



Mortality Pattern of Broiler Rabbits in an Organized Farm in Bihar, India

Asit Chakrabarti

10.18805/IJAR.B-3866

ABSTRACT

Background: The pre and post-weaning mortality in broiler rabbit limits the production potential and lower the income generation through rabbit farming. Therefore, mortality pattern of animals in a farm is very essential clue for future strategy to combat the incidences of various diseases and prevention. Considering the above fact the present study was undertaken to find out the incidences of various rabbit diseases and mortality in an organized institutional farm.

Methods: ICAR Research Complex for Eastern Region, Patna was maintaining a broiler rabbit farm with 364 rabbit comprising Newzealand White (194) and Soviet Chinchilla (170) rabbit breed. During the three years (October, 2011 to September, 2014) study period in total 364 rabbits were under observation. The seasonal variation viz. (pre-monsoon, monsoon, post-monsoon and winter, in regards to mortality, disease incidences, young and adults, sex variation, breed, housing system etc were recorded. The incidences of disease and mortality of rabbits were diagnosed through pathological examination and postmortem findings. The descriptive statistics and χ^2 test were used to explain the statistical significance.

Result: During the three years study period out of 364 broiler rabbits (Soviet Chinchilla and Newzealand white) in total 63 rabbits (17.31%) were died due to various diseases. The coccidiosis (3.02%), green slime disease (2.20%), haemorrhagic tracheitis (1.92%), enteritis (1.65%), pneumonia (1.37%) and peritonitis (1.37%) were affected more than the other diseases. Apart from these the other ailments that affected broiler rabbits were ear cancer (0.82%), gastroenteritis (0.82%), stomach infection (0.82%), cardinogenic shock (0.55%), stomach impaction (0.55%), kidney infection (0.55%), limb injury (0.27%), ascites (0.27%), cystitis (0.27%), abscess in abdominal cavity (0.27%), rupture of liver and gall bladder (0.27%) as well as injury of eye and blindness (0.27%). The Soviet Chinchilla rabbits were less (7.14%) affected than the Newzealand white (10.16%). It was observed that mortality of male rabbits (6.04%) were less than the female rabbits (11.26%) and mortality of young were higher (11.54%) than the adult rabbits (5.77%). The seasonal variations in mortality of broiler rabbits were observed in present study. In monsoon season mortality was maximum i.e. 6.32% whereas, in post-monsoon it was 5.49%, pre-monsoon 3.02% and in winter season mortality was only 2.47%. The Soviet Chinchilla rabbits were less susceptible and comparatively better performer in regards to disease resistance. It may be concluded that in broiler rabbit farm coccidiosis is a major concern along with other parasitic and bacterial diseases. However, proper hygiene and sanitation along with periodic treatment with coccidiostat and deworming reduces mortality of rabbits.

Key words: Age, Breed, Disease, Mortality, Rabbit, Season.

INTRODUCTION

Broiler rabbit production is a profitable venture and practiced in many countries in the world and as well as in India also (Chakrabarti *et al.*, 2014a). The broiler rabbit contribute to improving the nutrition and the economy of small holder families, both as a source of animal protein and as a source of extra income through sale of live animals (Chakrabarti *et al.*, 2014b). But, mortality of animals causes a great economic loss to the farmers. The mortality pattern of animals in a farm in different months or seasons is very important clue for future strategy to combat the incidences of various diseases and for prevention also (Jamuna *et al.*, 1995). Pasupathi *et al.* (2014) opined that in rabbit farming, litter size and litter weight are the important economic traits which are to be genetically improved for obtaining maximum productivity and increased profitability. However, pre and post-weaning mortality in rabbits limits the production potential and lower the income generation through rabbit farming. Therefore, maintaining higher economic efficiency necessitates higher survival rate of rabbits. Successful broiler rabbit farming depends on low mortality and maximum

Department of Livestock Production and Management, ICAR Research Complex for Eastern Region, ICAR Parisar, P.O. Bihar Veterinary College, Patna-800 014, Bihar, India.

Corresponding Author: Asit Chakrabarti, ICAR Research Complex for Eastern Region, Research Centre, Plandu, Ranchi-834 010, Jharkhand, India. Email: asit1963@yahoo.com

How to cite this article: Chakrabarti, A. (2021). Mortality Pattern of Broiler Rabbits in an Organized Farm in Bihar, India. Indian Journal of Animal Research. 55(1): 115-119. DOI: 10.18805/IJAR.B-3866.

Submitted: 26-06-2019 **Accepted:** 15-08-2020 **Online:** 19-12-2020

number of live rabbit in a year. Rashwan and Marai (2000) noticed that pre and post weaning mortality until marketing limits the crop of rabbits in kilograms and a lower income would be obtained. Lebas *et al.* (1988) observed that pre-weaning mortality up to 5-7% of the young as stillborn and 16-20% dies before weaning. Urosevic *et al.* (1986) and Peeters (1988) reported mortality rates in rabbit is 12 to 20% but, it may reach up to 50% in 4 to 8 weeks of age, while mortality in rabbits above 3 months is rare. The report

of rabbit mortality in a farm due to various diseases and seasonal variation is very scanty. Therefore, the present study was undertaken to find out the incidences of various rabbit diseases and mortality in an organized institutional farm.

MATERIALS AND METHODS

The present study was conducted in the experimental rabbit farm of ICAR Research Complex for Eastern Region, Patna located at 25°35'37" N latitude and 85°05' E longitude and at an altitude of 51.8 m above mean sea level. The climate of the experimental site is semi-arid with dry hot summer and winter. May and June are the hottest months with mean daily maximum temperature ranging from 31 to 41°C. Mean annual rainfall is 1200 mm, of which 80% occurs during southwest monsoon. The mean daily pan evaporation reaches a high of 8.0 mm per day in June and a low of 1.7 mm per day in January. The institute was maintaining a broiler rabbit farm with 364 rabbit comprising Newzealand White (194) and Soviet Chinchilla (170) breed. The rabbits were reared under uniform managemental conditions by housing them individually in clean metallic cages, fitted with feeders and waterers and kept inside well ventilated shed with cemented floor or in colony system. 50% mash feeding and 50% roughage feeding was practiced. Isonitrogenous concentrate mixtures with 16% crude protein and 70% total digestible nutrients were prepared with conventional feed ingredients like maize, wheat bran, deoiled rice bran, soya bean meal, ground nut cake, rice husk, fish meal, mineral mixture, common salt and offered in morning at 9 am. The

green roughages were given *ad libitum* at 3 pm daily. The greens were Berseem, (*Trifolium alexandrinum*), Dhub grass (*Cynodon dactylon*) and Oat (*Avena sativa*). *Ad libitum* clean drinking was provided throughout the year. Routine deworming and coccidiostat was administered regularly to prevent parasitic diseases. During the three years (October, 2011 to September, 2014) study period in total 364 rabbits were under observation. The seasonal variation viz. (pre-monsoon (March, April, May), monsoon (June, July, August), post-monsoon (September, October, November) and winter (December, January, February), in regards to mortality (seasonal classification in Bihar adopted from Chakrabarti and Kumar (2014), disease incidences, young and adults, sex variation, breed, housing system etc were recorded. The incidences of disease and mortality of rabbits were diagnosed through pathological examination and postmortem findings. The data were analysed as per Snedecor and Cochran (1995). The descriptive statistics and χ^2 test were used to explain the statistical significance.

RESULTS AND DISCUSSION

Out of 364 rabbits reared in institute farm, in total 63 rabbits (17.31%) were died due to various diseases during the three years period from 2011 to 2014. Among the 17.31% animals, 10.17% were Newzealand White and 7.14% were Soviet Chinchilla rabbits. The coccidiosis (3.02%), green slime disease (2.20%), haemorrhagic tracheitis (1.92%), enteritis (1.65%), pneumonia (1.37%) and peritonitis (1.37%) were the main causes of mortality in broiler rabbits (Table 1). The other ailments that affected were ear cancer (0.82%),

Table 1: Incidences of various diseases in rabbit farm.

Name of diseases	2011-12			2012-13			2013-14			Total No. of animals affected			% of animals affected out of total animal		
	NZW	SC	T	NZW	SC	T	NZW	SC	T	NZW	SC	T	NZW	SC	T
Coccidiosis	2	0	2	3	1	4	3	2	5	8	3	11	2.20	0.82	3.02
Green slime disease	0	1	1	2	2	4	1	2	3	3	5	8	0.82	1.37	2.20
Haemorrhagic tracheitis	2	1	3	2	0	2	1	1	2	5	2	7	1.37	0.55	1.92
Enteritis	0	0	0	1	2	3	2	1	3	3	3	6	0.82	0.82	1.65
Pneumonia	1	1	2	2	0	2	1	0	1	4	1	5	1.10	0.27	1.37
Peritonitis	1	2	3	0	0	0	1	1	2	2	3	5	0.55	0.82	1.37
Ear cancer	0	0	0	0	0	0	2	1	3	2	1	3	0.55	0.27	0.82
Gastroenteritis	0	0	0	1	1	2	0	1	1	1	2	3	0.27	0.55	0.82
Stomach infection	0	0	0	0	0	0	2	1	3	2	1	3	0.55	0.27	0.82
Cardiogenic shock	1	1	2	0	0	0	0	0	0	1	1	2	0.27	0.27	0.55
Stomach impaction	1	0	1	1	0	1	0	0	0	2	0	2	0.55	0.00	0.55
Kidney infection	0	0	0	0	0	0	1	1	2	1	1	2	0.27	0.27	0.55
Limb injury	0	0	0	1	0	1	0	0	0	1	0	1	0.27	0.00	0.27
Ascites	0	1	1	0	0	0	0	0	0	0	1	1	0.00	0.27	0.27
Cystitis	0	0	0	0	0	0	1	0	1	1	0	1	0.27	0.00	0.27
Abscess in abdominal cavity	0	0	0	0	1	1	0	0	0	0	1	1	0.00	0.27	0.27
Rupture of liver and gall bladder	1	0	1	0	0	0	0	0	0	1	0	1	0.27	0.00	0.27
Injury of eye and blindness	0	1	1	0	0	0	0	0	0	0	1	1	0.00	0.27	0.27
Total	9	8	17	13	7	20	15	11	26	37	26	63	10.17	7.14	17.31

NZW- Newzealand White, SC- Soviet Chinchilla, T- Total.

gastroenteritis (0.82%), stomach infection (0.82%), cardinogenic shock (0.55%), stomach impaction (0.55%), kidney infection (0.55%), limb injury (0.27%), ascites (0.27%), cystitis (0.27%), abscess in abdominal cavity (0.27%), rupture of liver and gall bladder (0.27%) and Injury of eye and blindness (0.27%).

Previous workers reported that coccidiosis is an important omnipresent parasitic disease and causes high mortality in commercial farms (Coudert, 1979; Khalil, 1980; Lang, 1981; Emara, 1982; Hegazi, 1988). Cheema *et al.* (1990) observed hepatic coccidiosis is a fatal disease and causes death within 3 to 4 days. Sharma *et al.* (1996) and Risam *et al.* (2004) observed pneumonia and enteritis were the major causes for mortality in Angora rabbits. Lukefahr *et al.* (1984) found pre-weaning losses due to enteritis and pneumonia. Cheeke (1987) and Gergis *et al.* (1992) reported respiratory ailments are common among domestic rabbits. The findings of these workers corroborate the present findings.

It was observed in present study that the Soviet Chinchilla rabbits were less (7.14%) affected than the Newzealand white (10.16%) (Table 2). The mortality of male rabbits (6.04%) were less than the female rabbits (11.26%) and mortality of young were higher (11.54%) than the adults (5.77%). Pasupathi *et al.* (2014) observed mortality pattern in New Zealand White rabbit as 9.05% in adult, 9.74% in grower and 8.47% in kits mortality in Tamilnadu whereas, Das and Nayak (1991) in Odisha (36.89%), Bhasin and Singh (1995) (35.0%), Ghosh (2009) in West Bengal (29.87%) and Thakkar *et al.* (2019) (38.39%) in Gujarat, reported higher mortality in Soviet Chinchilla rabbits. Dhara *et al.*, (2009) observed 16.13% and 7.69% mortality respectively during pre-weaning and post-weaning period among

Newzealand White rabbits in West Bengal. Risam *et al.* (2004) reported higher mortality in young Angora rabbits in Himachal Pradesh. Das (2012) reported that breed wise higher mortality was observed in New Zealand White breed of rabbit (22.12%). Sex wise higher mortality was in female (20.48%). Age wise mortality revealed that highest mortality was in finisher (21.49%). Etiology of disease indicated that highest mortality was due to coccidiosis (5.62%). Chandra *et al.* (2013) found that the overall mortality of Angora rabbits in Sikkim was 37.81% and the highest mortality was recorded in young ones (26.67%). In present study the mortality of male rabbits (6.04%) was less than the female rabbits (11.26%). This may be due to rearing of more female than the male rabbits. Pasupathi *et al.* (2014) opined that the mortality pattern in rabbits is highly variable. In the present study better health management practices that were followed in the farm might have reduced the mortality rate of broiler rabbits.

The seasonal variation in mortality of rabbits was observed in present study. In monsoon season mortality was maximum *i.e.* 6.32% whereas, in post-monsoon it was 5.49%, pre-monsoon 3.02% and in winter it was only 2.47%, respectively (Table 3). Ghosh (2009) reported lowest percentage of mortality in monsoon (19.52%) and highest in summer months (33.33%) followed by winter months (26.39%). Das (2012) observed season wise highest mortality was in summer (17.90%). The present study is in contrary to the study of Ghosh (2009). These observations of present study were more or less corroborating with the study of record noted by Gulterio *et al.* (1988). Pasupathi *et al.* (2014) opined that the season of kindling also plays a vital role in survivability of the kits. Chandra *et al.* (2013) observed higher mortality in rainy season in Angora rabbits

Table 2: Mortality of rabbits in relation to breed, sex and age.

Variables	Animals	Number of animals observed	Number of animals affected	% of animals affected	% of affected out of total animals	χ^2 value
Breed	Newzealand White	194	37	19.07	10.16	0.399*
	Soviet Chinchilla	170	26	15.29	7.14	
Sex	Male	154	22	14.28	6.04	0.812*
	Female	210	41	19.52	11.26	
Age group	Young (before 3 months)	224	42	18.75	11.54	0.417*
	Adult (above 3 months)	140	21	15.00	5.77	

*P < 0.05 Non-significant.

Table 3: Mortality of rabbits in different seasons.

Season	Number of animals observed	Animal affected		% of affected out total animals	χ^2 value
		Number	Percentage		
Pre-monsoon (March, April, May)	86	11	12.79	3.02	9.99*
Monsoon (June, July, August)	89	23	25.84	6.32	
Post-monsoon (September, October, November)	93	20	21.51	5.49	
Winter (December, January, February)	96	9	9.38	2.47	
Total	364	63	17.38 (Average)	4.33 (Average)	

*P < 0.05 Significant.

in Sikkim might be due to the heavy rainfall and humidity and sudden change in environment temperature and humidity leading to stress to the animals. Thakkar *et al.* (2019) noticed that the various environmental factors like year and season influence the mortality in rabbit kits, while mortality rate among rabbits is about 5 to 8%. Other reporters like Jamuna *et al.* (1995) and Ramakrishna *et al.* (2004) also observed similar incidence of mortality in rabbits.

CONCLUSION

The Soviet Chinchilla rabbits were less susceptible and comparatively better performer in regards to disease resistance. Rabbits are generally susceptible to parasitic and other diseases including coccidiosis. Periodic treatment with coccidiostat and hygiene is most essential part for a rabbit farm. Regular monitoring and health care management is prerequisite criteria for any livestock farm. A successful broiler rabbit farm should have less disease incidences and less mortality of animals. If hygiene and sanitation is properly maintained in a rabbit farm, the mortality of rabbits may be restricted to a minimum level.

ACKNOWLEDGEMENT

The author is thankful to the Director, ICAR Research Complex for Eastern Region, Patna, Bihar, India for providing necessary facility for the research work. The present study was carried out under the institute research project entitled 'Adaptability and management study of rabbit in Bihar (ICAR-RCER/ DLFM/ 2011/ 109) and data was compiled from institute farm records.

REFERENCES

- Bhasin, V. and Singh, D. (1995). Pre weaning mortality in rabbits. *International Journal of Animal Sciences*. 10: 77-79.
- Chakrabarti, A., Gupta, J.J. and Dey, A. (2014a). Economics of rearing broiler rabbit in an organized farm. *Indian Journal of Applied Agriculture Research*. 2(1): 9-12.
- Chakrabarti, A., Dayal, S., Dey, A. and Bhatt, B.P. (2014b). Production and management of broiler rabbit. *Krishisewa*. <http://www.krishisewa.com/cms/articles/livestock/396-broiler-rabbit.html>.
- Chakrabarti, A. and Kumar, P. (2014). Incidences of foot diseases of cattle in Bihar, India. *International Journal of Agricultural Science and Research*. 6(1): 267-272.
- Chandra, R., Karmakar, H.D., De, D., Rahman, H. (2013). Mortality pattern in German Angora rabbits in Sikkim. *Indian Journal of Small Ruminants*. 19(1): 118-120.
- Cheeke, P.R. (1987). *Rabbit feeding and Nutrition*. 4th Edn. USA.
- Cheema, A.H., Khan, M.Q. and Chishti, M.A. (1990). Hepatic coccidiosis in rabbits. *Pakistan Veterinary Journal*. 10(4): 204- 205.
- Coudert, P. (1979). Comparison of pathology of several rabbit coccidian species and their control with robenidine. In: *Proc. International Symposium "Coccidia and further prospects of their control"*, Pague.
- Das, R.K. and Nayak, J.B. (1991). Performance of broiler rabbits under hot and humid conditions. *Indian Journal of Animal Production and Management*. 7(4): 219-224.
- Das, S.K. (2012). Study on the different factors affecting mortality pattern of rabbit in India. *Indian Journal of Animal Research*. 46): 89-91.
- Emara, E.M.A. (1982). Effect of crossbreeding on some productive traits in rabbits. Ph.D. Thesis. Faculty of Agri, Moshtohor, Zagazig Univ., Banha Branch, Egypt.
- Gergis, S.M, EL -Nueimy E.Y., Choniem, I, Aly, N.M. Hassan, A.H. and Shahta, M.A. (1992). Role of aerobic bacteria in respiratory infection among rabbits. In: *Proceedings of 5th Science Congress Faculty of Veterinary. Medicine Assiut. University. Egypt*. Pp. 42-48.
- Hegazi, S.H. (1988). Some biological immunological studies on *Eimeria* of rabbits under the Egyptian environmental conditions. Ph.D. Thesis. Faculty of Veterinary Medicine, Cairo Univ., Egypt.
- Dhara K.C., Ray, N., Halder, G. and Samanta, A.K. (2009). A Study on Performance of New Zealand White and Gray Giant Broiler Rabbits. *Vet. Scan*. Vol. 4 No. 2, Article 44 (http://vetscan.co.in/v4n2/a_study_on_performance_of_Newzealand_white_and_Gray_giant_broiler_rabbits.htm).
- Ghosh, N. (2009). Mortality pattern in broiler rabbits (*Oryctolagus cuniculus*) under warm humid conditions of West Bengal, India. *Indian Journal of Animal Research*. 43(2): 127-129, 2009.
- Gualterio, L., Valentini, A. and Bagliacca, M. (1988). Effect of season and of parturition order on mortality rate at birth in the nest. In: *Proceedings. 4th World Rabbit Congress, Budapest, Hungary*. 1: 182-188.
- Jamuna K.V., Rajeswari, Y.B., Sathyanarayana, K. (1995). Mortality pattern of Rabbits. *The Veterinarian*. 19(1): 1-4.
- Khalil, M.H.E. (1980). Genetic and environmental studies on some productive traits in rabbits. M.Sc. Thesis. Faculty of Agriculture, Moshtohor, Zagazig University, Egypt.
- Lang, J. (1981). The nutrition of the commercial rabbits. 1. Physiology, digestibility and nutrient requirements. 2. Feeding and general aspects of nutrition. *Nutritional Abstract Review, Ser 13. Livestock Feeds*. 51: 197-225, 287-302.
- Lebas, F., Viard Drouet, F., Coudert, P. (1988). Reproduction and morbidity of rabbit does. Effects of diet energy level and origin. First results. *4th World Rabbit Congress, Budapest*. 3(2): 53-58.
- Lukefahr, S.D., Hohenboken, W.D., Cheeke, P.R., Patton, N.M. (1984). Genetic effects on maternal performance and litter pre-weaning and post-weaning traits in rabbits. *Animal Production*. 38: 193-300.
- Pasupathi, K., Muthusamy, P., Gopi, H., Balasubramanyam, D. and Babu, M. (2014). Survivability in New Zealand white breed of rabbits under farming condition in Tamilnadu. *International Journal of Science, Environment and Technology*. 3(5): 1772-1777.
- Peeters, J.E. (1988). Recent advantages in intestinal pathology of rabbits and further perspectives. *Proc. 4th World Rabbit Congress. Pathology Proceedings*, pp. 293-315.
- Ramakrishna, C., Chaturvedi, V.B., Kumar, A., Bhanuprakash, V., Sharma A.K. and Rasool, T.J. (2004). Birth and mortality patterns among Angora rabbits at Mukteshwar. In: *Proceedings. In national Seminar on Angora rabbit wool and cashmere production and utilization, Manali, Himachal Pradesh*. 25-26th September, 2004. P.202.

- Risam, K.S., Madal, D. and Kumar, D. (2004). Survivability of German Angora rabbits maintained under sub-temperate Himalayan condition. In: Proceeding National seminar on Angora rabbit wool and cashmere production and utilization. Manali, Himachal Pradesh. 25-26th September, p.202.
- Rashwan, A.A. and Marai, I.F.M. (2000). Mortality in young rabbits: A Review. *World Rabbit Science*. 8(3): 111- 124.
- Sharma, A.K., Kumar, R. and Paliwal, O.P. (1996). Mortality pattern in angora Rabbits. *Indian Veterinary Medical Journal*. 20: 302-305.
- Snedecor, G.W. and Cochran, W.G. (1995). *Statistical Methods*. 8th edn. Oxford, IBH Publication Company, New Delhi.
- Thakkar, N.K., Srivastava, A.K., Chaudhary, A.P., Chauhan, H.D., Ankuya, K.J., Patel, V.K., Gupta J.P. and Patel, J.V. (2019). Mortality pattern in white giant and soviet chinchilla rabbit kits. *International Journal of Current Microbiology and Applied Sciences*. 8(3): 2075-2079.
- Urosevic, M., Anojcic, B., Sterck, V., Pucar, H., Mihajlovic, Z. (1986). Pathological changes and bacteriological findings in dead rabbits from three intensive farms. *Veterinarski Glasnik*. 40: 709-714.