# **SOYBEAN MEAL** AS A FEED INGREDIENT



Priming Livestock for Premium Performance

## The Total Value Package of Soybean Meal

**Soybean meal (SBM)** is a cornerstone ingredient in animal feed, delivering essential protein, amino acids, and energy required for the growth and health of pigs, poultry, cattle, and fish. Its superior amino acid profile makes it a key driver of optimal growth and feed efficiency, earning its reputation as a **Total Value Package** in feed formulations. With highly digestible amino acids, SBM ensures animals receive essential nutrients efficiently.<sup>1</sup>

By maximizing animal growth and productivity through more efficient feed utilization, SBM **enhances ration efficiency**, delivering essential nutrients more effectively. This reduces the need for additional supplements and **lowers overall feed costs**.

SBM ADVANTAGE	IMPACT ON LIVESTOCK PRODUCTION
Superior Amino Acid Profile	Supports optimal growth and feed efficiency with highly digestible amino acids
Increased Metabolizable Energy	Provides more usable energy due to high digestibility and energy availability
Lower Fiber Content	Improves digestion and nutrient absorption for better feed conversion rates
Higher Total Phosphorus	Supports bone health and metabolism
Greater Uniformity	Simplifies feed formulations with consistent nutrient composition among production batches



# What Are Amino Acids?

Amino acids are the building blocks of proteins. Proteins are composed of various combinations of approximately 20 amino acids. Animals can naturally synthesize approximately half of these amino acids, known as non-essential amino acids, while the remaining essential amino acids must be obtained through their diet.<sup>2</sup> During digestion, animals break down dietary proteins into individual amino acids, which are then absorbed into the bloodstream to support vital biological functions.

#### **PROVEN HIGH-PROTEIN SOURCE**

Soybeans are classified as a **complete protein** because they contain all five key amino acids required for proper nutrition.<sup>3</sup>

- Lysine
  Cysteine
- Threonine
  Tryptophan
- Methionine
- Soybean meal has the **highest lysine digestibility** among commonly available protein sources up to 90% digestibility—and ranks high in methionine, cysteine, and threonine digestibility. Soybean meal is a great complement to corn in diets, as corn is low in lysine.

High concentrations of essential amino acids, such as lysine, methionine, and threonine, promote efficient muscle growth, immune function, and overall animal performance. This reduces the need for synthetic amino acid supplementation, supporting cost-effective feeding and sustainable production.

Soybean meal reduces the need for supplementation, helping lower feed costs.

Additionally, soybean meal shows a lower variation in digestibility compared to other oilseed meals, ensuring more consistent nutrient delivery. By naturally providing these critical amino acids, soybean meal reduces the need for supplemental amino acids, leading to cost savings and simplifying feed formulation.<sup>4</sup>

# Why Lysine is an Important Amino Acid

Lysine is one of the most critical amino acids in animal nutrition and is often the first limiting amino acid in swine and poultry diets. It is essential for protein synthesis, muscle growth, and tissue repair.

> Soybean meal stands out as a superior feed ingredient due to its high lysine content, both in protein quantity and digestibility.

Nutritionists prioritize lysine when formulating animal diets because it serves as the foundation for balancing other amino acids. Feed formulations are often "lysine-based," meaning that the levels of other amino acids are adjusted relative to lysine to ensure optimal nutrition.<sup>2</sup>

#### THE ROLE OF LYSINE IN FEED FORMULATIONS



## The Difference Between Amino Acids & Protein

While protein has traditionally been a benchmark for feed quality, scientists now recognize that **animals require specific amino acids** rather than protein as a whole. Amino acids are the building blocks of protein, and their availability directly impacts nutrient absorption and animal performance.

"When formulating diets, nutritionists focus on the specific quantities of each amino acid to ensure that animals receive all essential amino acids in the right balance. If even one of the amino acids is deficient, the animal won't be able to meet its potential. It will grow slower, in the case of a growing animal, or will lay fewer or smaller eggs, in the case of egg-laying hens."

> Dr. Stacey Roberts Director of Nutrition, Versova

## Amino Acids and Livestock Nutrition

Feed formulation and nutrition are critical components of animal production, but not all feed ingredients offer the same nutritional value. When blending feed ingredients, nutritionists select protein sources that complement each other to meet the precise amino acid requirements of livestock.

Digestible amino acids, metabolizable energy, and available phosphorus are among the most expensive nutrients in animal diets. However, **due to its price stability, soybean meal is the most cost-effective** source for delivering all three components.





Learn more at SoyOhio.org

Brought to you by Ohio soybean farmers and their checkoff.

Sources:

1 U.S. Soybean Export Council: The Nutritional Value of U.S. Soybean Meal

2 Kansas State University Swine Nutrition Guide: Protein Sources for Swine Diets

3 University of Georgia Department of Poultry Science: Amino Acids

4 U.S. Soy: Amino Acid Nutrition and the Implications of U.S. Soy