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Effect of Semi Natural Feed Supplement on Improving Egg Quality and Production Parameters in Commercial Layer Birds

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Abstract: ***The poultry industry holds significant importance globally, serving as a major source of employment for millions of individuals. Within the poultry sector, layer birds play a crucial role as their eggs constitute an affordable and abundant protein source for human consumption. In the current context, there is a growing emphasis not only on maximizing egg production but also on ensuring egg quality to meet market demands. Against this backdrop, an experiment was conducted involving two hundred white Leghorn layer birds aged 32 weeks to assess the efficacy of RAN Egglay, a semi herbal product aimed at enhancing egg quality and production. The birds were divided into two groups: T1 (control group) received a standard diet without supplementation of RAN Egglay, while T2 group was provided with RAN Egglay at a rate of 1 kg per metric ton along with their regular diet. The supplementation of RAN Egglay in the layer feed led to notable increases in egg production, feed intake, and feed efficiency. Furthermore, a significant improvement in egg weight and egg mass was observed in the T2 group.***

Keywords: RAN Egglay, Egg weight, Egg production, Natural Egg Enhancer, Herbal Egg Solution, Rivansh Animal Nutrition

1. Introduction

Meeting the high protein demand of densely populated countries has made poultry farming indispensable. Consequently, significant investments have been made in the poultry business for both meat and egg production. India, as the world's third - largest egg producer, has experienced annual egg production growth rates of 8 - 10%. The Indian poultry market, encompassing broilers and eggs, was valued at Rs.1, 750 billion in 2018 and increased to Rs.2049 billion in 2019. Projections indicate that the market will further expand to Rs.4, 340 billion by 2024, with a growth rate of 16.2% during 2019 - 2024. To meet the escalating demand for eggs, it is imperative for farmers to ensure their birds receive adequate nutrition on the farm.

In pursuit of profitable poultry ventures, it is essential for layer chickens to produce eggs of superior quality. However, egg production and overall bird productivity face various challenges. Factors such as feed quality and quantity, water consumption, lighting duration, diseases, and management practices significantly influence egg production. Poor feed quality and inappropriate feeding programs are pivotal in determining egg production, size, quality, and hatchability in laying hens. Inadequate levels of energy, protein, or essential nutrients can lead to a decline in egg production. Therefore, supplying essential nutrients that enhance the fertility of laying hens is crucial for achieving high - quality egg production.

Herbal feed supplements play a vital role in supporting the performance of layer birds. These supplements contain phytogenic active compounds that stimulate gut microflora and facilitate higher enzyme secretion, thereby promoting overall gut health and increased productivity.

RAN Egglay (by Rivansh Animal Nutrition Pvt Ltd) is a natural product derived from plant extracts containing essential minerals that boost the fertility, egg quality, and production of layer birds by improving liver and reproductive health. This product enhances egg quality, including yolk weight and shell thickness, while also increasing the overall egg weight. Moreover, it optimizes egg production in aging birds by reducing the feed conversion ratio. RAN Egglay promotes better nutrient absorption and maintains intestinal balance of volatile fatty acids, thereby ensuring healthy weight and improved egg quality in layer birds.

2. Material & Method

The research involved 200 healthy white Leghorn layer birds aged 32 weeks, each with a normal reproductive history. These birds were housed at the Govindnandsagar Herbal and Agricultural Farm, located in Jarora village, District Bilaspur, H. P., India. The layer birds were housed in cages and divided into two groups, each consisting of 100 birds.

Throughout the study period, the birds were provided with ad libitum diet. All birds were fed according to the normal dietary protocol (with a crude protein content of 18% and a fat content of 2 - 3%) followed at the farm. The herbal egg solution, RAN Egglay, procured from Rivansh Animal Nutrition Pvt Ltd in Paonta Sahib, H. P, India, was administered to the treatment group T2.

RAN Egglay is a comprehensive feed additive crafted to optimize the health and productivity of layer birds. Its composition includes a balanced blend of essential nutrients, trace minerals, amino acids, and herbal extracts.

The standard diet regimen followed for the layer birds is outlined in Table 1 below:

Table 1: The Diet Followed during the trial is given hereunder

Raw Material	Group 1 (T_1)	Group 2 (T_2)
Maize	55	55
Soya Meal 46 %	15	15
Mustard DOC	3	3
DDGS	4	4
Soya Oil	1	1
DORB	11	11
LSP	10	9.9
Salt	0.6	0.6
Lysine Hcl	0.15	0.15
DL Methionine	0.1	0.1
Vitamin Premix	0.05	0.05
Mineral Premix	0.1	0.1
RAN Egglay	0	0.1
TOTAL	100	100

At its core, Egglay contains a significant dose of Vitamin E (250 mg), alongside crucial elements like cobalt, copper, iodine, iron, magnesium, manganese, zinc, DL - Methionine, calcium, and phosphorus. These components work synergistically to support various physiological functions essential for egg production and overall bird health. Additionally, Egglay incorporates herbal ingredients such as Andrographis paniculate, Cichorium intybus, and Solanum nigrum, renowned for their potential benefits in enhancing immune function, promoting digestive health, and exerting antioxidant effects. By providing a balanced combination of vital nutrients and herbal extracts, Egglay aims to maximize egg production, improve egg quality, and minimize the incidence of health issues in layer birds, thereby contributing to the overall profitability and sustainability of poultry farming operations.

The experimental groups were defined as follows:

- T1: Control group with no supplementation (n=100).
- T2: Treatment group supplemented with RAN Egglay at a rate of 1 kg per metric ton (n=100).

Supplementation with RAN Egglay commenced upon grouping the birds and continued for a duration of four weeks.

Throughout the study, the birds were monitored for various parameters including egg production, feed intake, feed efficiency, and egg size (evaluated based on egg mass and shell quality). Additionally, environmental conditions within the poultry farm, such as temperature and relative humidity, were recorded using a thermo - hygrometer, and the Temperature Humidity Index (THI) was calculated.

3. Statistical Analysis

The data underwent analysis of variance (ANOVA) to compare means across different groups, and significant differences among groups were identified using Fisher's least significant difference test. This statistical approach allows for the detection of variations in means between groups, providing valuable insights into the effectiveness or impact of different treatments or conditions.

4. Result & Discussion

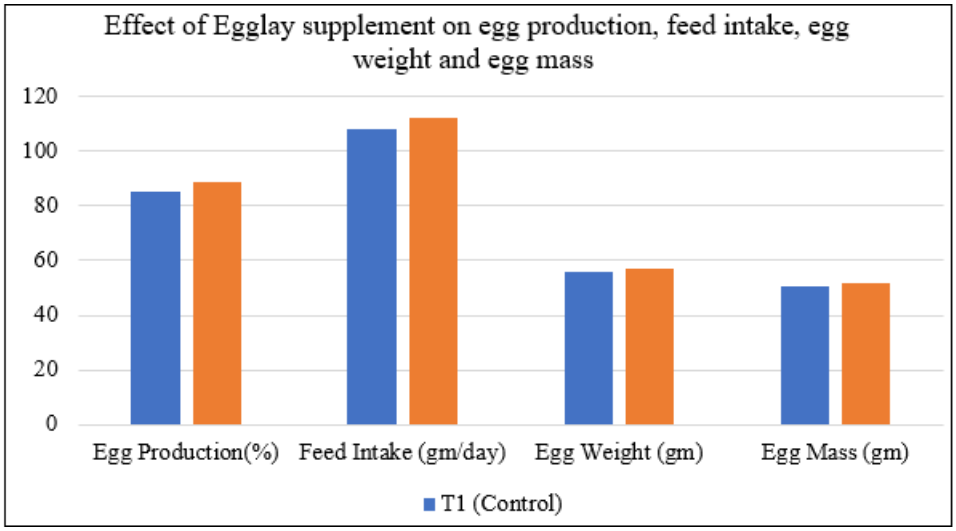
The effect of RAN Egglay on egg production (percentage), feed intake (g/day), weight of egg (g), and egg mass (g) is presented in Table 2

Group	Egg Production (%)	Feed Intake (g/day)	Egg Weight (g)	Egg Mass (g)
T_1 (Control)	85	108	56	50.5
T_2	89	112	57	51.6

The study findings indicate a noteworthy enhancement in various parameters upon supplementation with RAN Egglay:

1) **Egg Production:** There was a significant increase in egg production, with the number of eggs rising by 4% in the group supplemented with RAN Egglay compared to the control group.
2) **Feed Intake:** The feed intake showed a notable improvement in the RAN Egglay supplemented group (T2), with an observed increase of 4 grams per day compared to the control group.
3) **Egg Weight:** The average egg weight was found to be higher in the RAN Egglay supplemented group, measuring 57 grams compared to 56 grams in the control group.
4) **Egg Mass:** Egg mass also demonstrated marked improvement in the RAN Egglay supplemented group (T2).

These findings suggest that the supplementation of RAN Egglay positively influenced egg production, feed intake, egg weight, and egg mass, highlighting its potential as a beneficial addition to poultry feed for improving overall productivity and quality of eggs.



The performance of layer birds is influenced significantly by factors such as a balanced diet and effective management practices. The current study places particular emphasis on optimizing feed intake through the inclusion of a feed supplement enriched with herbal ingredients, predominantly amino acids, micro minerals, and phyto - biotics. This product exhibits a synergistic effect, enhancing overall efficiency and consequently improving the productivity of layer birds.

The active compounds derived from herbal plants positively impact the gut ecosystem by controlling the proliferation of harmful bacteria. The addition of RAN Egglay feed supplement enhances the digestibility of feed ingredients, thereby boosting overall egg production. Notably, the treatment group (T2) achieved the highest egg production rate, reaching 88.00% compared to the control group.

No significant difference was observed in egg yolk content. The antibacterial properties of herbal ingredients operate by regulating harmful microbes, thus rendering feed constituents more bioavailable to the birds. Additionally, antioxidants present in natural ingredients play a pivotal role in safeguarding feed fat from damage caused by oxidation reactions.

Various trials have corroborated the efficacy of herbal plants containing phenolic components in enhancing the stability of oxidation reactions in poultry - derived products such as chicken meat and eggs. These findings underscore the potential of incorporating herbal feed supplements like RAN Egglay to optimize the health and productivity of layer birds, while also ensuring the quality of poultry products for consumers.

5. Conclusion

The utilization of the feed additive RAN Egglay, derived from natural herbs and minerals, demonstrates a synergistic effect in augmenting both the production and quality of eggs. This is evidenced by an increase in egg weight and a reduction in eggshell breakage.

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