

Research Report: LIVESTOCK 2017

Probiotics for pasture-raised chicken



FARMER-RESEARCHER

Justin Hilborn, Fat of the Land Farm - East Region

WHY IT MATTERS

White rock chickens are the industry standard but weight gain is usually lower on pasture than in conventional settings. Feeding them probiotics, therefore, might improve the health and weight gain of pasture-raised chickens. With several products on the market, Justin wanted to see if any would have a real effect on his chickens. Justin set out to compare three commercial poultry probiotics to see if they increased growth rates and survival of pasture-raised White Rock chickens.

RESEARCH QUESTION

Do poultry probiotics affect weight gain or health of pasture-raised chickens?

METHODS

Justin used four brooders and four chicken tractors with 75 chickens each, and randomly assigned one of four treatments to each:

- Bio-Lac powder abiotic
- Bio-Lac liquid abiotic
- Acidophilus liquid probiotic
- No probiotic control

Justin had five cohorts of birds over the course of the summer, so there were five replicates of the experiment and a total of 1500 chickens (4 brooders/tractors x 75 chickens each x 5 cohorts).



Chick receiving different treatments in four side-by-side brooders. This arrangement was replicated 5 times.

Justin recorded feed consumption of each group of birds, along with mortality. He also planned to keep each cohort of birds separate for butchering in order to record the weights of each bird in each batch.



Chickens receiving different probiotics in 4 tractors.

RESULTS

Mortality

- Mortality ranged from 1 - 15 birds, but we can not attribute the difference to the probiotic (P=0.23).
- There was **no difference** in mortality among probiotics and control.

Average Weight Gains

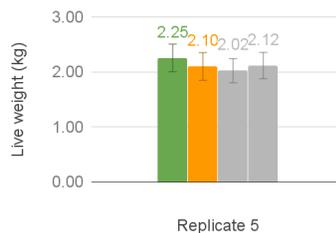


Figure 1. Average live bird weights from the last replicate. **Green** = Bio-Lac liquid; **Orange** = Bio-Lac powder; **Grey** = Controls; Acidophilus liquid probiotic not used in this replicate.

- Unfortunately, the abattoir could not weigh the groups separately and Justin couldn't get accurate enough weights, so carcass weights were not available as planned.
- To get a sense of individual weight ranges, Justin weighed 13 birds in each group in the final replicate.
- There was no detectable difference in weight gain from this one replicate because of variation within each group.
- **More replicates would allow us to determine if average weight gain of 2.25 kg (green) is really different than the average weight gain of 2.02 kg (grey)**



TAKE HOME MESSAGE

Logistics

- Justin found probiotics hard to access, with one supplier simply unable to refill an order mid-season.
- The dry probiotic was easier to administer and store.
- Overall, experiments involving pasture-raised livestock take a lot of coordinating: the hatchery, brooder management, pasture management, abattoir, etc.
- Justin managed the most animals in a FLRP study to date!

Probiotic Effect

- Contrary to our predictions, probiotics did not affect mortality rates.
- A full dataset with replicates is needed to draw a conclusion about weight.
- Since pasture based systems have so many uncontrollable variables, Justin was left wondering if probiotics could have a noticeable effect on growth.



White Rocks in chicken tractors on pasture at Fat of the Land Farm.

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Fat of the Land Farm Weather Data:

Monthly temperatures and precipitation for 2017 and historical averages.

Centreville was selected as the weather station of Fat of the Land Farm. It is located 5.63km from the farm.

