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IMPACT OF BIOSTIMULATOR ON PRODUCTION OF LAYING HENS

A. B. Singh *et al.,*

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A. B. SINGH[1], O. P. SINGH[1], B. K. BHINCHHAR[2]* AND P. K. SINGH[1]
[1]Department of Animal Husbandry and Dairying,
UdaiPratap Autonomous College, Varanasi - 221 002 (U.P.) INDIA
[2]Department of Animal Husbandry and Dairying,
Institute of Agricultural Sciences, Banaras Hindu University, Varanasi - 221 005 (U.P.) INDIA
e-mail: basantbhu88@gmail.com

ABSTRACT

The Biovet fed an increasing trend in daily feed consumption from beginning to 31st week of age followed by a little decrease in feed intake which became rather stationary by the end of 42nd week of age in both the control and experimental groups. Weekly feed consumption per bird in control and experimental groups increased gradually from 18th to 31st week of age. The total feed consumption ranged between 12.48 to 25.20 kg and 12.24 to 24.00 kg in control and experimental groups, respectively. The 'Biovet' fed experimental group showed significant higher body weight as compared to control group of layers. The 'Biovet' feed group produced 301 extra eggs during the treatment and on average there was 7.00% increase in egg yield of pullets as compared to controls. The highly significant differences in volume of egg yolk were recorded during 23rd, 25th, 27th, 28th, 29th 30th, 31st, 32nd, 33rd, 34th and 36th week of age among the control and experimental groups under investigation. The overall cumulative feed consumption was significantly higher ($P < 0.01$) in experimental group as compared to control group of laying pullets.

*Corresponding author

INTRODUCTION

At present poultry farming in India is an integral part of agricultural industry, providing gainful employment and thereby raising the economic status of large number of people, besides supplying much needed animal protein to the large population of this country. India is the fifth largest producer of poultry meat in the world after USA,China, Brazil and Mexico (Executive guide, 2006). It is world's 3rd in egg production and 6th in chicken meat production. Feed is a major component, affecting net return from the poultry business, because about 65% of the total expenditure in term of cash is spent on feed purchase. To ensure more net return and to minimize high expenditure on feed are the main challenges, for which many research strategies have been practiced such as introducing feed supplements and feed additives (Pervez, 1992). That expenditure on feeding birds is governed not only by the price of feeds but also by the quantity of feed used, needs no elucidation. While the former is dependent on several factors beyond the control of the poultry farmer, latter can be more easily by him by adopting better management practices. Similar work done by Krasil *et al*. (1970) on 1650 hens were each given 0.3 g biostimulator from dried embryonic tissues (obtained from a slaughterhouse) daily for 3 mth. During the 3 mth of the experiment (Feb.-Apr.) and in May, egg production was higher by 10.8-18.0% and egg weight by 2.0-4.0% than in 1550 controls. Body weight was not affected adversely. Pandey *et al*. (2013) also found that herbal biostimulatordrug having better effect on growth performance than control and market drug. Similar work also done by Jacobes*et al*. (2007).In case of birds feed intake depends on several factors which include size and age of the birds, environmental temperature, stage of the reproductive cycle, appearance and taste of the food and availability of water. Though feed consumption by birds was found to be less in cage system than the deep litter system, the birds in cages require more care, better controlled conditions and more labour. Deep litter system has, therefore, remained more popular in the country and under certain conditions; viz. proper frequency of feeding, stocking rate, culling etc. can remain superior to cage system even in respect of feed requirement. Srivastava *et al*. (2012) study the effect of diet supplementation with a mixture of some selected indeginous herbs on growth of broiler chicks and layers and result shows that the indigenous herbal drugs having a significant effect on the performance of the broiler and layer chicken during summer season.In order to provide proper guidance to feed manufacturers, broiler and pullet growers, it was planned to study the efficacy of a new growth promoter 'BIOVET'in poultry production.. Therefore, the present research work has been carried out to examine the impact ofBIOVET on feed conversion efficiency of poultry birds, study the effect of BIOVET on growth rate of poultry birds , the effect of BIOVET on egg production of poultry birds and assess the influence of BIOVET on quality of eggs of poultry birds.

MATERIALS AND METHODS

The present study entitled "Impact of biostimulator on production of poultry layers"

was undertaken during the year, 2010-11. Four hundred chicks, one day old stock of white leghorn (Hyline) chicks were procured from M/S Rani Shaver Poultry Breeding Farm, Delhi.These birds were reared at the Poultry Research Unit, UdaiPratap Autonomous College, Varanasi (Uttar Pradesh), India with usual care and precautions as needed for their growth and production. A part of this stock was used in the experiments to observe the effect of feeding biostimulator 'BIOVET' (Wokhardt) on poultry production and to assess the keeping quality of poultry products and their ultimate use on poultry production.

Selection and grouping of experimental birds

After rearing the female chicks for 18 weeks, 40 pullets which showed uniformity in respect of body size, body weight, body vigour, feed consumption were randomly selected for the present investigations. These pullets were divided into two equal groups of the 20 were served as control and remaining 20 for experimental on the basis of their body weight. There was no significant difference in mean body weight of birds in different treatments on day of grouping at 18 weeks. After immediately selection of birds in both the groups (control and experimental) were shifted in experimental cubicals.

Treatment offered

'Biovet' a biologically derived biostmulator by wokhardt Veterinary limited containing enzymes, vitamins, minerals and organic nitrogen was given to layers @ 2 ml/litre drinking water. This Biovet fortified water was available ad libitum to experimental groups of layers. The trial lasted for 175 days for layers. The Biovet feed group was designated as experimental while the other one as control.

The day housing in the experimental shed throughout the duration of the experiments the birds (pullets) of each group were weighed individually a week.

Quantity and physical analysis of eggs

During the study on layers, observations on egg production in different treatments and their gross chemical composition were under taken.

Collection of egg

Egg boxes were put in front of each cubical in gallery. Form each cubical the eggs were collected daily at 8.00 AM, 12 Noon and 4.00 P.M. these were counted group and numbers.

Maintenance of records

Recorded the body weight, growth rate, feed consumed by layers, eggs produced by layers were regularly maintained throughout the experiments. Control and experimental temperature was recorded by (maximum and minimum thermometer) of each day during both experiment. Relative humidity was recorded with the help of zeal make (dry and wet bulb) hygrometer. These two instruments were kept in the poultry shed and readings taken at fixed time on every day.The statistical analysis for the experiment was done by using standard procedure given by Cochran and Cox (1957).

RESULTS AND DISCUSSION

The data recorded during the progress of experimental observation on birds were statistically analyzed to assess the degree of variations due to treatments effect. The results were presented and depicted with the help of tables and figures at appropriate places. The effect of treatments has been compared taking into account the statistical parameters. In all the cases, first of all main effect of the treatments and then the statistically significant interaction effects are described.

Impact of biovet on laying hens

Daily feed consumption per bird

The Biovet fed experimental group consumed less feed as compared to control group of laying pullets. The daily feed consumption per bird ranged between 75.92 to 151.64 g and 74.50 to 144.49 g in control and experimental groups, respectively. The overall average of daily feed consumption per bird per day in control and experimental groups were found to be 129.68±19.30 g and 125.11±19.10 g, respectively(Figure 1). Similar results were reported by Woodward *et al.*, 1988, Yusrizal and Chen, 2003b and Hooge, 2004.

Feed consumption per week

Weekly feed consumption per bird in control and experimental groups increased gradually from 18th to 31st week of age.

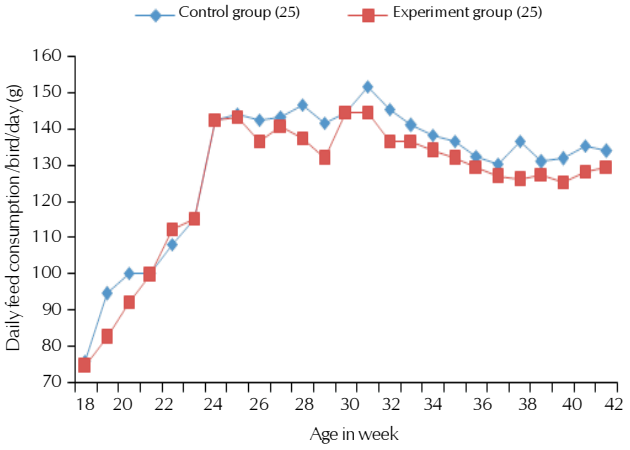

Figure 1: Impact of biostimulator 'Biovet' on daily feed consumption in laying hens

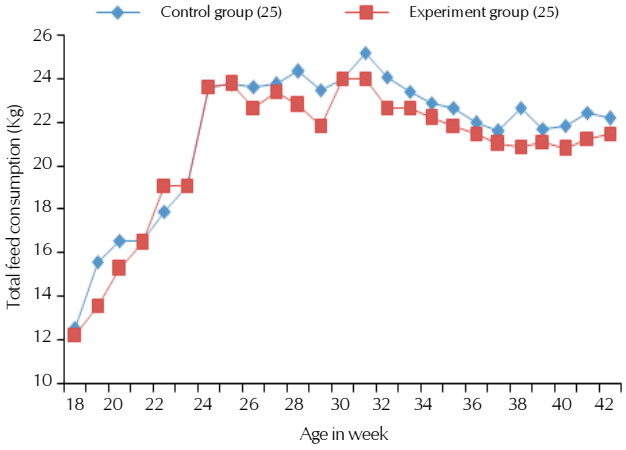

Figure 2: Impact of biostimulator 'Biovet' on total feed consumption in laying hens

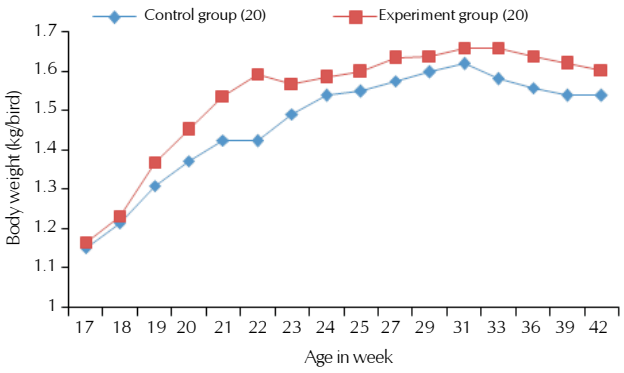

Figure 3: Impact of biostimulator 'Biovet' on body weight of laying hens (kg/bird)

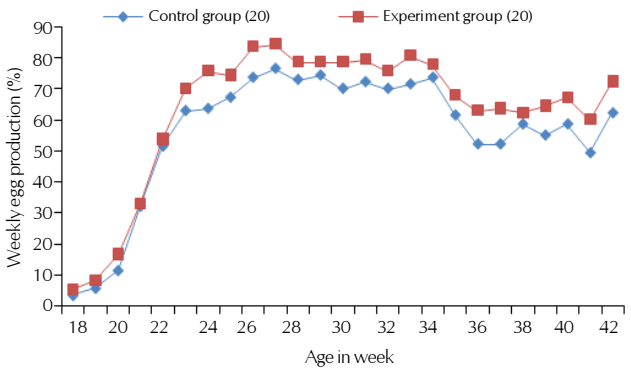

Figure 4: Impact of biostimulator 'Biovet' on weekly egg production (%) in laying hens

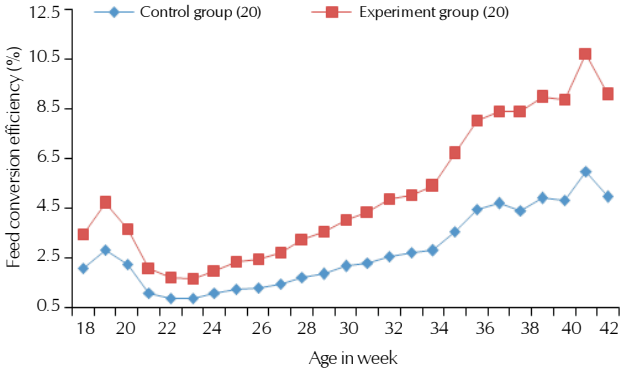

Figure 5: Impact of biostimulator 'Biovet' on feed conversion efficiency in laying pullets

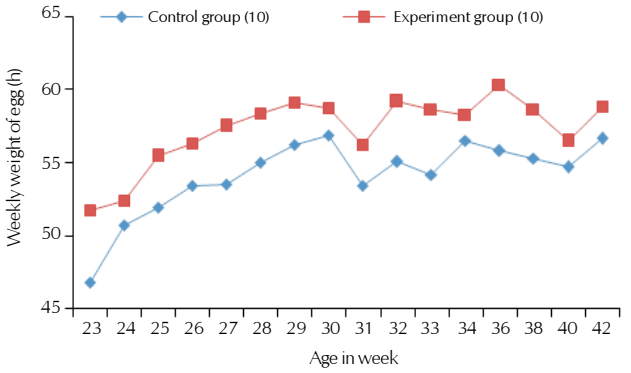

Figure 6: Impact of biostimulator 'Biovet' on weekly egg weight in laying pullets

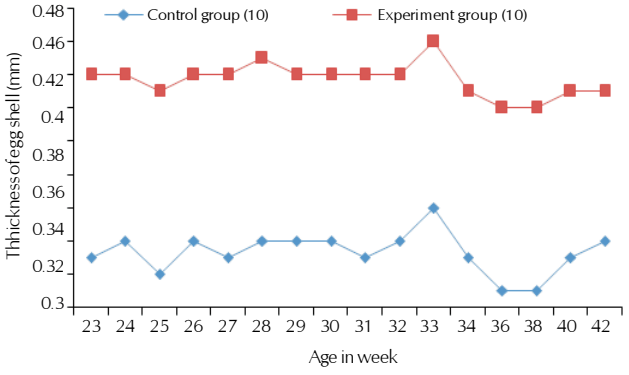

Figure 7: Impact of biostimulator 'Biovet' on thickness of egg shell

Thereafter, it showed a decreasing but static trend in both the groups under reference.

Total feed consumption (Kg)

The data shows that the average total feed consumption of laying hens was 21.50 ± 3.24 kg and 20.76 ± 3.20 kg in control and experimental groups, respectively (Fig. 2). The difference in total feed consumption of laying hens between the two groups were highly significant ($P<0.01$). Dumonceaux *et al.* (2006) agreements that the inclusion of antibiotic growth promoters, such as virginiamycin, at subtherapeutic levels in poultry feeds has a positive effect on health and growth characteristics, possibly due to beneficial effects on the host gastrointestinal microbiota.It appears that supplementation of 'Biovet' tended to increase the digestibilities of nutrients and thereby improve their utilization.

Body weight (kg/bird)

Regarding mean body weight weekly observations were made from 17th to 25th week of age followed by two week observation up to 33rd week and three week upto 42nd week of age (Figure 3). Significant differences were observed between control and experimental groups for all the observations of body weight of laying hen.The 'Biovet' fed experimental group showed significant higher body weight as compared to control group of layers. These results collaborated with Sultan *et al.* (2006).

Egg production (Number)

The average egg production in control group was 98.00 ± 37.20 per week against 110.00 ± 40.10 in 'Biovet' feed experimental group.The total number of egg production was significantly higher ($P<0.01$) in experimental group as compared to control group of laying hens.(Fig. 4)

Feed conversion efficiency

Feed conversion efficiency on egg number basis was also calculated between control and experimental groups, covering a period of 18th to 42ndweeks of age (Figure 5).Kral*et al.*(2012) evaluated the same effect of probiotic on the performance of broiler chickens. The average feed consumed per 12 egg

produced was found to be 2.75±12.8 kg in control group and 2.29±10.7 kg in experimental group. These figures indicate that the efficiency of feed conversion in to product (egg) was more in experimental group than the control group.

(7) Egg weight (g): The overall means for the weight of eggs based on entire duration of laying during the experiment from 19th to 42nd week in control and experimental groups were found to be 51.06 ± 5.51 g and 52.93 ± 6.14 g, respectively. The egg weight in experimental group was more than the control group and the differences between the two groups were highly significant ($P<0.01$). There has been a tendency of producing heavier eggs in 'Biovet' fed group of laying hens (Figure 6).

(8) Weight of Egg shell, Egg yolk and Egg albumen: The overall mean for shell weight , egg yolk weight and egg albumen weight in control group was 5.02±0.14 to 5.77± 0.08g, 13.53±0.421 to 15.98±0.294g and was 29.41 ± 0.655 g (23rd week) to 35.11 ± 0.812g (36th week) respectively, whereas in experimental group it ranged between 5.13±0.10 to6.46±0.145g, 14.50±0.276 to 16.73±0.240g and 31.76 ± 0.517 g (23rd week) to 37.94 ± 0.684 g (32nd week), respectively.

(9) Thickness of egg shell (mm): Thickness of the egg shell depends on size, weight and shape of the egg. Figure 5.1.17 indicates that the mean egg shell thickness ranged between 0.31 ± 0.007 mm to 0.36 ± 0.004 mm and 0.42 ± 0.007 mm to 0.46 ± 0.006 mm in control and experimental groups, respectively. From these data it appears that thickness of egg shell was not much affected by 'Biovet' (Figure 7).

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