

EFFECT OF EARLY POST-HATCH FEEDING ON THE ECONOMIC EFFICIENCY AND FEASIBILITY OF COMMERCIAL BROILER CHICKEN

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Abstract: A biological trial was carried out to study the effect of early post hatch feeding of early chick nutritional supplements (ECNS) viz. egg white protein glucose (EWPG) based ECNS, corn-soyabean-fishmeal based (CSF WOS) ECNS without steaming, corn-soyabean-fishmeal based (CSF WS) ECNS with steaming and commercial broiler pre starter diet (CBPSD) on the economic efficiency of commercial broiler (Cobb-400) chicken. Data on day old to six week body weight and weight gain, feed consumption and feed conversion ratio at biweekly interval, and economics of feeding ECNS including BPEI were recorded, calculated, analysed and presented. The cost of production of one kg of live broiler chicken ranged from Rs. 62.64 in CBPSD fed group and Rs. 64.81 in control. The net profit per kg live weight was 9.19 in control and ECNS fed groups ranges from Rs 9.63 to 11.36. In ECNS fed broiler chicken, the broiler performance efficiency index (BPEI) was higher ranging from 99.18 (CSF WOS) to 103.58 (CBPSD). To conclude, the early post hatch feeding of broilers chicks with commercial pre-starter broiler diet increased net profit up to Rs.11.36 per kg of live weight and the performance efficiency index to 103.58 than that of fasted control.

Keywords: Broiler, early post-hatch feeding, economics, broiler performance efficiency index.

Introduction

Incubation and neonatal period account for about 50 per cent of the productive life of hybrid broiler chicken. The perinatal period, from 17th day of incubation to four days post hatch is most critical for development and survival of commercial hybrid broiler chicken. During immediate post-hatch period, glycogen reserves decline rapidly and adversely affect the growth and livability. Under field conditions, most chicks receive feed and water 24-36 hours after hatching, which results in mobilization of body reserves to support metabolism, thermo regulation; decreases body weight and impairs overall performance. Body weight is increased up to three fold during the first week (Jin *et al.*, 1998) and delayed feeding in the first few days of life reduces final body weight. Early access to feed and water (early chick nutrition) as quickly as possible post-hatch is one of the most effective tool in stimulating early digestive function and sustaining performance throughout the growing period of the

chick. Since, available literature on economic feasibility of early post hatch feeding in broilers are very futile in India, a biological experiment was undertaken at the Department of Poultry Science, Madras Veterinary College of Tamil Nadu Veterinary and Animal Sciences University as a part of Ph.D research work to study the effect of early post hatch feeding on the economic efficiency and feasibility of research in hybrid broiler chicken

Materials and Methods

A total of 600 day old straight run broiler chicks from a single hatch, individually weighed, wing banded and randomly allotted into five treatments with four replicates each. Thirty chicks were allotted to each replicate. The experimental birds were offered with one of the following ECNS immediately after hatch in the hatcher tray and continued till placing the chicks in the chick transport box except control (T1) which was subjected to fasting for 24 hours to simulate field conditions. The trial was conducted in completely randomized design.

- T1 Control (No ECNS)
- T2 Egg white protein-glucose based ECNS (EWPG)
- T3 Corn-soyabean and fish meal based ECNS without steaming (CSF WOS)
- T4 Steamed corn-soyabean and fish meal based ECNS (CSF WS)
- T5 Commercial broiler pre starter diet as ECNS (CBPSD)

After reaching the farm, the birds were fed with pre starter, starter and finisher mash from 0-7 days, 8-21 days and 22-42 days of age respectively. The experimental diets were analyzed as per AOAC (2007). The birds were fed *ad libitum* and provided clean portable drinking water. Standard broiler managemental practices were followed.

Body weight and feed intake recorded bi-weekly interval by using an electronic balance with 0.1 g accuracy. Feed conversion ratio was calculated by dividing average feed consumption (in kg) by average body weight gain (in kg) at 2nd, 4th and 6th week of age. Also mortality recorded bi-weekly interval. Bi-weekly body weight gain recorded as, weight of bird in gram minus hatch weight in gram. All the experimental procedures were assessed and approved by the Institutional Animal Ethics Committee from the Tamil Nadu Veterinary and Animal Sciences University, Chennai -600 051 and all the institutional guidelines were followed. Economics of rearing broiler chicken subjected to early post hatch feeding was worked out. Broiler Performance Efficiency Index (BPEI) was calculated by the formula as given below.

$$\text{Broiler Performance Efficiency Index} = \frac{\text{Total saleable live weight (kg)}}{\text{No. of chicks purchased} \times \text{FCR}} \times 100$$

Results and discussions

Economics of rearing broiler up to six weeks of age fed with/without different ECNS immediately after hatch is presented in Table 1. The cost of ECNS feeding per bird was Rs. 0.24 for CSF WOS ECNS, Rs.0.27 for CBPSD ECNS, Rs.0.29 for CSF WS and Rs.1.37 for EWPG ECNS feeding. The cost of production per bird was the lowest in CSF WS ECNS fed broiler chicken (Rs.106.23) and the highest in EWPG ECNS fed broiler chicken (Rs.109.37). The cost of broiler chicken without ECNS (control) was Rs.107.07 per bird. The cost of production of one kg of live broiler chicken ranged from Rs. 62.64 in CBPSD fed group and Rs. 64.81 in control. The net profit per kg live weight was 9.19 in control and ECNS fed groups ranges from Rs 9.63 to 11.36. In ECNS fed broiler chicken, the broiler performance efficiency index (BPEI) was higher ranging from 99.18 (CSF WOS) to 103.58 (CBPSD). The EWPG fed chicks had the BPEI of 102.45 followed by CSF WS fed chicks with 101.51 BPEI. The economics of broiler chicken reared up to six week of age, fed with various post hatch ECNS was worked out for various treatments and found a profitable range of Rs.0.44 to Rs.2.17 per kg live weight than control. Higher returns in broilers fed on ECNS realized in this study was supported by Mirza and Naji *et al.* (2011), who early fed symbiotic in broiler chicken and recorded higher returns, expressed in production index of broilers compared with control. The improved net profit in ECNS fed chicks might be due to increased growth rate, reduced mortality, and improved gut health associated with more efficient absorption of nutrients.

In this experiment, the commercial broiler pre-starter crumble feed can be effectively used for early post hatch feeding of broiler chicken as it improved the net profit of Rs.11.36 per kg of live weight and also broiler performance efficiency index (BPEI) to a desired profit level of 103.58.

Conclusion

In conclusion, the economic efficiency of broiler chicken subjected to early post hatch feeding with commercial pre-starter broiler diet resulted in the improvement of the net profit up to Rs.11.36 per kg of live weight and also in the broiler performance efficiency index (BPEI) to 103.58 than that of control (Rs.9.19 and 92.84 respectively).

Acknowledgement

The author greatly acknowledges the Tamil Nadu Veterinary and Animal Sciences University, Chennai-51 for providing all infra structural facilities to carry out this work.

Conflict of Interests

The author expresses no conflict of interest in this research article.

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Table 1. Economics of rearing broiler chicken up to six weeks of age as influenced by early post hatch ECNS feeding

Treatments	ECNS feeding at hatchery (g)	Feed consumption (kg)/bird			ECNS cost/bird (Rs)	Cost of production / bird (Rs)	Cost of production / kg of live weight (Rs)	Returns / bird (Rs)	Net profit/kg live weight (Rs)	BPEI*
		Pre-starter	Starter	Finisher						
Control (No ECNS)	0	0.102	0.59	2.068	0.00	107.07	64.81	122.25	9.19	92.84
ECNS - EWPG	9.03	0.113	0.544	2.137	1.37	109.37	64.37	125.73	9.63	102.45
- CSF WOS	8.78	0.112	0.587	2.027	0.24	106.37	63.51	123.95	10.49	99.18
- CSF WS	9.41	0.116	0.579	2.024	0.29	106.23	63.05	124.69	10.95	101.51
- CBPSD	9.6	0.109	0.567	2.074	0.27	107.06	62.64	126.47	11.36	103.58

*BPEI – Broiler Performance Efficiency Index

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|-------------------------------|-------------------------|---|----------------|
| 1. Chick cost | Rs.25.00/each | 5. Cost of Early Chick Nutritional Supplement (ECNS): | |
| 2. Miscellaneous cost | Rs.4.00/bird | | |
| 3. Feed cost | | EWPG – ECNS | : Rs.151.42/kg |
| Pre-starter mash | Rs. 30.00/kg | CSF WOS - ECNS | : Rs. 26.82/kg |
| Starter mash | Rs. 29.00/kg | CSF WS - ECNS | : Rs. 30.82/kg |
| Finisher mash | Rs. 28.00/kg | CBPSD - ECNS | : Rs. 28.34/kg |
| 4. Sale price of birds weight | Rs.74.00/kg live weight | | |