanyam *et al.,* 2014). Despite the availability of reports on rabbit growth and reproduction, comparative information on slaughter characteristics of Soviet Chinchilla and NZW rabbits under Indian and tropical production systems is limited. Generating such data is essential for informed breed selection, formulation of breeding strategies, and improving the efficiency of rabbit meat production. Therefore, the present study was undertaken to compare the slaughter characteristics, carcass composition and economics of Soviet Chinchilla and NZW rabbits reared under identical management conditions, with the objective of identifying breed-specific advantages relevant to tropical meat production systems.

Materials and Methods

Experimental Animals

The study was conducted at the Rabbit Breeding Unit of the Post Graduate Research Institute in Animal Sciences, Kattupakkam (Tamil Nadu, India). A total of 20 healthy, farm-bred rabbits, Soviet Chinchilla (10 Nos.) and New Zealand White (10 Nos.) were used. All animals were maintained under standard management, feeding, and housing conditions. Rabbits were slaughtered at six weeks of age in accordance with standard humane slaughter procedures.

Slaughter and Carcass Evaluation

Prior to slaughter, live body weight was recorded. After slaughter and evisceration, hot carcass weight was measured, and dressing percentage was calculated as the ratio of carcass weight to live weight. Edible offals (liver, kidney, lungs with heart) and non-edible components (gastrointestinal tract, head, skin) were weighed separately. Carcass was further divided into standard primal cuts, namely ribs and breast, fore part, loin, and hind part, and individual weights were recorded.

Cost of Rearing and Economic Analysis

All rabbits were fed a combination of concentrate feed and green fodder (Desmanthus). Each rabbit received 0.98 kg of concentrate feed and 3.50 kg of Desmanthus fodder over a period of four weeks from two to six weeks of age. The cost of concentrate feed was Rs. 31 per kg, while Desmanthus fodder was valued at Rs. 4 per kg. In addition, feed supplements were provided at a rate of Rs. 5 per rabbit per day for four weeks period from two to six weeks of age.

Labour requirement was calculated based on a unit of 200 rabbits, with a daily labour cost of Rs. 883. Accordingly, labour cost per rabbit per day was estimated at Rs. 4.42, and the total labour cost per rabbit for the six-week rearing period was calculated.

The total cost of rearing per rabbit up to market age (six weeks) included feed cost, fodder cost, labour cost, and feed supplements. Revenue was calculated based on sale price of rabbit meat at Rs. 600 per kg, using actual carcass yield recorded for each breed. Profit per rabbit and profit per ten rabbits were computed by subtracting the total rearing cost from the total revenue.

Statistical Analysis

Data were analysed using SPSS 23 package, and mean values with standard errors were calculated. Differences between breeds were tested using One-way ANOVA, and significance was declared at $p<0.05$ and $p<0.01$.

Results and Discussion

The comparative slaughter and carcass characteristics of Soviet Chinchilla and NZW rabbits (Mean ± SE) are presented in Table 1.

Table 1: Slaughter and carcass characteristics of Soviet Chinchilla (SC) and NZW rabbits (Mean ± SE)

Parameters	SC	NZW	F-value
Live weight (kg)	2.09 ± 0.05	1.75 ± 0.02	39.31**
Carcass weight (kg)	1.20 ± 0.03	0.99 ± 0.03	24.11**
Dressing percentage (%)	57.17 ± 0.41	56.42 ± 1.51	0.23 NS
Liver (kg)	0.05 ± 0.00	0.05 ± 0.00	2.14 NS
Kidney (kg)	0.01 ± 0.00	0.02 ± 0.00	5.00*
Lungs with heart (kg)	0.02 ± 0.00	0.02 ± 0.00	2.50 NS
Gastro-intestinal tract (kg)	0.36 ± 0.01	0.31 ± 0.02	4.70*
Head (kg)	0.13 ± 0.00	0.11 ± 0.00	15.65**
Skin (kg)	0.47 ± 0.01	0.42 ± 0.01	10.49**

*NS Non-significant, *p<0.05, *p<0.01.

Live Wight and Carcass Weight

The significantly higher ($p<0.01$) live weight recorded in Soviet Chinchilla rabbits reflects their superior growth performance compared to NZW rabbits. Comparable results have been documented under Indian tropical conditions, where Soviet Chinchilla rabbits consistently attain higher mature body weights, attributable to their larger body frame and enhanced adaptability to growth in tropical environments (Singh *et al.,* 2004; Chellapandian *et al.,* 2012). The genetic constitution of Soviet Chinchilla rabbits favours greater muscle accretion, particularly when reared under intensive production systems commonly practiced in India.

The significantly ($p<0.01$) higher carcass weight observed in Soviet Chinchilla rabbits is consistent with earlier findings from Indian studies, which have reported a strong positive

correlation between live weight and carcass yield in meat-type rabbits (Kumar *et al.,* 2006; Jagan Mohan *et al.,* 2010). This suggests that Soviet Chinchilla rabbits provide a higher absolute meat yield per animal, thereby offering economic advantages for rabbit farming systems under Indian tropical conditions.

Carcass Characteristics

Dressing percentage did not differ significantly between the breeds indicating a similar efficiency in the conversion of live weight to carcass weight. Comparable observations were reported by Thiruvenkadan *et al.* (2011) and Balasubramanyam *et al.* (2014) under South Indian conditions, who noted minimal breed influence on dressing percentage when rabbits were slaughtered at similar ages and comparable physiological maturity.

The non-significant differences observed in liver and lungs with heart weights (Table 1) indicate proportional development of internal organs in both breeds. Similar observations have been reported by Indian researchers, who noted that edible organ weights in rabbits remain relatively consistent across breeds and are influenced mainly by overall body size rather than genotype (Sureshkumar *et al.,* 2009).

Kidney weight differed significantly between the breeds ($p<0.05$), with NZW rabbits exhibiting marginally higher values. Previous studies conducted under tropical conditions have suggested that such differences are associated with breed-specific metabolic activity and renal adaptation to climatic stress, rather than reflecting differences in carcass merit (Rao *et al.,* 2013).

The significantly ($p<0.05$) higher gastrointestinal tract weight observed in Soviet Chinchilla rabbits indicates enhanced digestive capacity and a greater potential for feed intake. Supporting evidence from Indian studies suggests that heavier rabbit breeds tend to develop larger digestive organs to meet increased nutritional requirements under tropical climatic conditions (Kumar and Pathak, 2007; Rao *et al.,* 2013).

Significantly ($p<0.01$) higher head and skin weights in Soviet Chinchilla rabbits correspond to their larger skeletal frame and thicker skin. Similar findings have been reported by several Indian authors, who observed that heavier breeds exhibit increased non-carcass components, providing additional opportunities for by-product utilization such as skin and manure (Pandey *et al.,* 2008).

The distribution of primal carcass cuts in Soviet Chinchilla and NZW rabbits (Mean ± SE) are presented in Table 2. Significantly higher yields of ribs and breast, fore part, loin, and hind part in Soviet Chinchilla rabbits ($p<0.05$ to $p<0.01$) highlight their superiority as a meat breed. Indian and tropical studies consistently report the hind part and loin as the most valuable cuts, contributing the largest proportion of edible meat (Thiruvenkadan *et al.,* 2011; Chellapandian *et al.,* 2012). The enhanced development of these cuts in Soviet Chinchilla rabbits increases carcass value and consumer acceptability.

Table 2: Distribution of primal carcass cuts in Soviet Chinchilla (SC) and NZW rabbits (Mean ± SE)

Carcass cut	SC	NZW	F-value
Ribs and breast (kg)	0.20 ± 0.01	0.14 ± 0.01	27.06**
Fore part (kg)	0.18 ± 0.01	0.14 ± 0.00	20.23**
Loin (kg)	0.32 ± 0.01	0.28 ± 0.01	7.58*
Hind part (kg)	0.45 ± 0.02	0.36 ± 0.01	21.21**

*p<0.05, *p<0.01

Economic Efficiency

The cost of rearing and economic analysis of Soviet Chinchilla (SC) and NZW rabbits are given in Table 3.

Table 3: Cost of rearing and economic analysis of Soviet Chinchilla (SC) and NZW rabbits

Particulars	SC	NZW
Quantity of concentrate feed intake/ rabbit / 4 wks (kg)	0.98	0.98
Quantity of desmanthus fodder intake / rabbit /4 wks (kg)	3.50	3.50
Cost of concentrate feed/kg (Rs.)	31.00	31.00
Cost of Desmanthus fodder /kg (Rs.)	4.00	4.00
Labour cost per day for 200 rabbits (Rs.)	883.00	883.00
Labour cost per rabbit per day (Rs.)	4.42	4.42
Cost of concentrate/ rabbit/ 4 weeks (Rs.)	30.38	30.38
Cost of desmanthus fodder/rabbit/ 4 weeks (Rs.)	14.00	14.00
Labour cost/ rabbit/ 6 weeks (Rs.)	185.64	185.64
Cost of feed supplements @ Rs.5/day/ rabbit/ 4 wks (Rs.)	140.00	140.00
Cost of rearing / rabbit till market age (6 wks) (Rs.)	370.02	370.02
Cost of rearing 10 rabbits till market age (6 wks) (Rs.)	3700.20	3700.20
Sale price of rabbit meat/ kg (Rs.)	600.00	600.00
Carcass yield / rabbit (kg)	1.20	0.99
Revenue / rabbit (Rs.)	720.00	594.00
Profit per rabbit (Rs.)	349.98	223.98
Revenue / 10 rabbits (Rs.)	7200.00	5940.00
Profit per 10 rabbits (Rs.)	3499.80	2239.80

Cost of Rearing: The total cost of rearing rabbits up to market age (six weeks) was Rs. 370.02 per rabbit for both Soviet Chinchilla and New Zealand White breeds, as all input parameters such as feed intake, fodder quantity, labour requirement, and feed supplements were maintained uniformly. Feed cost constituted a relatively smaller proportion of total expenditure compared to labour and feed supplements, with labour alone accounting for nearly 50% of the total rearing cost**.** Similar observations on the dominance of labour cost in rabbit production systems have been reported by Iyeghe-Erakpotobor and Adewumi (2008) and Mailafia *et al.* (2010), who emphasized the need for labour-efficient management practices to enhance profitability.

The inclusion of Desmanthus fodder, a low-cost green forage, contributed to reduced feeding expenses without compromising growth, supporting earlier findings that

incorporation of leguminous fodders improves economic efficiency in rabbit feeding systems (Lebas *et al.,* 1997).

Carcass Yield and Revenue: A marked difference was observed in carcass yield between the two breeds. Soviet Chinchilla rabbits recorded a higher carcass yield (1.20 kg/ rabbit) compared to New Zealand White rabbits (0.99 kg/ rabbit). As the sale price of rabbit meat was fixed at Rs. 600 per kg, the higher carcass yield of Soviet Chinchilla translated directly into greater revenue **(**Rs. 720.00 per rabbit**)** compared to New Zealand White **(**Rs. 594.00 per rabbit**).**

Breed-associated variation in carcass traits has been widely documented in rabbits, with genetic potential playing a crucial role in growth rate and meat deposition (Lebas *et al.,* 1997; Dalle Zotte, 2014). The superior carcass yield of Soviet Chinchilla rabbits observed in the present study is in agreement with earlier reports indicating better dressing percentage and muscle development in this breed under intensive management systems.

Profitability and Economic Returns: Despite identical rearing costs, profit per rabbit differed significantly between breeds, with Soviet Chinchilla yielding a net profit of Rs. 349.98, while New Zealand White recorded Rs. 223.98 per rabbit**.** On a unit basis of ten rabbits, profit amounted to Rs. 3499.80 for Soviet Chinchilla compared to Rs. 2239.80 for New Zealand White, indicating a clear economic advantage of the former.

The higher profitability of Soviet Chinchilla rabbits can be attributed primarily to their enhanced carcass yield and better conversion of feed inputs into marketable meat. Similar conclusions were drawn by Iyeghe-Erakpotobor and Adewumi (2008), who reported that breeds with superior growth performance generate higher net returns even when input costs remain constant. The findings further corroborated with FAO (2011), which highlighted breed selection as a key determinant of profitability in small-scale and commercial rabbit meat production systems.

Conclusion

The present findings confirmed that Soviet Chinchilla rabbits exhibit superior slaughter and carcass traits, while New Zealand White rabbits maintain acceptable dressing efficiency and adaptability. The economics results suggest that Soviet Chinchilla rabbits are more economically efficient for meat production under the prevailing feeding and management conditions. Thus, both breeds are suitable for distinct production objectives under tropical conditions, yet Soviet Chinchilla rabbits possess superior meat production potential under comparable management conditions. Adoption of this breed, coupled with balanced feeding strategies and low-cost fodder resources, can substantially improve income generation for rabbit farmers. The findings provide baseline information useful for breed selection and for designing genetic improvement programmes aimed at enhancing rabbit meat production.

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References

Balasubramanyam, D., Thiruvenkadan, A.K., & Panneerselvam, S. (2014). Effect of breed on carcass characteristics of meat rabbits reared under tropical conditions. *Indian Journal of Animal Sciences, 84*(3), 312-315.

Blasco, A., & Ouhayoun, J. (1996). Harmonization of criteria and terminology in rabbit meat research. *World Rabbit Science, 4*(2), 93-99.

Chellapandian, M., Thiruvenkadan, A.K., & Panneerselvam, S. (2012). Growth performance and carcass traits of different rabbit breeds under tropical conditions. *Tamil Nadu Journal of Veterinary & Animal Science, 8*(2), 85-90.

Dalle Zotte, A. (2002). Perception of rabbit meat quality and major factors influencing the rabbit carcass and meat quality. *Livestock Production Science, 75*(1), 11-32.

Dalle Zotte, A. (2014). Rabbit farming for meat purposes. *Animal Frontiers*, *4*(4), 62-67.

FAO (2011). *Guide to Good Hygiene Practices for Rabbit Meat Production*. FAO Animal Production and Health Guidelines. Rome.

Iyeghe-Erakpotobor, G.T., & Adewumi, M.K. (2008). Profitability of rabbit production under different management systems. *Journal of Animal Production Research*, *20*(1), 45-50.

Jagan Mohan, R., Ravi, A., & Thiruvenkadan, A.K. (2010). Slaughter characteristics of broiler rabbits reared under intensive system. *Indian Journal of Small Ruminants, 16*(1), 92-95.

Kumar, S., & Pathak, N.N. (2007). Effect of genotype on growth and carcass traits in rabbits. *Indian Journal of Animal Nutrition, 24*(2), 121-124.

Kumar, S., Singh, B., & Pathak, N.N. (2006). Comparative carcass characteristics of New Zealand White and Soviet Chinchilla rabbits. *Indian Journal of Animal Sciences, 76*(10), 847-850.

Lebas, F., Coudert, P., de Rochambeau, H., & Thébault, R.G. (1997). The *Rabbit – Husbandry, Health and Production*. FAO Animal Production and Health Series No. 21. FAO, Rome.

Mailafia, S., Onakpa, M.M., & Owoleke, O.E. (2010). Problems and prospects of rabbit production in Nigeria - A review. *Bayero Journal of Pure and Applied Sciences*, *3*(2), 20-25.

Pandey, H.N., Singh, B., & Verma, A.K. (2008). Utilization of rabbit by-products and their economic importance under smallholder systems. *Indian Veterinary Journal, 85*(6), 621-624.

Rao, V.R., Reddy, Y.R., & Naidu, K.V. (2013). Influence of breed and climate on organ development in meat rabbits. *Tamil Nadu Journal of Veterinary & Animal Science,* 9(4), 243-248.

Singh, B., Kumar, S., & Pathak, N.N. (2004). Performance of different rabbit breeds under tropical climatic conditions. *Indian Journal of Animal Sciences, 74*(3), 321-324.

Sureshkumar, S., Vinodh Kumar, O.R., Rajendiran, A.S., & Swain, N. (2009). Carcass characteristics of Soviet Chinchilla rabbits maintained at sub-temperate climate of Kodai Hills. *Indian Journal of Small Ruminants*, *15*(1), 85-87.

Thiruvenkadan, A.K., Panneerselvam, S., & Chellapandian, M. (2011). Slaughter and carcass characteristics of meat rabbits under tropical climate. *World Rabbit Science, 19*(1), 29-34.