Moringa Leaf Meal: A Sustainable Protein Source for Poultry Nutrition

Arun Kumar Panda* and Biswanath Sahoo

ICAR-Central Institute for Women in Agriculture, Bhubaneswar

Corresponding Author
Arun Kumar Panda
Email: akpanda59@gmail.com

OPEN ACCESS

Keywords

Moringa leaf meal, Protein source, Poultry

How to cite this article:

Panda, A. K. and Sahoo, B. 2025. Moringa Leaf Meal: A Sustainable Protein Source for Poultry Nutrition. *Vigyan Varta* 6(7): 50-52.

ABSTRACT

Moringa leaf meal is increasingly being considered as an alternative protein supplement in poultry diets due to its excellent nutritional profile. The optimal inclusion level of MLM in poultry diets varies depending on the type of birds (broilers vs. layers) and the specific formulation of the diet. Typically, it ranges from 5-10% of the total diet. By incorporating Moringa into poultry feed, farmers can potentially reduce feed costs while providing a nutrient-rich diet for their birds.

INTRODUCTION

Poultry production in India has gained significant growth due to growing demand of egg and chicken meat. Feed accounts for 70 to 80% of the total cost of production in poultry. Balanced and précised feeding is therefore, a foundational aspect of poultry production, impacting everything from bird health and growth to production efficiency and overall profitability. The ever rising in the cost of conventional feed ingredients compel the poultry nutritionists to search for alternate source of feed ingredients. One such feed ingredient is moringa leaf meal (MLM). Moringa leaf meal is increasingly being considered as an alternative protein supplement in poultry diets due to its excellent nutritional profile (Gayathri *et al*., 2020). Moringa leaf is known for its high concentrations of essential nutrients, including proteins, vitamins, and minerals (Donkor *et al*., 2013).

Nutritive Value of Moringa Leaf Meal

- **High Protein Content:** Moringa leaves contain around 25-30% protein, making it a valuable source of plant-based protein. This is comparable to or even higher than some conventional protein sources used in poultry diets, such as soybean meal.
- **Amino Acids:** The amino acid profile of Moringa leaves is rich in essential amino acids, including lysine, methionine, and tryptophan, which are critical for growth, development, and egg production in poultry.
- **Vitamins and Minerals:** Moringa is a powerhouse of vitamins (like Vitamin A, Vitamin C, and various B-vitamins) and minerals (such as calcium, iron, and potassium), which contribute to overall poultry health, immunity, and egg production.
- **Antioxidants:** The leaves contain antioxidants, including flavonoids and polyphenols, which can help boost the immune system and reduce oxidative stress in poultry.
- **Fats:** Moringa leaf meal contains some fats, including omega-3 fatty acids, but in smaller quantities than other sources of fat in poultry diets.

The rich nutritional profile of MLM makes it as an important protein supplement in the diet of poultry. The nutrient composition of MLM is given in Table 1 and 2.

Table 1. Nutrient composition of Moringa Leaf meal

Nutrient	% DM basis
Crude Protein	23-28
Crude Fiber	11-15
Ether Extract (Fat)	4-8
Ash	7-12
Calcium	200-500 mg
Phosphorus	100-150 mg
Iron	20-40 mg
Magnesium	100-150 mg
Potassium	1500-2500 mg
Sodium	50-100 mg
Vitamin A (Carotenoids)	15-40 µg
Vitamin C	10-30 mg
Vitamin E	0.5-1.5 mg
Folic Acid	25-50 µg

Table 2. Amino acid composition Moringa Leaf meal

Amino Acid	% DM Basis
Alanine	1.6 - 2.1 g
Arginine	2.5 - 3.0 g
Aspartic Acid	3.0 - 4.0 g
Cysteine	0.4 - 0.6 g
Glutamic Acid	5.5 - 7.0 g
Glycine	1.0 - 1.5 g
Histidine	0.5 - 0.7 g
Isoleucine	1.3 - 1.6 g
Leucine	2.3 - 2.8 g
Lysine	2.1 - 2.5 g
Methionine	0.4 - 0.6 g

Benefits of Moringa Leaf Meal in Poultry Diets

- **Improved Growth Performance:** Studies have shown that dietary incorporation of MLM in poultry improves growth performance, especially in broilers, due to its high protein and amino acid content.
- **Egg Production:** In laying hens, MLM improves egg production, increase egg size and egg quality due to the vitamins and minerals it provides.
- **Reduced Feed Costs:** MLM can be used as a partial replacement for more expensive conventional protein sources like soybean

meal or fishmeal, potentially lowering the cost of poultry feed.

- **Enhanced Immune Function:** The antioxidants in MLM can help strengthen the immune system, leading to healthier birds and potentially reducing the need for antibiotics or other medications.
- **Sustainability:** Moringa is a drought-resistant, fast-growing plant, making it an environmentally friendly and sustainable option for use in poultry feed, especially in regions where conventional feed ingredients may be scarce or expensive.

Limitations of Moringa Leaf Meal

- **Anti-Nutritional Factors:** Moringa leaves contain some anti-nutritional factors, such as tannins and oxalates, that could interfere with nutrient absorption. However, these compounds are typically in low concentrations in MLM and can be managed through proper processing techniques (such as drying and grinding).
- **Inclusion Levels:** The optimal inclusion level of MLM in poultry diets varies depending on the type of birds (broilers vs. layers) and the specific formulation of the diet (Donkor *et al*., 2013). Typically, it ranges from 5-10% of the total diet, though higher levels may be used with proper management (Abdulkarim *et al*., 2022).
- **Palatability:** While MLM is palatable to poultry, the addition of high levels of it might affect the taste of the feed. Therefore, it's important to gradually introduce it into the diet to ensure the birds adjust.
- **Source Quality:** The quality of MLM can vary depending on the source, the processing method, and storage conditions. It's essential to ensure that the meal is free from contaminants and properly processed.

CONCLUSIONS:

Moringa leaf meal is a promising and sustainable protein supplement for poultry, offering several nutritional benefits, including enhanced growth, improved egg production, and immune system support. By incorporating Moringa into poultry feed, farmers can potentially reduce feed costs while providing a nutrient-rich diet for their birds. However, the inclusion level and processing methods should be carefully considered to optimize its effectiveness and ensure the health of the poultry.

REFERENCES:

Abdulkarim, A. A. and Jürgen Z. 2025. 2022. Moringa (M. oleifera) Leaf Meal in Diets for Broilers and Laying Hens: A Review. Journal of Agricultural Science, 14: 15-33.

Donkor, A. M., Glover, R. K., Addae, D., & Kubi, K. A. (2013). Estimating the nutritional value of the leaves of Moringa oleifera on poultry. Food and Nutrition Science, 4(11), 1077-83.

Gayathri, S. L., L. K. Babu, and A. K. Panda. 2020. Effect of dietary supplementation of Moringa oleifera leaf meal on egg quality, composition and anti-stress activity of Vanaraja laying hens. Indian Journal of Animal Sciences 90 (2): 207–211.