MicroLife™ PRIME

Technical Bulletin

Information from Phibro Technical Services

Direct-Fed Microbial Trial Demonstrates Significant Improvements of Production Parameters in Turkeys with Common Disease Challenges

MicroLife™ Prime direct-fed microbial is a patent-pending proprietary combination of four probiotic strains of *Bacillus amyloliquefaciens*, *Bacillus subtillis*, *Bacillus licheniformis* and *Bacillus coagulans*. These strains were selected to create a synergistic effect that encourages a higher intestinal population of beneficial bacteria to support turkey health, performance and processing yields. MicroLife Prime has been shown to reduce populations of *Clostridium perfringens*, *Escherichia coli* and *Salmonella*, as well as reduce lesion scores associated with coccidiosis. This study was designed to evaluate four levels of MicroLife Prime in feed for meat turkeys with this technical bulletin reporting production results.

Compared to challenged and unmedicated controls, groups fed at different levels of MicroLife Prime had statistically significant:

- Higher body weights at all levels
- Lower feed conversions at three levels
- Lower mortality rates at all levels
- Improved European Production Efficiency Factor (EPEF) at all levels

Trial Design

The floor pen trial was conducted with all challenged groups housed on built-up litter from a commercial turkey farm that reported high mortalities from the three previous flocks. The litter was known to contain *Clostridium perfringens* and other common bacteria such as *E. coli* and *Salmonella*. In a previous trial at the research facility, these pens had also been supplemented with additional *E. acervulina* and *E. maxima* coccidia oocysts and an additional *Clostridium perfringens* challenge. The unchallenged, untreated control group was grown on new, clean litter.

Male turkeys were vaccinated in the hatchery with a commercial coccidiosis vaccine. Each treatment had 12 replicates of 24 birds per pen arranged in a randomized block design. Birds were fed standard corn and soy diets with no consumption restrictions. MicroLife Prime was fed at four inclusion levels as follows: 500,000, 1 million, 1.5 million or 2 million colony forming units (CFU) per gram of feed throughout the trial. No other feed additives or antibiotics were used.

Performance data results presented encompass the entire trial on day 84. Statistical analysis of all parameters used a multi-factorial procedure to compare the means of the treatment groups using ANOVA (Analysis of Variance). A Least Significant Difference of means was reported at $P < 0.05$ level as determined by Duncan's New Multiple Range Test for most parameters. The European Production Efficiency Factor used Tukey's Least Significant Difference Test in the analysis.

Results

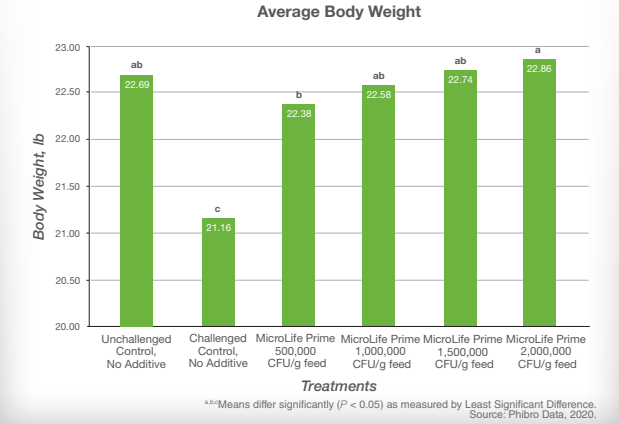
The litter challenge model was successful in creating a disease challenge similar to field stressors found in commercial turkey flocks. This was demonstrated in the challenged control group with 9.17% mortality as shown below. In a separate technical bulletin, disease challenge results are presented that demonstrate a moderate *coccidiosis* challenge, as well as significant infections of *E. coli, Salmonella* and *Clostridium perfringens*.

All groups fed MicroLife Prime had statistically significant higher body weights compared to the challenged control group. Final body weight improvements ranged from 1.2 to 1.7 pounds. The groups fed the three higher inclusion levels of MicroLife Prime all had body weights statistically similar to the unchallenged control with two groups having numerically higher body weights (Figure 1).

Technical Bulletin

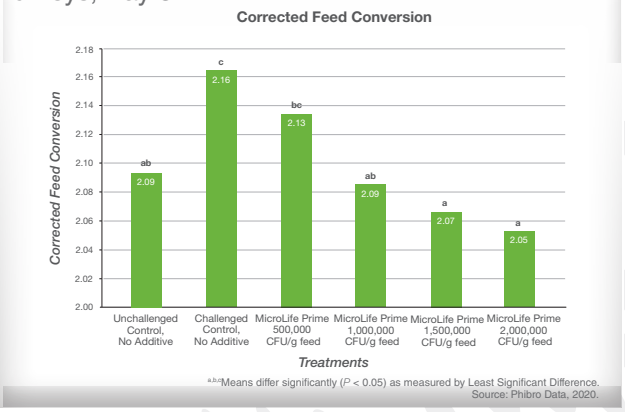
Direct-Fed Microbial Trial Demonstrates Significant Improvements of Production Parameters in Turkeys with Common Disease Challenges

Figure 1. Average Body Weight Comparison of Male Turkeys, Day 84



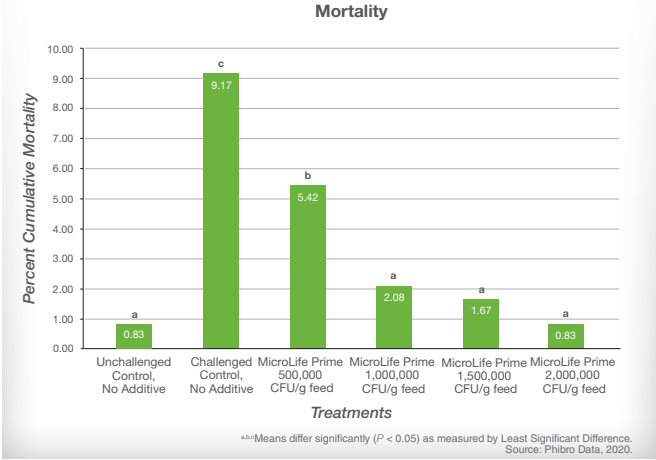
All groups fed MicroLife Prime had lower feed conversions than the challenged control ranging from 3 to 11 percentage points, with the three higher inclusions levels of MicroLife Prime showing statistically significant improvements. These three inclusion levels were statistically similar and numerically equal to or lower than the unchallenged control group (Figure 2).

Figure 2. Corrected Feed Conversion of Male Turkeys, Day 84



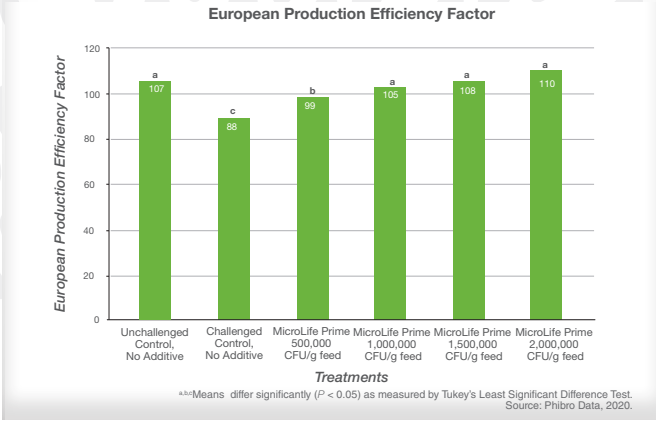
All turkeys fed MicroLife Prime had statistically significant lower mortality rates than the challenged control group. The reduction in mortality ranged from 3.75 to 8.3 percentage points. The groups with the three highest inclusion levels of MicroLife Prime all had mortality rates statistically similar to the unchallenged control group, with the highest inclusion level of MicroLife Prime having the same 0.83% mortality (Figure 3).

Figure 3. Turkeys Fed MicroLife Prime Showed a Lower Mortality Rate



The European Production Efficiency Factor is used to compare flock performances using a standardized formula that considers weight gain, mortality and feed conversion. All inclusion levels of MicroLife Prime showed statistically significant better results than the challenged control. The progressively higher inclusion levels of MicroLife Prime showed consistent statistical improvement in this measurement of production efficiency (Figure 4).

Figure 4. All MicroLife Prime Fed Turkeys Demonstrated an Improved EPEF



Conclusion

This study confirms benefits of the direct-fed microbial MicroLife Prime in commercial turkeys that have been observed in previous controlled pen studies and field trials. Production benefits of improved body weight and lower feed conversion and mortality are key drivers in the decision-making of producers worldwide. Turkey producers may use this information in deciding how to include MicroLife Prime into their feeding programs.

To learn more about MicroLife Prime, talk with a Phibro expert at +1.800.677.4623.

This information has been prepared for industry professionals.