

## **PERFORMANCE OF BROILER CHICKEN FARMING IN KASHMIR VALLEY**

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### **ABSTRACT**

Two hundred day old chicks were reared on deep litter system up to 6 weeks of age to evaluate the comparative performance of broiler chicken during four different seasons viz. spring, summer, autumn and winter in Kashmir Valley of Jammu and Kashmir. The season had significant ( $P < 0.05$ ) effect on all the parameters under study. Highest body weight (1449.8 g) was observed during summer season and lowest (1038 g) in winter season. Best feed conversion ratio was found during summer followed by spring and autumn seasons. Highest mortality (7.55 per cent) was observed during winter season and lowest in summer (3.68 per cent). The gross profit per bird was significantly highest during summer season and lowest during winter season. The cost of broiler production per kg live weight was found to be least during the summers as compared to other seasons. The results indicate that summer season appears to be ideal season for optimum performance and maximum returns from broiler rearing in Kashmir Valley.

**Key words :** Performance, broilers, seasons, Kashmir.

Broiler production has been ever increasing in Kashmir Valley to meet the requirements of protein from animal origin as this region of country is situated in the sub-tropical zero where the average temperature is not very high (average 18 °C) when compared to other parts of the country. Researchers have been investigating the effect of temperature on the performance of poultry and have found deleterious effects on productive performance<sup>9,14</sup>. Both heat and cold stress depresses body weight and is generally accompanied by suppression of feed intake leading to decline in production. Climatic conditions which include temperature and humidity have a significant

effect on the production performance of broiler chicken<sup>16</sup> whereas seasonal change in prices of inputs, demand, selling rates etc. in broiler production alter the cost and return considerably to make broiler business a profitable enterprise.

Few studies have been carried out to see the effects of environmental factors on the performance of broilers<sup>6,10</sup>. However, no information is available on the relative performance of broiler chicken under climatic conditions of Kashmir Valley during different seasons. Therefore, the study was conducted to know the effect of season on certain traits of broiler chicken production under agro-climatic conditions of Kashmir Valley.

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## MATERIALS AND METHODS

The Kashmir Valley is located in Himalayan Mountains and falls under the tropical agro climatic region with winters too cold (Average 9 °C) and summers warm ((Average 27 °C). In every season, 200 Cobb broiler chicks were reared up to six weeks of age under standard managerial conditions in deep litter systems in the poultry shed of Division of Livestock Production and Management, SKUAST-K, Shuhama, Srinagar, Jammu and Kashmir. All the birds were fed *ad libitum* uniform commercial broiler ration viz. Pre-Starter (CP: 23%, ME: 2800 Kcal/Kg, EE: 4 %,Ca: 1.0 % and P: 0.50 %), Starter (CP: 22%, ME: 2900 Kcal/Kg, EE: 4 %,Ca: 1.0 % and P: 0.50 %) and Finisher (CP: 21%, ME: 3000 Kcal/Kg, EE: 4 %,Ca: 1.0 % and P: 0.50 %) respectively throughout the rearing period. Weekly live body weight, feed consumption and feed conversion ratio (FCR) and mortality were recorded season wise. For calculating cost of production per kg live weight the expenditure incurred on chick cost, feed, medicine, vaccine and miscellaneous recurring expenditure was considered in each season. Besides, labour charges were calculated uniformly @ Rs. 2/- per bird during different seasons. The gross profit per bird and benefit cost ratio were calculated based upon the market sale rate of broiler per kg live weight with respect to time. The whole year was divided in to four seasons viz. Spring (March-May), Summer (June-August), Autumn (September-November) and Winter (December-February) according to the climatic conditions prevailing in the state. The mean temperature (° C), humidity (%) and total precipitation (inch) were 16, 59 and 5; 27, 72 and 18; 20, 69 and 2 and 9, 58 and 7 during Spring, Summer, Autumn and Winter seasons respectively. The data were analysed as per the method of Snedecor and Cochran<sup>17</sup>.

## RESULTS AND DISCUSSION

Changes in season had a significant influence on the body weight gain of broilers at six weeks of age (Table 1). There was a significant

( $P < 0.05$ ) increase in the body weight gain of birds reared during summer season when compared with the body weight of birds reared during winter season with an increase in the body weight of birds by about 19.62%. These results do not corroborate with earlier report<sup>15</sup> who found that the body weight gain of broilers reared during summer was low as compared to those reared during winter due to high summer ambient temperature that significantly decrease the protein digestion and feed digestibility of different components of the diet<sup>5</sup>.

In the present study significant differences ( $P < 0.05$ ) between the body weight gains of broiler chicken reared during spring and summer seasons were observed. It was revealed that a significant ( $P < 0.05$ ) reduction in the body weight gain of chicken was observed reared during winter season. The study indicates that temperature is an important bio-climatic factor affecting the physiological functions of chicken<sup>11</sup>. Prevalence of extreme cold climate in the valley caused stress in the birds and enhancing outbreak of various diseases affecting the performance of the birds<sup>2</sup>.

Significantly higher ( $P < 0.05$ ) feed consumption was observed in the birds reared during winter season when compared with the rest of the seasons. However, contrasting to the present finding, earlier report says that due to low temperature there is increase in feed intake, reduction in growth, nutrient digestibility and feed conversion<sup>3</sup>. Feed conversion efficiency which is the amount of feed required for producing one unit of meat was affected during seasons. Significantly ( $P < 0.05$ ) best FCR was observed during summer season followed by spring and autumn seasons. Significantly ( $P < 0.05$ ) poor FCR was observed during winter seasons indicating that the birds had consumed more quantity of feed in order to maintain their body temperature but it was not enough to meet their nutritional requirements for the body growth rate. These results are in contrast with<sup>12</sup> who reported that the high temperature during summer season caused a reduction in feed efficiency.

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Mortality rate of broilers differed significantly ( $P < 0.05$ ) during different seasons. Mortality rate was higher during winter followed by spring and autumn and was lowest during summer<sup>1</sup>. Higher mortality rate during winter was due to cold environment leading to stress and thus declining the production performance of birds<sup>4</sup>. These results are in contrast to the earlier reports<sup>12</sup> who reported higher mortality rate during summer season<sup>13</sup>. based upon observational study from microanalysis, exploratory data analysis for seasonal broiler growth performance prediction observed higher temperature has a negative influence on mortality.

Data related to the performance and cost of production for broiler chicken during different seasons is shown in Table 1. Overall investment for rearing of broiler chicken was highest in winter season followed by spring season and autumn. It was lowest during summer season. The feed cost remained the major item of expenditure in broiler rearing irrespective of season. This was in

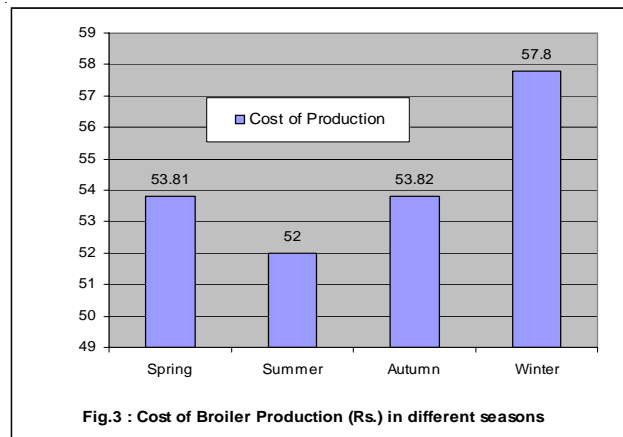
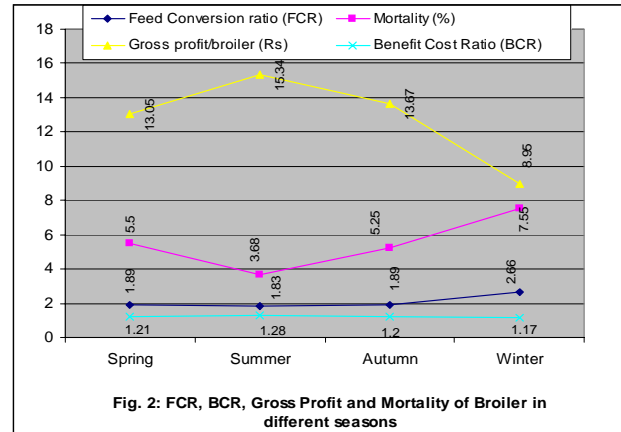
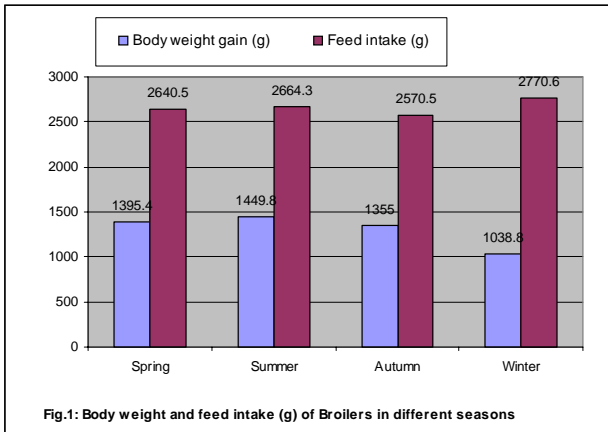
agreement with the earlier report<sup>8</sup>. Significant differences ( $P < 0.05$ ) were observed in the cost of production per Kg live weight of broiler chicken among different seasons. The cost of production per Kg live weight of broiler chicken was higher in winter compared to other seasons and lowest during summer season. The reason for higher cost might be due to the higher prices of feed, medicine, litter material and other miscellaneous inputs in winter.

There was a significant ( $P < 0.05$ ) difference in the gross profit per bird during various seasons with maximum profit per bird during summer followed by autumn and spring seasons. Significantly ( $P < 0.05$ ) lowest profit per bird was recorded during winter season. Similarly maximum benefit cost ratio was observed during summer season and least during winter season. The results of present study are similar with the findings of the worker<sup>7</sup>. However, in contrast to the present findings the earlier worker<sup>8</sup> who observed maximum returns in the broilers reared during winter season.

Table 1. Performance and cost of production of broiler chicken during different seasons

Parameters	Seasons			
	Spring (March-May)	Summer (June-August)	Autumn (September-November)	Winter (December-February)
Initial investment per bird	120000	120000	120000	120000
Feed cost	100000	100000	100000	100000
Medicine cost	10000	10000	10000	10000
Litter cost	10000	10000	10000	10000
Other miscellaneous cost	10000	10000	10000	10000
Total investment per bird	150000	150000	150000	150000

Values are mean ± SD. Significant differences are indicated by P < 0.05.



### CONCLUSION

Better performance along with higher net returns during summer season may be attributed to the stable and favourable climatic conditions in

Kashmir Valley for poultry rearing, whereas performance was poor in winter season due to cold stress. However, further detail studies are needed to find out other cold stressors.

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