ECONOMICS OF EGG PRODUCTION DURING FIRST AND SECOND LAYING YEARS IN WHITE LEGHORN AND LYALLPUR SILVER BLACK BREEDS

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The economics of egg production in White Leghorn and Lyallpur Silver Black breeds of chicken was investigated. Returns were positive both in the first and second laying years. The rate of return, however, was reduced slightly in the second year as compared to the pullet year. The income in the second laying year could be improved by resorting to the grading of eggs, as the eggs laid during the later period of production were found to be 20 per cent heavier. It may be advisable for the poultry farmers of our country not to cull their birds till new pullet crop is ready to replace the old stock to utilize the buildings, equipment and the investment on rearing of birds better than otherwise. The problem of chick supply would also be solved as the pressure on demand for chicks would be reduced.

INTRODUCTION

An effective plan for the replacement of poultry flocks needs a careful observation of all the variables which affect the economics of poultry production. The ability to utilize the feed and its conversion into eggs is the major contributing factor which affects the income of a farm. The other factors are the weight of eggs and their composition. Similarly, the problem of securing the largest possible number of chicks in proportion to the total number of incubated eggs is also of considerable economic significance. All these factors needed exploration. Keeping in view these variables, a study was planned to determine the comparative expenses and returns in the first and second laying years of White Leghorn and Lyallpur Silver Black breeds.

REVIEW OF LITERATURE

Marble (1963) reported 4.8 per cent reduced intake of feed in layers in second year of production as compared to those in the pullet year. Anorova (1959) recorded 145.5 eggs in the first laying year as compared to 116.5 eggs in the subsequent year of production. Marion *et al.* (1966) reported an increase in weight of eggs laid during the second year which was accompanied by a

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decrease in per cent shell and albumen, and an increase in per cent yolk.

The relationship between the incubating characters of eggs and the age of birds was investigated by Baranovskaja (1957) in White Leghorn layers. He reported a decline in the fertility from 96.1 per cent in the pullet year to 91.8 per cent in the third year of production. Hatchability of fertile eggs and that of total eggs set was also indicated to decrease with the increase in age of the birds.

MATERIALS AND METHODS

One day old chicks of White Leghorn and Lyallpur Silver Black breeds were raised separately in thermostatistically controlled battery brooders, up to eight weeks and in poultry houses thereafter, on the same feeding regime. Records of all the expenses were maintained up to 26 weeks of age which were included in rearing costs. After this period, they were shifted to laying houses. Records of feed consumption, egg production, egg weight and mortality were taken. After every fortnight, eggs were set in the incubator throughout the normal hatching season of the year, which spread over 8 months (September to April). The hatching was stopped during May to August due to the extremely high temperature. The eggs placed in the incubator were from the fresh weekly collection and were candled prior to incubation to discard the cracked ones. On 18th day of incubation the infertile eggs were removed and discarded. On 21st day the dead in shells were recorded and the chicks were sent for sale.

The cost of production in pullet year included the price of chicks and the expenditure spent on feed from the first day of age up to the end of first laying year. The cost for second year was calculated by adding the cull price of first year birds and the feed price during laying. The expenses on labour, hatchary, electricity, litter, medicine and depreciation on the investment of buildings and equipment were also included in cost of both the years to depict a clear picture of expenditure. The income sources in first year and second year of production were from the sale of eggs, both for table purposes and incubation, the chicks hatched during experiment and the cull birds.

The total income received was divided by the cost spent on feeding of birds, to find out the conversion ratio, which was calculated for each of the two breeds and years of production under study. The percentage of returns on investment were also calculated for the comparison of first and second laying years of White Leghorn and Lyallpur Silver Black breeds.

RESULTS AND DISCUSSION

Costs: Table 1 indicates rearing expenditure of Rs. 1135.00 and Rs. 1139.00 which were spent on chicks of White Leghorns and Lyallpur Silver

Black breeds respectively to bring them to maturity. This together with laying cost amounted to Rs. 4393.25 and Rs. 4139.28 in the first laying year of White Leghorn and Lyallpur Silver Black breeds respectively. The average per bird cost in the respective breeds was Rs. 43.93 and Rs. 41.39. The average cost per bird in the second laying year was found to be Rs. 33.76 and Rs. 32.84 in White Leghorn and Lyallpur Silver Black breeds respectively (Table 2).

TABLE 1.—*Comparison of Costs of Rearing the Chicks up to 26 Weeks of Age.*

Item		White Leghorn (Rupees)	Lyallpur Silver Black (Rupees)
Chicks	..	375.00	375.00
Feed	..	170.00	174.00
Labour	..	300.00	300.00
Litter, Vaccination and medicine	..	50.00	50.00
Electricity and water	..	60.00	60.00
Depreciation on Buildings and Equipment.	..	180.00	180.00
Total	..	1135.00	1139.00

TABLE 2.—*Comparison of Costs During the First and Second Laying Years.*

Item	White Leghorn			Lyallpur Silver Black		
	1st yr. (Rs.)	2nd yr. (Rs.)	1+2nd yr. (Rs.)	1st yr. (Rs.)	2nd yr. (Rs.)	1+2nd yr (Rs.).
Rearing	1135.00	—	1135.00	1139.00	—	1139.00
Feed	1478.25	1329.00	2807.25	1340.28	1233.70	2573.98
Labour	600.00	600.00	1200.00	600.00	600.00	1200.00
Litter, medicine & Electricity	105.00	100.00	205.00	105.00	100.00	205.00
Hatchary	795 00	500.00	1295.00	675.00	450.00	1125.00
Depreciation on Buildings & Equipment.	280.00	280.00	560.00	280.00	280.00	560.00
One year old birds	—	399.00	—	—	391.00	—
Total	4393.25	3208.00	7202.25	4139.28	3054.70	6802.98
Number of birds	100	95	195	100	93	193
Cost per bird (Rs.)	43.93	33.76	36.93	41.39	32.84	35.25

Taking into consideration the entire life of the project as a whole, the expenditure averaged to Rs. 36.93 and 35.25 per bird in White Leghorn and Lyallpur Silver Black birds respectively. The cost was reduced by 15.93 and 14.64 per cent as compared to the pullet year but was higher by 8.58 and 6.84 per cent when the costs of second laying year were considered. Low costs in the second year were due to less intake of feed as reported by Marble (1963).

Returns: White Leghorn flock yielded on an average the income of Rs. 61.74 and a net income of Rs. 17.81 per bird in the first laying year. Similar findings for the second year of production were Rs. 40.59 and Rs. 6.83. The total income per bird in Lyallpur Silver Black breed was Rs. 54.59 and net income was Rs. 13.20 in the first laying year and Rs. 38.01 and Rs. 5.17 in the second year of production (Table 3). Returns on investment in White Leghorn breed were calculated to be 40.55 per cent in the first year and 20.19 per cent in the second laying year. Corresponding figures for Lyallpur Silver Black birds were 31.89 and 15.75 per cent in the first and second laying year respectively. The conversion ratios were calculated to be 4.3 : 1 and 4.1 : 1 in White Leghorn and Lyallpur Silver Black layers in the first year, while similar figures in the second laying year were 2.90 : 1 and 2.86 : 1 in the respective breeds.

TABLE 3.—*Comparison of Gross and Net Returns During the First and Second Laying Years.*

Item	White Leghorn			Lyallpur Silver Black		
	1st yr. (Rs.)	2nd yr. (Rs.)	1+2nd yr. (Rs.)	1st yr. (Rs.)	2nd yr. (Rs.)	1+2nd yr. (Rs.)
Table eggs	964.00	585.00	1549.00	1434.00	676.00	2110.00
Hatching eggs	1557.00	768.00	2325.00	892.00	612.00	1504.00
Chicks	3254.00	2142.00	5396.00	2742.00	1903.00	4645.00
Culled birds	399.50	361.25	361.25	391.00	344.45	344.45
Total	6174.50	3856.25	9631.25	5459.00	3535.45	8603.45
Number of birds	100	95	195	100	93	193
Gross income per bird (Rs.)	61.74	40.59	49.39	54.59	38.01	44.57
Net income per bird (Rs.)	17.81	6.83	12.46	13.20	5.17	9.32

The net income received in the first year of production was more than the second year. It was due to higher egg production in the pullet year. Similar were the findings of Anorova (1959) who recorded greater number of eggs in the first laying year. The other factor for increased income in the pullet year was higher fertility and hatchability of eggs which reduced the loss due to

infertile eggs or dead in shell embryos. The results reported by Baranovskaja (1957) are in agreement with the present findings.

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