

# Technical Bulletin

## Information from Phibro Technical Services

### Effects of Magni-Phi® on Performance and Nutrient Digestibility of Growing Broilers

Two studies were conducted to assess the performance responses and nutrient digestibility of feeding Magni-Phi nutritional specialty product to growing broilers. Magni-Phi contains a combination of Quillaja and Yucca saponins, which have been shown in previous studies to help improve intestinal health and performance.

#### Overview:

- Birds fed Magni-Phi at 227 and 454 g/U.S. ton (equivalent to 250 and 500 ppm, respectively) had statistically significant improvements in Body Weight Gain and the European production efficiency factor
- Birds fed Magni-Phi at 454 g/U.S. ton (500 ppm) had a statistically significant improvement in feed conversion
- Birds fed Magni-Phi at 227 and 454 g/U.S. ton (250 and 500 ppm, respectively) had statistically significant improvements in nutrient digestibility of dry matter, organic matter, crude ash and nitrogen retention
- Birds fed Magni-Phi at 454 g/U.S. ton (500 ppm) had a statistically significant improvement in nutrient digestibility of crude fat
- A significant linear effect was measured across all parameters as the feeding rate of Magni-Phi was increased

#### Trial Design

Results reported are a combination of two identical floor pen studies using Cobb male broilers raised to 35 days of age. Pens of 20 birds were used in each study, including eight pens for each of three treatment groups. Treatment groups were an untreated control, a group fed Magni-Phi at 227 g/U.S. ton (250 ppm), and a group fed Magni-Phi at 454 g/U.S. ton (500 ppm). The trials were conducted on new, clean litter and birds were not exposed to any disease organisms. Birds were fed standard starter and grower rations.

For the nutrient digestibility evaluation two birds per pen (16 per treatment) were selected based on body weights being closest to the average of their respective treatment group. These birds were housed in pairs from day 21 to day 25 in

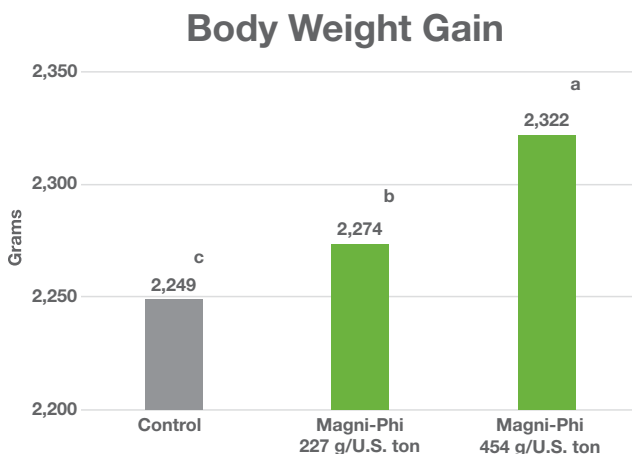
metabolism cages designed for the collection of excreta. After the five-day sampling period, collected excreta were pooled by cage, so each treatment was replicated eight times. Chemical analysis was conducted on samples to determine dry and organic matter digestibility. A marker in the feed was used to calculate apparent total tract digestibility.

Statistical evaluation was completed by applying the Holm-Bonferroni procedure to the Least Significant Difference methodology. Linear regression was used to determine the linear effects of increasing levels of Magni-Phi.

#### Results

Birds fed Magni-Phi had improved Body Weight Gain (BWG) when compared to the control group ( $P < 0.05$ ) (Figure 1). The levels of Magni-Phi produced a statistically significant linear effect, with the higher level resulting in an average of 73 more grams of body weight gain per bird.

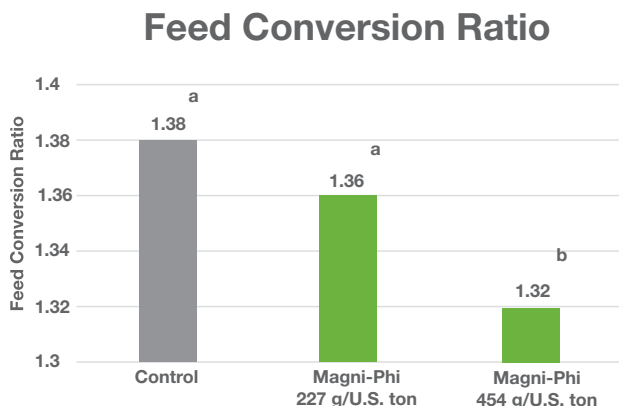
Figure 1. Effect of Magni-Phi on Body Weight Gain (Day 35)



abc Means differ significantly ( $P < 0.05$ ) as determined by Least Significant Difference. Linear effect was significant ( $P < 0.005$ ).

Feed conversion improvements were calculated at day 35 (Figure 2). Magni-Phi fed at 454 g/U.S. ton significantly improved feed conversion by 6 points compared to the control group ( $P < 0.05$ ). Although not statistically different from controls, Magni-Phi fed at 227 g/U.S. ton also had a feed conversion improvement. A statistically significant linear effect was recorded for Magni-Phi.

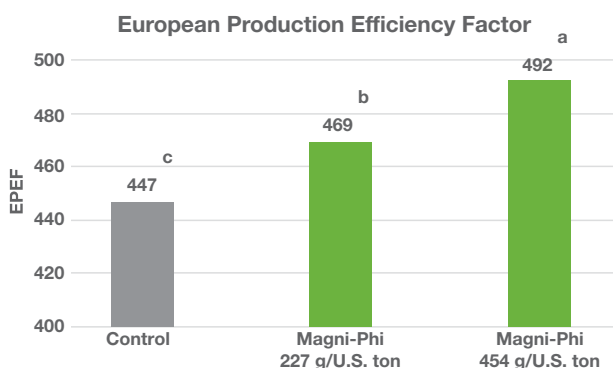
Figure 2. Effect of Magni-Phi on Feed Conversion (Day 35)



<sup>ab</sup> Means differ significantly ( $P < 0.05$ ) as determined by Least Significant Difference. Linear effect was significant ( $P < 0.005$ ).

The European Production Efficiency Factor (EPEF) was used to evaluate multiple variables that were determined in this trial. This measure is useful, as it provides a factor based on a calculation using average daily gain, survivability and feed conversion, providing one value to assess all of these variables collectively. Both groups fed Magni-Phi had statistically significant improvements in EPEF ( $P < 0.05$ ). A Magni-Phi linear effect was also observed (Figure 3).

Figure 3. Effect of Magni-Phi on European Production Efficiency Factor (Day 35)



<sup>abc</sup> Means differ significantly ( $P < 0.05$ ) as determined by Least Significant Difference. Linear effect was significant ( $P < 0.005$ ).

Both groups fed Magni-Phi had statistically significant improvements ( $P < 0.05$ ) in apparent total tract digestibility of dry matter, organic matter and crude ash, as well as nitrogen retention. There was a statistically significant linear improvement in all parameters measured with the increased feeding levels of Magni-Phi (Table 1).

Table 1. Effect of Magni-Phi on Percent Apparent Total Tract Digestibility and Nitrogen Retention Measured from Days 21 Through 25

Apparent Total Tract Digestibility					
	Dry Matter %	Organic Matter %	Crude Ash %	Crude Fat %	Nitrogen Retention %
Control	67.2 <sup>c</sup>	70.5 <sup>c</sup>	18.1 <sup>c</sup>	80.0 <sup>b</sup>	53.9 <sup>c</sup>
Magni-Phi 227 g/U.S. ton (250 ppm)	70.1 <sup>b</sup>	73.1 <sup>b</sup>	20.5 <sup>b</sup>	81.8 <sup>b</sup>	57.1 <sup>b</sup>
Magni-Phi 454 g/U.S. ton (500 ppm)	74.1 <sup>a</sup>	76.6 <sup>a</sup>	22.9 <sup>a</sup>	84.1 <sup>a</sup>	60.0 <sup>a</sup>

<sup>abc</sup> Means differ significantly ( $P < 0.05$ ) as determined by Least Significant Difference.

### Conclusion

The performance responses were likely the result of improvements in apparent total intestinal tract digestibility. These observations have been confirmed in various controlled pen studies. This study is important, as the improvement in nutritional digestibility confirms the effects of Magni-Phi as an important tool to help provide optimum performance in broiler production.

To learn more about Magni-Phi, talk with a Phibro expert at 800.677.4623.

### References

K. W. Bafundo, K. Männer & I. Duerr (2021): The combination of quillaja and yucca saponins in broilers: effects on performance, nutrient digestibility and ileal morphometrics, British Poultry Science, DOI: 10.1080/00071668.2021.1891523

This information has been prepared for industry professionals.