Field Trial #2: Water Additives Comparison

By: Casey Rogers

 When poultry begin to shows signs of illness, one of the first things producers see is a decrease in their feed intake. Their water intake remains the same however. Because of this, we designed a field trial that examined the potential benefits to using some of these water-based remedies continually throughout the birds lives on pasture, rather than just if they showed signs of illness. This was done in the hopes that a simple measure such as adding an organically-approved substance to a flocks water on a daily basis would not only increase the birds health and vitality overall, but that it would also lead to a higher carcass yield and increase feed conversion ratio for the farmers.

 There were 71 Cornish Cross that were split into 4 groups (18 in three test groups, 17 in the control). Each group was placed on an alfalfa/orchard grass mix pasture and given the same organic 20% broiler feed from start to finish as well as grit. The amount of water given was dependent on the amount of water consumed by the birds. The control group received nothing in their water, while the test groups received apple cider vinegar, garlic oil, and vitamin E oil, respectively. Each of the test groups was given approximately 1 ounce of apple cider vinegar or garlic oil per gallon of water and 1 dropper’s worth of vitamin E oil per gallon of water. These dosages are the recommended amounts when using these remedies as treatments for an ailment. Apple cider vinegar is used to help birds with heat stress as well as a general blood cleanser, garlic oil is used to help birds fight off infection and illness, and vitamin E oil is given to help birds fight off any type of illness they may encounter. Many of these remedies are used to treat human illness as well, and all can be approved organically as treatments for ailments in poultry.

 Table 1 shows the average per-bird cost of production for this trial. Feed and water consumptions were recorded twice daily throughout the trial. The birds were moved every morning onto fresh pasture and the birds always had access to shade. The birds were kept in the brooder for 25 days and then moved to pasture for an additional 28 days. The average temperature during August 2015 in Bainbridge, PA was 85.6 degrees Fahrenheit. According to the time log kept throughout, an average of 25 minutes per day was spent in the brooder and 15 minutes per field pen per day (equating to one hour per day total) was spent. It also took a total of 2 hours to make repairs to field pens and clean out feeders/waterers from the previous batch. In addition to this, it took 1 hour to prep the field for the birds. Assuming a labor cost of $12.00 per hour, a feed cost of $27.53 per 50 lb. bag, the current cost per gallon of water at $0.011 per gallon in Bainbridge, PA, the cost of the water additives, and an average sale price of $4.00 per pound of carcass weight, the costs of production are displayed below.

**Table 1. Average Production Figures for Individual Birds**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Control** | **Apple Cider Vinegar** | **Garlic Oil** | **Vitamin E Oil** |
| **Yield** |  |  |  |  |
| Live Weight | 5.85 lb. | 5.40 lb. | 5.58 lb. | 6.03 lb. |
| Carcass Weight | 4.50 lb. | 4.10 lb. | 4.42 lb. | 4.36 lb. |
| Carcass Yield | 77% | 76% | 79% | 72% |
| FCR Liveweight | 1.78 lb. | 1.80 lb. | 1.92 lb. | 1.70 lb. |
| FCR Carcass | 2.32 lb. | 2.38 lb. | 2.42 lb. | 2.35 lb. |
| **Feed & Water Consumption** |  |  |  |  |
| Feed | 10.46 lb. | 9.76 lb. | 10.72 lb. | 10.26 lb. |
| Water | 4.74 gal. | 4.99 gal. | 4.65 gal. | 4.90 gal. |
| **Profit** |  |  |  |  |
| Sale Price | $18.00 | $16.40 | $17.68 | $17.44 |
| Production Cost | $12.89 | $12.52 | $14.85 | $13.36 |
| Profit | $5.17 | $3.88 | $2.83 | $4.08 |

 The results of the trial indicate that it is not economically beneficial for farmers to utilize these health boosting remedies on a long-term basis as there were no significant differences in carcass yields or feed conversion ratios. While these remedies should be used to treat illness or heat stress, they should be reserved for the times where they are needed, particularly for economic reasons. The highest profits were seen in the control group, and there was not a significant difference in the temperament or overall health and vitality of the birds between the different groups. It was apparent on the hotter days that the control group was panting more than the other groups, but there was no mortality associated with this. There was some concern about the flavoring of the meat with the additives, however upon completing a taste test of the meat post-processing, there was no noticeable flavoring differences between the groups. In the end, it will benefit farmers to utilize these remedies on a case-by-case basis for their birds, however this trial determined that there is no additional benefit from using these remedies for a longer time period.