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Original Article**Nutritional Management Strategy for Economic Poultry Farming in India****Abhishek Sharma¹, Vikas Galav² and Monika Karnani³,**¹M.V.Sc Scholar, PGIVER, Jaipur (Raj.)²Assistant Professor, Technical Writing and Scientific Communication, PGIVER, Jaipur (Raj.)³Assistant Professor, Animal Nutrition, PGIVER, Jaipur (Raj.)*Corresponding author: vikasgalav@gmail.com

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INTRODUCTION

Poultry farming is an important livestock sector. This not only provides a solution to unemployment and malnutrition, but also boosts the rural economy. This is evident from the fact that India ranks 3rd in egg production and 5th in poultry meat production(PIB,2023).

Additionally, the poultry meat market in India has reached a significant value of 1,959.5 billion INR in 2022 and is predicted to grow at CAGR of 9.2% between 2023 and 2028 to reach a value of INR 3133.41 billion by 2028.The market consists of three segments(CAGR Annual report 2023).

Poultry farming, small and marginal poultry farmers and poultry producers. Poultry is a staple of rural households, as it not only meets the nutritional needs of rural households, but can also add significant small income. Commercial poultry farming shows a growing market driven by increasing demand and supply. In between are the small and marginal poultry operators who are important links in the overall supply chain of the Indian poultry market. These completely different segments work side by side and complement each other, making the Indian poultry market a unique industry.

India has seen the escalation of the poultry sector from backyard farming to a techno-commercial industry due to the involvement of various key players and significant investment in rearing, hatching and rearing. These advances in structure and function can be attributed to the increasing number of egg-eaters and non-vegetarians and the proportion of health-conscious people in our society. In addition, the growth of production and consumption is predicted in the coming years under the influence of various factors, such as changes in eating habits, urbanization, rising incomes, etc. Despite the overall growth of the poultry industry, one important area that requires special attention to increase productivity and profits is poultry nutrition management. High feed costs limit poultry productivity. In addition, the limited supply and poor quality of feed prevent optimal poultry farming in our country. This is mainly due to the diverse ecoregions of the country characterized by extreme or low rainfall. All these factors in turn lead to

low protein intake in people, which leads to serious health problems. Therefore, the role of feed management in poultry farming is huge.

CURRENT SCENARIO OF NUTRITIONAL RESOURCES

The success of poultry farming is mainly expressed in the quality of individual birds, the care conditions offered to them, the quality of the food provided to the birds and the efficiency of conversion of the nutrition of the breed used. Of all of them, the quality of nutrition, which is the most expensive input, deserves the most attention. Feed accounts for 65-70% of broiler production costs and 75-80% of layer costs (Gunasekar, 2007; Olugbenga, Abayomi, Oluseye, & Taiwo, 2015).

The most popular grain used in poultry is corn, which is used in conjunction with protein-rich soybean meal. The increase in corn availability is significantly lower than the production rate of meat and eggs. To do this, it is necessary to increase the production of corn and soybeans and study the benefits of alternative energy- and protein-rich foods in poultry meat. A more scientific and holistic approach is needed to meet the demand of the growing poultry industry and the huge gap between the demand and availability of poultry feed. These approaches are briefly listed below.

Cereals and oilseeds, which are common bird food, compete directly with human food. Due to increasing urbanization and shrinking agricultural land, grain and cereal production is not growing at the same rate as population growth. After that, the availability of grain and oilseed in poultry farming is expected to decrease. This increases the cost of nutritional ingredients and thus the price of eggs and meat. This, in turn, can reduce the consumption of poultry products by the poorer sections of society and reduce their protein intake. This vicious cycle goes on and on. Identifying new sources of nutrition can solve this problem. The development of efficient feed converters can also be useful in reducing poultry costs. A healthier approach is to find alternative and sustainable food ingredients that are not consumed by the population and are abundantly available. Another strategy is to exploit technological advances in feed processing that allow poultry to utilize structural carbohydrates and phytate phosphates. This reduces their reliance on stored plant nutrients such as β -glucans, pentosans, mannans, cellulose, lignin and phytic acid, which are not only indigestible to poultry, but also cause indigestion, leading to wet waste problems. The solution to this is the use of nutritional enzymes (Reddy VD, 2018). There are several technical and socio-economic factors that limit the use of agro-industrial by-products and non-conventional nutrients in practical formulations, despite their enormous potential. The food industry can overcome these limitations with the help of scientists, planners and policy makers. Feed mixing errors, nutrient imbalances, inadequate storage, mishandling of raw feed ingredients and loss of potency are likely causes of nutrient deficiency diseases in poultry. This leads to poor performance of individual birds and flocks without clinical signs. Therefore, such errors should be minimized in the food industry. Insufficient knowledge about feeding birds.

STRATEGIES FOR REDUCTION OF FEED COSTS IN AN ECONOMIC POULTRY FARMING

The decrease in feed costs increases the profitability and production efficiency of poultry farms (The poultry site, 2007). To These goals can be achieved through scientific nutrition and management strategies. These strategies are listed below :

Timed feeding of broilers

Broilers are fed freely to reach market weight in less time. However, timely feeding is recommended if the birds receive a certain amount of feed 4-6 times a day and then keep for an hour without eating.

This reduces the mechanical stimulation of food that is usually seen when feeders are used throughout the day. When the birds are not given food, they remain calm and quiet. This helps improve nutrient utilization as less maintenance feed is needed. Amino Acids and Enzyme Additives: Protein is an expensive food ingredient in food rations and is therefore of great economic importance, especially in protein deficient tropical countries like India. Therefore, rations should be designed to achieve at least an optimal level of production without high feed costs. The actual benefit of increasing protein is usually limited to about a 0.025% increase in lysine and methionine. Addition of 250 g of synthetic lysine and methionine per ton of feed provides a similar benefit. Fortunately, with recent advances in biotechnology, the availability of such synthetic amino acids has become possible, making this approach affordable. Enzymes play an important role in improving nutrient utilization and reducing feed costs. For example, the enzyme phytase releases some of the undigested phosphorus and reduces its secretion, thus minimizing the need and cost of phosphorus supplementation. Another enzyme, protease, effectively breaks down protein against nutrients in nutritional ingredients such as soybeans. The enzymes amylase and xylanase also increase the available energy in birds by 3-5% if they are added to the diet.

Control feed waste: There are many ways in which feed is wasted without being used by the bird. These feed waste channels burden the poultry farm economy and include (Chandrasekaran, 2014):

- i. Feed Trough Design: Due to low availability and resistance to physical damage, poultry farms usually use elongated troughs made of galvanized metal. These troughs add to the food waste problem and should therefore be replaced by a boiler or chain feed system.
- ii. Food level in feeders: The food must be regulated and kept at a certain level and avoid overeating the food trough.
- iii. Beak clipping: Birds with long beaks play with the feed, resulting in spillage of the feed. If the feed mixes with the bedding material, the bird will not eat it. Therefore, cutting the beak is necessary not only to prevent spillage of food, but also to prevent certain vices, such as cannibalism.
- iv. Food storage: Food that is not handled properly can spoil and mold. In addition, the tropical region where the climate is hot and humid favors mold growth. To avoid this problem, 0.5% calcium aluminum silicate can be added to the feed without harming the health of the birds. In addition, the use of silos can alleviate the problem of feeding feed.

Use of flavoring agents: Several experiments have been conducted to test the effect of food flavorings on birds. The results showed that the flavored birds were 8 grams heavier at four weeks and 3 grams heavier at eight weeks than the control birds. In addition, an improvement in feed conversion was also observed, resulting in tons of feed.

Use of unusual feed: Unusual feed refers to feed that is not normally used for eating. A wide range of NCF variants are listed below. They are mostly organic in nature and their economic value is lower compared to collection and transportation costs. Some of these nutritional resources may contain nutrients and toxic substances, so they should be properly handled and used as a supplement to overcome the limited nutritional resource.

- Source of energy (Krishna et al., 2014)
Oil-free seed flour, tapioca flour, dried poultry scraps, molasses, small millets.
- Source of vegetable protein (Ravindran and Blair, 1992; 1993)
Mustard cake, soy flour, sesame flour, kobaros, sunflower seed, safflower flour, Ramtil cake
- Source of animal protein
Blood meal, liver meal, feather meal, poultry by-product meal, hatchery by-product meal.

CONCLUSION

The scarcity of nutritional resources is a critical situation in poultry farming, which must be taken care of through effective nutritional management. There is a significant gap between the need and availability of feed resources, which must be filled by various strategies such as the use of non-conventional nutrients, flavorings, proteins and enzyme additives. Currently, these possibilities are not fully used for inclusion in poultry feeds. However, with the help of knowledge and new discoveries, future challenges will be solved to improve the prosperous future of poultry farming in India.

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