

Use of Poultry Manure as an Alternative of Soybean in Fish Feed

Abdul Samad^{1*}

1. Department of Poultry Science, Faculty of Veterinary and Animal Sciences, MNS university of Agriculture Multan

*Corresponding Author: buzdarabdulsamad@gmail.com

ABSTRACT

This article discusses the potential of using poultry manure as an alternative to soybean meal in fish feed. Poultry manure is a cost-effective and nutrient-rich ingredient that can help reduce the environmental impact of the poultry industry. Studies have shown that replacing soybean meal with poultry manure in fish feed can result in comparable growth performance for fish. However, there are also challenges associated with using poultry manure in fish feed, such as variable nutrient content, contaminants, and processing difficulties. Proper processing and utilization of poultry manure can improve its nutritional quality and make it a sustainable and cost-effective ingredient in fish feed. Further research is needed to optimize the use of poultry manure for different fish species

Introduction

Poultry manure is a nutrient-rich organic waste product generated by the poultry industry [1]. It is rich in nitrogen, phosphorus, and potassium, making it an excellent source of plant nutrients. In recent years, there has been increasing interest in using poultry manure as an alternative to soybean meal in fish feed due to its cost-effectiveness and potential environmental benefits. In this article, we will explore the use of poultry manure as an alternative to soybean meal in fish feed, its nutritional value, and its potential benefits and drawbacks

Nutritional value of poultry manure

Poultry manure is a rich source of essential nutrients such as nitrogen, phosphorus, and potassium, as well as trace elements such as zinc, copper, and manganese. The nutrient content of poultry manure varies depending on factors such as the type of poultry, the age of the birds, and their diet. Generally, the nutrient content of poultry manure is as follows:

Nitrogen: 2-4%

Phosphorus: 2-3%

Potassium: 1-2%

Calcium: 1-3%

Magnesium: 0.5-1.5%

Trace elements: Zinc, copper, manganese, etc.

These nutrients are essential for the growth and development of fish, making poultry manure a potentially valuable ingredient in fish feed.

Benefits of using poultry manure in fish feed

There are several potential benefits of using poultry manure as an alternative to soybean meal in fish feed

Cost-effectiveness:

Poultry manure is a low-cost alternative to soybean meal, which can be expensive in some regions. By using poultry manure, fish farmers can reduce the cost of feed production and increase profitability.

Nutritional value:

Poultry manure is a rich source of essential nutrients such as nitrogen, phosphorus, and potassium, as well as trace elements. These nutrients are essential for the growth and development of fish and can improve the nutritional value of fish feed.

Environmental benefits:

The use of poultry manure in fish feed can help reduce the environmental impact of the poultry industry by providing a useful outlet for poultry waste. This can help reduce the amount of waste that ends up in landfills or pollutes waterways.

Sustainability:

The use of poultry manure in fish feed is a sustainable practice that can help reduce the reliance on soybean meal, which is a finite resource.

Drawbacks of using poultry manure in fish feed

Despite the potential benefits of using poultry manure in fish feed, there are also some drawbacks that need to be considered:

Variable nutrient content:

The nutrient content of poultry manure can vary depending on factors such as the type of poultry, the age of the birds, and their diet. This can make it difficult to ensure a consistent nutrient profile in fish feed.

Pathogens and contaminants:

Poultry manure can contain pathogens such as Salmonella and E. coli, as well as contaminants such as heavy metals and antibiotics. These can be harmful to fish and pose a risk to human health if consumed [2].

Palatability:

Poultry manure may not be as palatable to fish as soybean meal, which can affect feed intake and growth rates.

Processing challenges:

Poultry manure is a challenging ingredient to process due to its high moisture content and variable nutrient profile. This can require specialized equipment and processes to produce a high-quality feed.

Potential for using poultry manure in fish feed

Despite the challenges, there is potential for using poultry manure as an alternative to soybean meal in fish feed. Several studies have investigated the use of poultry manure in fish feed, with varying results.

In one study, researchers evaluated the use of poultry manure as a partial replacement for fishmeal and soybean meal in the diets of Nile tilapia. The researchers found that replacing up to 40% of soybean meal with poultry manure did not significantly affect the growth performance of Nile tilapia, indicating that poultry manure can be a viable alternative to soybean meal in fish feed. In another study, researchers investigated the use of dried poultry manure as a replacement for fishmeal in the diets of channel catfish. The researchers found that replacing up to 50% of fishmeal with dried poultry manure did not significantly affect the growth performance of channel catfish. However, the researchers noted that the nutrient content of the dried poultry manure varied considerably, which could affect the nutritional quality of the feed [3].

Other studies have reported similar results, indicating that poultry manure can be a potential alternative to soybean meal and fishmeal in fish feed. However, more research is needed to fully understand the nutrient requirements of different fish species and the optimal levels of poultry manure in fish feed.

Processing and utilization of poultry manure in fish feed

To utilize poultry manure in fish feed, it must be processed to remove moisture and contaminants and to improve its nutritional quality. There are several processing methods that can be used, including:

Drying:

Poultry manure can be dried using a variety of methods, including solar drying, drum drying, and fluidized bed drying. Drying reduces the moisture content of the manure and increases its shelf life.

Pelleting:

Dried poultry manure can be pelleted to improve its handling and storage properties. Pelleting also reduces the dustiness of the feed and can improve the palatability of the feed to fish.

Fermentation:

Poultry manure can be fermented to improve its nutrient profile and reduce its pathogen load. Fermentation can also increase the protein content of the manure and improve its digestibility.

Extraction:

Poultry manure can be extracted to obtain a liquid fraction that is rich in nutrients. The liquid fraction can be used as a feed additive or as a fertilizer [4]. Once processed, poultry manure can be incorporated into fish feed at various levels depending on the nutrient requirements of the fish species and the nutrient content of the manure. It is important to ensure that the nutrient profile of the feed is consistent and meets the nutritional needs of the fish.

Conclusion

Poultry manure has the potential to be a valuable alternative to soybean meal in fish feed due to its cost-effectiveness and nutritional value. However, there are also challenges that need to be addressed, including

Published on: 30 March 2023

<https://biologicaltimes.com/>

To cite this article: Samad A. Use of Poultry Manure as an alternative of soybean in Fish Feed. Biological Times. 2023 March; 2(3): 1-2

variable nutrient content, pathogens and contaminants, palatability, and processing challenges. With proper processing and utilization, poultry manure can be a sustainable and cost-effective ingredient in fish feed that can improve the nutritional value of the feed and reduce the environmental impact of the poultry industry. Further research is needed to fully understand the potential benefits and drawbacks of using poultry manure in fish feed and to optimize its use for different fish species.

References

- [1]. Bolan NS, Szogi AA, Chuasavathi T, Seshadri B, Rothrock MJ, Panneerselvam P. Uses and management of poultry litter. *World's Poultry Science Journal*. 2010 Dec;66(4):673-98.
- [2]. Bloem E, Albiñá A, Elving J, Hermann L, Lehmann L, Sarvi M, Schaaf T, Schick J, Turtola E, Ylivainio K. Contamination of organic nutrient sources with potentially toxic elements, antibiotics and pathogen microorganisms in relation to P fertilizer potential and treatment options for the production of sustainable fertilizers: a review. *Science of the Total Environment*. 2017 Dec 31;607:225-42.
- [3]. George FO, Nwaezeigwe FO, Abdul WO, Jegede AV. Development of Organic fish feeds: Case study of poultry droppings and pig feces as replacement for soybean meal in practical diets for Nile tilapia, *Oreochromis niloticus* (L.). In *Ecological and Organic Agriculture Strategies for Viable Continental and National Development in the Context of the African Union's Agenda 2063*. Scientific Track Proceedings of the 4th African Organic Conference. November 5-8, 2018. Saly Portudal, Senegal 2018 (pp. 121-128).
- [4]. Prado J, Ribeiro H, Alvarenga P, Fangueiro D. A step towards the production of manure-based fertilizers: Disclosing the effects of animal species and slurry treatment on their nutrients content and availability. *Journal of Cleaner Production*. 2022 Feb 20;337:130369.

