

## What Broiler Trials Tell Us About QTI's Multi-DFM Strain Q-Biotic™ 3DP and Profitability



Direct-fed microbials (DFM) or probiotics have gained significant interest and use in poultry feed globally in the wake of restricted or banned use of antibiotics for growth promotion. Quality Technology International, Inc. (QTI) has been offering probiotics to the poultry and livestock industries for over two decades. In addition to probiotics, QTI's products also include prebiotics and synbiotics. QTI has recently launched new series of products, including the Q-Biotic™ series and the BacPack® Q series. The following is a review of independently run US broiler trials to help evaluate the potential use and profitability of Q-Biotic™ 3DP, a multi-strain product containing 3 select DFM *Bacillus* bacterial strains.

### Go Far Together

The ageless proverb “Go fast alone, go far together” can apply to the multi-bacterial strain DFM compared to the single strain DFM. This is particularly true when the journey is laced with uncertainty and surprises, as is the case when poultry are exposed to environmental and pathogenic microbial challenges throughout the production life cycle. When systematically and carefully selected, DFM bacterial strains can work synergistically along the gastrointestinal tract when fed as a multi-strain product due to their numerous modes of action. Having a carefully selected strain combination can help maintain a robust intestinal integrity to safeguard the birds' genetic growth potential. The select bacterial strains in Q-Biotic™ 3DP can derive their positive effects on bird performance from their individual and combined biological benefits. Such benefits include enhancing the bird's microflora balance, improving the bird's intestinal integrity, nutrient digestibility and absorption, keeping enteric pathogens from establishing, and modulating the bird's immunity.

There is real potential for additivity or synergy among the bacterial strains as well as the bird's microflora to maximize their beneficial effects. Moreover, together that can provide probiotic coverage throughout the sections of the GIT from day one to market age.

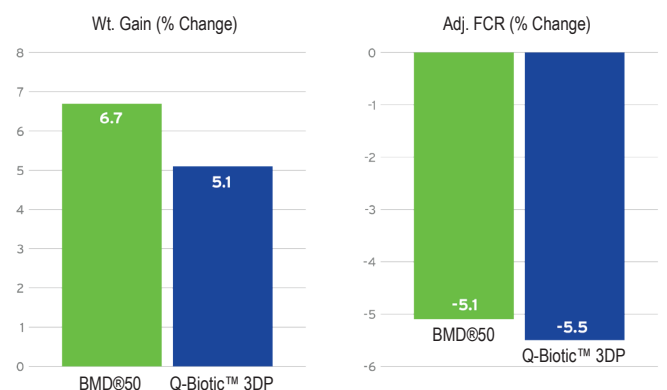
While both QTI's new Q-Biotic™ 1DP (QTI's single strain product, See [Technical Report Volume 15 / Issue 2 / 2021](#)) and Q-Biotic™

3DP improve broiler chickens' performance, research has shown that birds fed the multi-strain product had superior performance, particularly under challenging rearing conditions.

### Equivalent Performance Between Q-Biotic™ 3DP and BMD®50

Results from three U.S. controlled pen trials carried out on used litter indicated the productivity of broiler chickens can be significantly improved using Q-Biotic™ 3DP at a total dose of 700,000 CFU/g feed (Figure 1). The results also showed that birds fed Q-Biotic™ 3DP had growth performances that were equivalent to those of birds fed rations with 50 grams of BMD®50 per ton of feed. Results from these trials support the functional additivity or synergy from the select probiotic bacterial strains contained in Q-Biotic™ 3DP. Two of the trials had challenging rearing conditions, while the third trial had more optimal rearing conditions.

**Figure 1: Summary (3 Trials) of % Improvements in Broiler Live Performance with Q-Biotic™ 3DP and BMD®50: Adj. FCR & Wt. Gain (% Change Vs. Control) (Average Change Relative to the Control)**



The average improvements from feeding diets with Q-Biotic™ 3DP across the three pen trials were 5.1% in body weight gain and 5.5% in feed conversion ratio. Birds fed BMD®50 in their diet had average improvements of 6.7% in weight gain and 5.1% in FCR.

## Higher Return on Investment (ROI) with Q-Biotic™ 3DP Compared to BMD®50

From an economics point of view, when the actual values of weight gain, FCR and livability from the three pen trials are considered, along with assumptions of feed and feed additive cost and live bird value, Q-Biotic™ 3DP had a significant ROI (Table 1). Under the used costs' assumptions, Q-Biotic™ 3DP had a higher ROI than BMD®50.

ROI values can change depending on production performance and cost of feed, feed additive and live bird value, and other factors. However, the ROI calculated using actual results from the three trials provide a strong indication that Q-Biotic™ 3DP can provide a compelling value to broiler production.

**Table 1: Benefit: Cost Ratio and Return on Investment (ROI) in U.S. Dollars Using 3 Controlled Broiler Chicken Trials and Assumptions for Broiler Feed Cost per Ton, Broiler Live Weight, Q-Biotic™ 3DP and BMD®50**

Parameter	Control	Q-Biotic™ 3DP	BMD®50
Chick Placement per Week	1,000,000	1,000,000	1,000,000
Body Weight, Lb.	5.409	5.649	5.727
Livability, %	94.8	96.1	95.5
Feed Conversion Ratio	1.766	1.665	1.674
Total Live Weight, Lb.	5,125,134	5,428,255	5,466,796
Feed Cost, \$/Ton	220.00	221.60	223.00
Total Feed, Lb.	9,052,696	9,039,854	9,149,595
Total Feed Cost, \$	995,797	1,001,616	1,020,180
Live Weight Value, \$/Lb.	0.40	0.40	0.40
Total Live Weight Value, \$	2,050,054	2,171,302	2,186,718
Net: (Live Value-Feed Cost), \$	1,054,257	1,169,686	1,166,539
Net: Compared to Control, \$	-	115,429	112,281
Total Cost of Additive, \$	-	7,232	13,724
Net Value: (Net-Additive Cost), \$	-	108,197	98,557
Benefit: Cost Ratio	-	16.0	8.2
<b>Return on Investment (ROI)</b>	-	<b>15:0:1</b>	<b>7:2:1</b>

**Intestinal Integrity™**

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