

A MULTI-ENZYME FEED ADDITIVE

for Enhancing Growth
Performance in Broiler Chickens

The efficiency of nutrient utilization in broiler production remains a critical determinant of economic profitability and sustainability. Plant-based poultry diets commonly contain anti-nutritional factors such as non-starch polysaccharides (NSPs), phytate-bound phosphorus, complex proteins, and indigestible fiber fractions, which limit nutrient availability.

ENZOBLEND-NSP PRO is a multi-enzyme feed additive formulated to enhance nutrient digestibility and growth performance in broiler chickens.

This paper outlines the scientific rationale, enzyme composition, mechanism of action, expected performance outcomes, and practical application guidelines. Supplementation with exogenous enzymes may result in improved body weight gain, enhanced feed conversion ratio (FCR), improved mineral utilization, and reduced nutrient excretion, thereby supporting both economic and environmental sustainability in poultry production.

INTRODUCTION

Modern broiler diets predominantly consist of plant-derived raw materials such as corn, soybean meal, wheat, and rice bran. Although nutritionally rich, these ingredients contain several anti-nutritional components that reduce nutrient bioavailability.



Key anti-nutritional factors include:

- Non-starch polysaccharides (NSPs)
- Phytate-bound phosphorus
- Complex storage proteins
- Structural fiber fractions

Broiler chickens possess limited endogenous enzyme capacity to fully degrade these compounds. Consequently, incomplete digestion leads to reduced nutrient absorption, suboptimal growth performance, and increased nutrient excretion.

Exogenous enzyme supplementation has emerged as a scientifically validated strategy to overcome these limitations.

SCIENTIFIC RATIONALE FOR ENZYME SUPPLEMENTATION

for Enhancing Growth
Performance in Broiler Chickens

NSPs increase intestinal viscosity, impair nutrient diffusion, and reduce feed efficiency. Enzymatic degradation lowers digesta viscosity and improves nutrient absorption.

01

**NON-STARCH
POLY-
SACCHARIDES
(NSPS)**

PHYTATE

02

Phytate binds phosphorus and other minerals, rendering them unavailable. Phytase supplementation releases bound phosphorus, enhancing mineral utilization and skeletal development.

Plant proteins and starches are not fully hydrolyzed by endogenous enzymes. Supplemental protease and amylase improve breakdown efficiency, increasing amino acid and energy availability.

03

**PROTEIN AND
STARCH
COMPLEXITY**

PRODUCT DESCRIPTION

Product Name: ENZOBLEND-NSP PRO

Type: Multi-enzyme feed additive

Application: Inclusion in broiler feed

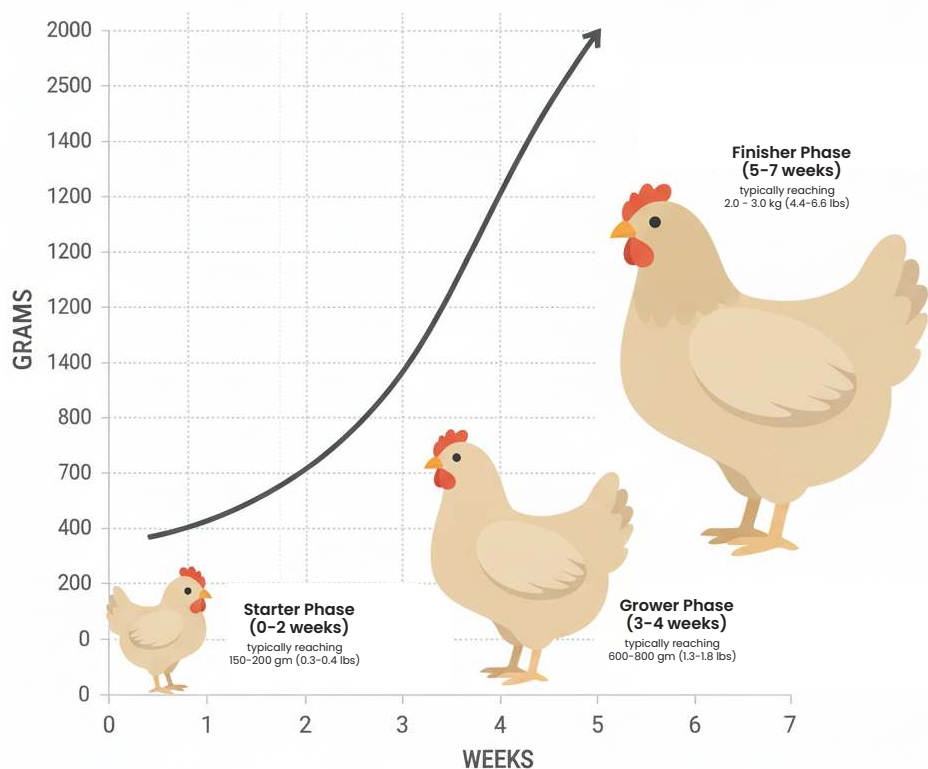
Target Species: Broiler chickens

The formulation is designed to improve nutrient digestibility, body weight gain, and feed conversion efficiency through synergistic enzymatic action.

ENZYME COMPOSITION AND FUNCTIONAL ROLE

ENZYME	PRIMARY FUNCTION	EXPECTED GROWTH BENEFIT
Xylanase	Hydrolyzes arabinoxylans	Improves energy utilization
β -Glucanase	Reduces gut viscosity	Enhances nutrient absorption
Phytase	Releases phytate-bound phosphorus	Improves bone strength and FCR
Protease	Enhances protein hydrolysis	Increases amino acid availability
Amylase	Breaks down starch	Enhances metabolizable energy

The combined action of these enzymes ensures comprehensive degradation of anti-nutritional components in feed.



MECHANISM OF ACTION

Hydrolysis of Complex Carbohydrates and Proteins

The enzymes break down complex carbohydrates and protein fractions present in the feed into simpler, more digestible molecules.

Enzyme Activation in the Gastrointestinal Tract

After ingestion, the supplemented enzymes become active within the bird's gastrointestinal tract under normal physiological conditions of pH and temperature.

Increased Nutrient Bioavailability

As complex feed components are degraded, essential nutrients such as amino acids, energy substrates, and minerals become more accessible for absorption.

Reduction in Metabolic Stress

Improved digestion decreases the presence of undigested feed in the gut, reducing digestive strain and supporting a more balanced metabolic state.

Enhanced Feed-to-Body Mass Conversion

With better nutrient utilization, birds convert feed into body weight more efficiently, resulting in improved growth performance and feed efficiency.

Expected Benefits

- Improved body weight gain
- Better feed conversion ratio (FCR)
- Enhanced nutrient digestibility
- Stronger skeletal development
- Reduced feed cost per kg weight gain
- Lower nutrient excretion

PERFORMANCE IMPACT OF ENZOBLEND-NSP PRO

Measurable Growth Improvements

+3% to +8% Improvement

Enhanced nutrient digestibility supports faster and more uniform growth.

Feed Conversion Ratio (FCR)

+2% to +5% Better Efficiency

Birds convert feed into body mass more effectively.

Skeletal Development

Improved phosphorus release through phytase activity supports stronger bone formation and mineral utilization.

Reduced Feed Cost per kg Weight Gain

Improved nutrient absorption lowers the feed required for target weight.

Lower Nutrient Excretion

Better digestibility leads to:

- Reduced nitrogen loss
- Reduced phosphorus waste
- Improved environmental sustainability

Recommended Inclusion Rate

100–500 g per metric ton of feed

(Depending on enzyme activity and feed formulation.)

STABILITY AND HANDLING

- Stable under standard pelleting temperatures (subject to enzyme characteristics)
- Store in cool, dry conditions
- Avoid prolonged exposure to moisture and high humidity
- Follow standard feed additive handling protocols

ECONOMIC AND ENVIRONMENTAL IMPLICATIONS

By enhancing nutrient utilization efficiency, ENZOBLEND-NSP PRO contributes to:

- Improved feed cost efficiency
- Reduced dependency on inorganic phosphorus supplementation
- Lower nutrient excretion
- Reduced environmental load from poultry production
- These improvements align with sustainable livestock production goals.



CONCLUSION

ENZOBLEND-NSP PRO multi-enzyme poultry feed additive enhances digestion efficiency and nutrient utilization, supporting faster growth and improved production performance in broiler chickens.

By improving feed efficiency, producers can achieve better economic returns while maintaining gut health and sustainability.