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ANALYSIS OF PREGERMINATED GRAIN MIXTURE SOAKED IN APPLE CIDER VINEGAR AND AZOMITE AS PARTIAL SUBSTITUTION TO REGULAR DRY FEED FOR FREE-RANGE BROILERS.

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The idea for this investigation originated from the need for poultry producers to lower the costs of feed given that this alone contributes to 50-60% of the total cost of production. The proof of concept examines the substitution of regular feed concentrate by 63% with a grain mix of pre-germinated grains.

METHODS

Two broiler flocks were used; 460 Freedom Rangers per flock. Flocks were managed under the PCRA model. Two different treatments (T1 and T2) were completed 15 miles apart:

T1 = flock diet was composed of 63% grain mixture using six grains, and 37% regular feed, 70 pounds of comfrey weekly, exposed to paddocks at week two of hatching and supplemented with a small dose of apple cider vinegar, garlic, onion and elder in water daily to prevent diseases from the sixth week of birth. This treatment lasted 83 days.

T2 = flock diet was composed of 92% concentrate (regular feed) and an 8% mix of grains from day 30 since hatching, exposed to paddocks at week four of age. This treatment lasted 70 days.

Treatments were assessed visually, physically and chemically. Both treatments were provided with starter feed (corn and soy base; 18% protein). T1 was fed starter feed for three weeks, while T2 was fed for four weeks. Additionally, T1 was exposed to the paddocks at week two, while T2 was exposed at week four. From week four to week six, T1 was fed regular feed (corn and soy base; 16% protein) at the same time the grain mixture (six grains at varying proportions; 16% protein) was introduced. From week seven to ten, T1 diet was 100% grains. From week ten to twelve, T1 diet was composed of 50% regular feed and 50% grain mix. Additionally, T1 was treated from week six to twelve with a small dose of apple cider vinegar, garlic, onion and elder in water daily to prevent diseases. T2 diet was 92% regular feed and 8% grain mix from week five to ten.

RESULTS

T1 consumed 1,050 lbs of starter feed concentrate, 1,754 pounds of finishing concentrate, and 4,706 lbs of pre-germinated grains. T2 consumed 1,400 lbs of starter feed concentrate, 5,173 lbs of finishing concentrate, and 600 lbs of grains. Assuming the average cost of organic regular feed (starter and finalizer) costs \$ 0.30 cents per lb. and the grain mix costs \$ 0.18

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cents per lb. The total cost (grain and regular feed) of feed for the 440 chickens of T1 treatment was \$ 1,641 versus \$ 2,074 of the total cost of feeding the T2 flock.

Birds managed under T1 consumed 17.07 lbs. of feed to obtain a carcass yield of 4.31 lbs. of average weight per bird, with a feed conversion of 3.96:1. In other words, each bird in T1 had to consume 3.96 lbs. of feed to produce one lb. of meat. Birds under T2 consumed 16.30 lbs. of feed to yield 4.12 lbs. of carcass weight and had a feed conversion equal to that of T1. The mortality under T1 was 6.61%. Deaths occurred before apple cider vinegar, garlic, onion and comfrey supplements were provided. T2 presented a slightly higher mortality of 6.82%, in a shorter time frame than T1.

1,896 lbs. of meat were produced in T1 and 1,809 lbs. in T2. If the producer obtains a net profit of \$ 0.45 cents per lb. of meat, this means \$ 39.00 more was obtained for the additional 87 lbs. of meat produced in T1. These \$ 39.00 are added to the \$ 433.00 saved from changing the diet in T1. The total profit for the producer in this case was then \$ 472.00.

DISCUSSION & FURTHER RESEARCH

It has been concluded that, based on the nutritional profile of each grain, the grain mix presents a lower protein percentage and energetic value than regular feed. However, better nutrition and physical health in the broilers was manifested using the composed diet of 63% mixture of six grains and 37% of regular feed. For there to be a better or equal nutritional benefit in the broilers fed with the grain mix versus the broilers fed with the regular feed, this diet of 60% grains must always be accompanied by 40% regular feed, given that the mixture of grains provided at 100% would not be able to maintain the proper development or final weight of the flocks compared to those fed with regular feed.

Conducting a second analysis for this proof of concept using a full broiler flock of 1500 birds is recommended before any definitive conclusions can be made. Some considerations for the next investigation would be to replace the diet of T1 with fresh comfrey by 10-15% and adapt feeders to the feeding system of whole pre-germinated grains. Additionally, reinforcing the birds immune system from day seven until the time of harvest using small daily doses of apple cider vinegar, garlic, onion and elderberry in the grain mixture.

