

NON-GENETIC FACTORS AFFECTING THE MORTALITY OF CAGE-REARED BROILER RABBITS (OR *RYCTOLOGUS CUNICULUS*) MAINTAINED UNDER TROPICAL CLIMATIC CONDITIONS OF TAMIL NADU

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ABSTRACT

The influence of non-genetic factors namely breed, sex, age, season and cause of death on the mortality of rabbits were studied utilizing a total of 835 mortality records over a period of 20 years. The study revealed that there is a significant difference ($P < 0.05$) in number of pre-weaning mortalities between seasons, with more mortality in summer and least in winter season. The pre-weaning mortality observed in Soviet Chinchilla in summer, south-west monsoon, north-west monsoon and winter seasons were 29.53, 28.37, 27.60 and 14.48 per cent, respectively and the values observed in White Giant were 32.80, 27.12, 32.49 and 7.57 per cent, respectively. The post-weaning mortality did not differ significantly between breeds, sexes and seasons. The cause of death did not influence the number of mortality between four seasons of the year. However, pneumonia and enteritis resulted in more mortalities than other causes.

KEYWORDS : Non-genetic Factors, Mortality, Broiler Rabbits (*Oryctolagus Cuniculus*)

INTRODUCTION

Rabbits (*Oryctolagus cuniculus*) have a number of attributes such as high potential for reproduction, growth rate, high selection potential, efficient feed and land utilization, limited competition with man for feeds and produce high quality meat (Cheeke, 1980). However, the pre- and post-weaning mortality is influenced by several non-genetic factors and it lowers the income obtained through rabbit rearing, not only in India but also in western countries (Lebas *et al.*, 1986; Urosevic *et al.*, 1986; Peters, 1988). In order to identify the various non-genetic factors affecting mortality rate, this study has been made in institutional farm maintained at Veterinary College and Research Institute, Namakkal. The findings of this study will be useful for formulating suitable management strategies to reduce the mortality rate in rabbits for better profit.

MATERIALS AND METHODS

A study on effect of non-genetic factors on mortality rate has been made for a period of 20 years (from 1995 to 2014) at Institutional Rabbit Farm maintained by the Department of Livestock Production and Management, Veterinary College and Research Institute, Namakkal, Tamil Nadu. The breeds maintained are Soviet Chinchilla and White Giant. The data on mortality rate of 518 Soviet Chinchilla and 317 White Giant rabbits were collected from the mortality register. The rabbits are cage reared in asbestos roofed, raised platform shed with good ventilation and light. Each adult rabbit is provided with 2,025 sq.cm floor space and housed individually. The maternity cages are double sized with a floor space of 4,050 sq.cm with a nest box provided with bedding material. Individual waterer and feeder are provided and the rabbits are fed with a concentrate diet (CP 18 % and TDN 70 %) according to their dry matter requirement and *ad lib* water is made available

always. The parent stock and growers were kept in different sheds and the young ones are weaned at 42 days. There are three post-weaning periods, namely 42 to 120 days, 120 to 240 days and more than 240 days classified for the convenience of analysis. The mortality details recorded in the farm has been compiled and analysed by making use of 518 mortalities in Soviet Chinchilla rabbits and 317 mortalities in White Giant rabbits. The data were collected and analysed to find out the influence of breed, sex, age, season and the cause of death applying Chi-square test of significance as per Snedecor and Cochran (1994).

RESULTS AND DISCUSSIONS

Pre-weaning mortality

The season-wise pre-weaning mortality of Soviet Chinchilla and White Giant breeds are presented in Table.1. The values observed in the present study were lower than the values reported by Urosevic

Table 1: Season-wise pre-weaning mortality (per cent) in Soviet Chinchilla and White Giant breeds.

Season	Soviet Chinchilla	White Giant	Chi-Square value
Summer	29.53 (153)	32.80 (104)	10.301*
Southwest monsoon	28.37 (147)	27.12 (86)	
Northeast monsoon	27.60 (143)	32.49 (103)	
Winter	14.48 (75)	7.57 (24)	
Total	518	317	

*($P < 0.05$) - significant. Figures in parentheses are number of observations

et al.(1986) and Peters (1988). Out of 518 mortalities in Soviet Chinchilla, highest mortality was recorded in summer followed by southwest monsoon, northeast monsoon and winter seasons and almost similar trend was noticed in 317 White Giant rabbits. The number of mortalities differed significantly ($P < 0.05$) between seasons. The influence of summer on preweaning mortality continued to exist in monsoon seasons also. In summer, the atmospheric temperature may reach up to 43°C (April, 1999) and hence the chances of young one survival is least for in the heat tolerance point of view.

Post Weaning Mortality

Season-wise and breed-wise post-weaning mortality rates are depicted in Table.2. The differences in number of mortality between the post weaning periods, sexes, seasons and breeds are found to be non-significant. However, more Soviet Chinchilla males died (11.6 %) in summer during the first post weaning period (42 to 120 days) when compared with other seasons and age groups. The differences in mortality between two breeds failed to show any significance. However, the percentage of mortality showed that White Giant rabbits died more in number than Soviet Chinchilla rabbits. The rabbit mortality in southwest monsoon is attributed to the sudden changes in the environmental variables at the end of summer and at the beginning of southwest monsoon. It is obvious that the rabbits are very sensitive to changes in the living conditions, feeding practices and so also the infective agents. The results observed in this study are in accordance with the earlier report (Das, 2012).

Table 2: Season-wise post-weaning mortality (per cent) in Soviet Chinchilla and White Giant breeds

Period (days)	Soviet Chinchilla		White Giant		Chi-Square value
	Male	Female	Male	Female	
42 to 120 days					
Summer	11.65	8.26	8.71	5.12	1.8037 ^{NS}
Southwest	5.72	6.35	9.23	3.58	
Northeast	7.41	6.56	5.12	4.61	
Winter	2.75	2.33	5.12	3.58	
120 to 240 days					
Summer	0.63	1.90	2.56	2.56	2.6801 ^{NS}
Southwest	4.87	5.72	8.20	3.58	
Northeast	0.63	1.27	1.02	1.02	
Winter	0.84	0.63	1.02	0.51	
>240 days					
Summer	1.48	4.87	1.53	3.58	1.2805 ^{NS}
Southwest	5.08	12.71	4.10	18.46	
Northeast	0.63	3.17	1.02	4.10	
Winter	1.27	3.17	1.02	0.51	
Between Breeds	40 to 120 days				7.1687 ^{NS}
	Summer	19.91	13.84		
	Southwest	12.07	12.82		
	Northeast	13.98	9.74		
	Winter	5.08	8.71		
	120-240 days				3.0381 ^{NS}
	Summer	2.96	4.10		
	Southwest	7.20	20.00		
	Northeast	1.69	2.56		
	Winter	0.84	3.07		
	>240 days				1.6508 ^{NS}
	Summer	6.35	5.12		
	Southwest	20.30	16.41		
Northeast	4.87	2.56			
Winter	3.38	4.10			

Influence of causes of mortality

The causes of death observed in the present study were pneumonia, enteritis, hepatitis, heat stroke, debility, tracheitis, septicaemia, nephritis and shock (Table 3). Among the causes, pneumonia and enteritis are the major reasons for mortality in two breeds. There was an incidence of "rabbit haemorrhagic disease" in a southwest monsoon season in which more White Giant rabbits died

Table 3. Cause of mortality in Soviet Chinchilla and White Giant Rabbits

Cause of mortality	Soviet Chinchilla	White Giant
Pneumonia	38.29	12.57
Enteritis	25.53	25.14
Hepatitis	4.52	8.98
Heat Stroke	4.78	1.79
Debility	9.04	7.78
Tracheitis	11.44	40.12
Septicaemia	4.52	1.79
Nephritis	0.53	0.59
Shock	1.33	0.59

than Soviet Chinchilla rabbits. Comparatively, the mortality rate was less in winter season, which is because of comfortable weather conditions matched with their environmental requirements.

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