



Innovax[®]-ND-IBD Variant IBD Protection: Return on Investment for Vaccination vs. Maternal Antibody

INTRODUCTION




Innovax[®]-ND-IBD, the first dual construct rHVT vaccine, was introduced to a broiler-producing region where Newcastle challenge was mild and where variant type infectious bursal disease (IBD) was the typical IBD challenge. An integrator in this region used a replacement breeder vaccination program that combined natural exposure to local IBD variant strains, live strong (intermediate +) IBD vaccines and inactivated IBD vaccine to obtain high and uniform maternal antibody in the broiler progeny. The integrator depended upon maternal antibody to provide protection against both classical and variant IBD at their location.

In a field comparison study, the integrator vaccinated 1,131,600 broilers with Innovax[®]-ND-IBD *in ovo* and compared performance results to 1,261,315

broilers vaccinated with the standard program of rHVT-ND *in ovo*. The standard program relied upon maternal antibody for IBD protection. The trial took place over a 4-week period from May to July 2019, with the first two weeks vaccinated with Innovax[®]-ND-IBD and the second two weeks vaccinated with a standard program of rHVT-ND. The average grower performance profile for the first two weeks was lower than that of the second two weeks, giving a slight advantage to the standard program test group.



KEY POINTS

-  An integration with a variant IBD field challenge similar to AL2 and Delaware variant E used Innovax[®]-ND-IBD and compared field performance to a program that used rHVT-ND for Newcastle disease protection and maternally-derived antibody alone for IBD protection.
-  The field trial, involving over 2 million broilers, demonstrated that birds vaccinated with Innovax[®]-ND-IBD had a 5-point feed conversion advantage and 0.18 lbs weight advantage over the flocks that vaccinated with rHVT-ND and used maternally-derived antibody for IBD protection.
-  When compared farm-by-farm, with adjusted FCR ranked from best to worst individual results, the adjusted FCR advantage for the Innovax[®]-ND-IBD flocks were consistent across the duration of the study.

INTEGRATOR FIELD IBD CHALLENGE

Bursal samples were collected from the integrator and submitted to Rapid Genomics for next-generation sequencing (Viral Flex Seq[®]) of field IBD viruses. The field virus survey results included variant IBD viruses similar to AL 2 and Delaware E. Figure 1 shows the virus identification.

WEATHER DURING FIELD TRIAL

The temperatures from May to July can sometimes have a dramatic impact on field performance. The weekly average temperatures during this study, taken from Accuweather historical data were:

- **Week of 6/28** - High: 88.2, Low: 65.5 (2 days +90deg: 91 & 91)
- **Week of 7/6** - High: 88.5, Low: 68.4 (2 days +90deg: 93 & 92)
- **Week of 7/13** - High: 86, Low: 68.5
- **Week of 7/20** - High: 91.1, Low: 70.7 (4 days +90deg: 92,94,94, & 96)

Temperatures were similar for all weeks processed in the study.

FIELD TRIAL RESULTS

The summary of the average field performance results is summarized in Table 1.

A summary of the individual farm adjusted Feed Conversion Ratio (FCR adjusted to 6 lbs) ranked from best to worst farms on the two programs (Figure 2) shows that flocks vaccinated with Innovax[®]-ND-IBD demonstrated consistently lower FCR despite the lower grower profile based upon historical performance.



Figure 1. Phylogenetic Tree demonstrating relatedness of three field samples to AL 2 and Del E

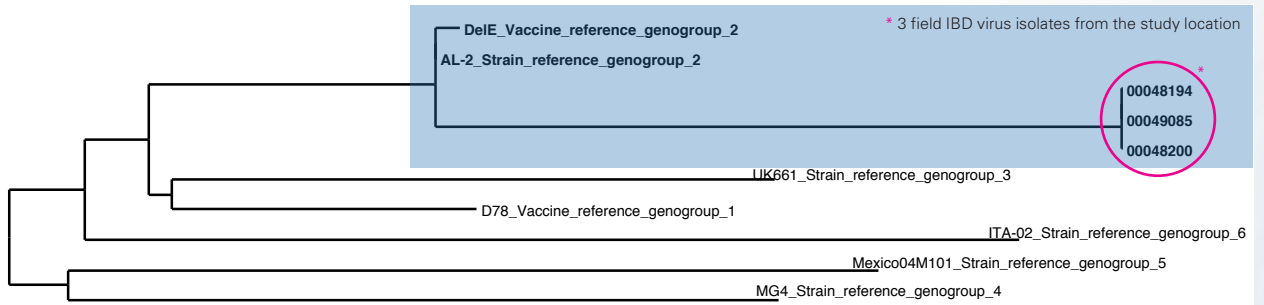
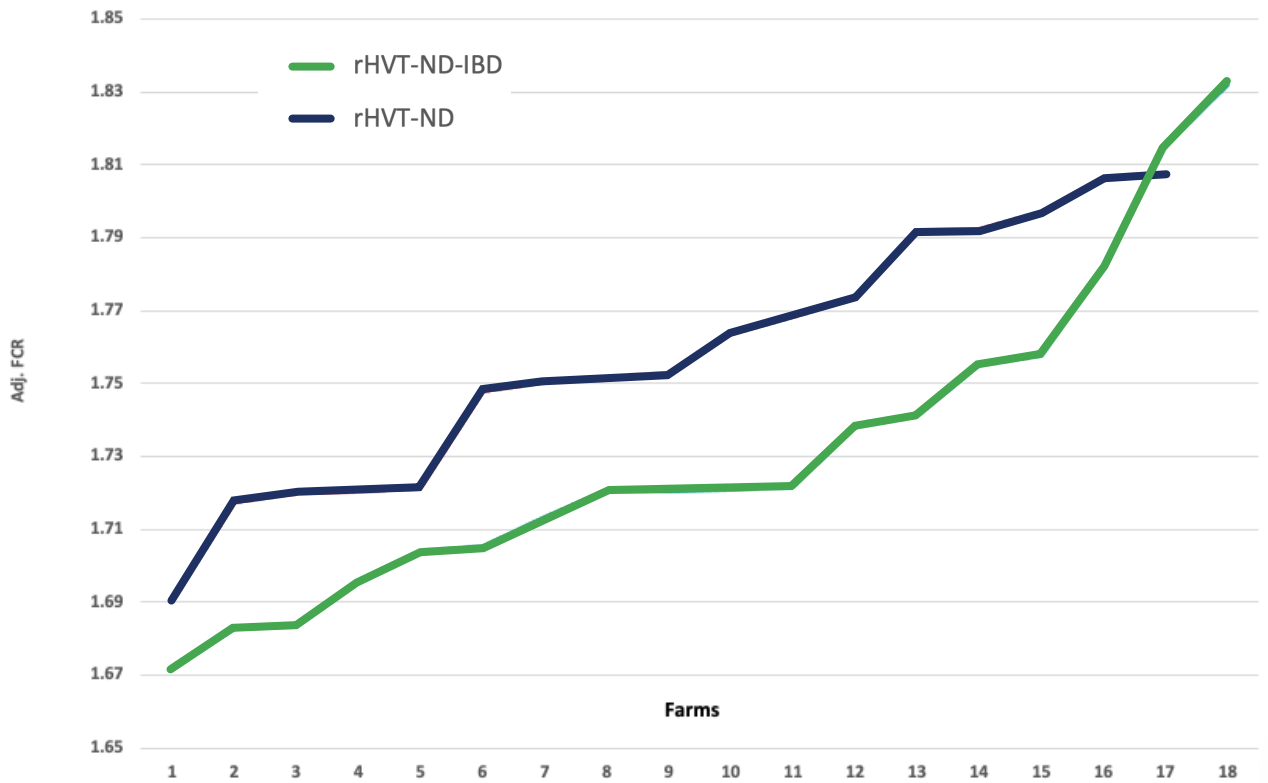


Table 1. Summary of Field Trial Comparison

| Treatment | Age (days) | Head Placed | Livability | Weight (lbs) | FCR Adj to 6 lbs | ADG |
|---------------------------------|------------|-------------|------------|--------------|------------------|-------|
| Innovax [®] -ND-IBD* | 44.4 | 1,131,600 | 96.05% | 6.195 | 1.70 | 0.139 |
| rHVT-ND + IBD maternal antibody | 44.7 | 1,261,315 | 96.28% | 6.014 | 1.75 | 0.134 |

* lower grower profile in this group

Figure 2. Individual Farm Adjusted FCR ranked from best to worst farms processed during the study



CONCLUSION

In this study, the integrator experienced a 5-point improvement in adjusted feed conversion ratio, together with a higher average daily gain (ADG) and 0.18 lbs higher weight despite the lower grower profile that made up the test group, when compared to the program of rHVT-ND with maternally derived antibody to protect against IBD. The difference could be demonstrated farm-by-farm when a ranked comparison of individual farm adjusted FCR was evaluated.