

Poultry Feed Trial – 2018

Purpose:

The purpose of this trial is to compare the performance of 2 different feeds, particularly a newer formulated soy-free feed, on broiler chickens, in a pastured setting. The trials are primarily assessing which feed produced a better feed conversion rate, and secondarily, other observations concerning the overall health of the chickens.

Overview of Trial:

Mirror Image Farms at Fertrell received 200 Cornish Cross day-old chicks from Reich's Poultry on May 8, 2018, and divided into two groups of 100 each. Group 1 ("Soy") was fed the standard organic soy-based ration, from Panorama Feeds. Group 2 ("Crumble") was fed an organic Soy-free Protein blend that Fertrell formulated. It is a proprietary blend using sesame seed meal, field peas, linseed meal, crabmeal, and fishmeal as the protein source, instead of soy. It was also mixed by Panorama Feeds. Except for the feed, the chickens were raised in as similar situations as practically possible. The Soy group was butchered at 42 days, on June 19, 2018. The Crumble group was butchered at 62 days on July 9, 2018



The chicks were in the brooder till day 23. They were moved to the pasture on day 23. They were in 5'x10' shelters, approximately 30 chickens in each shelter. The shelters were moved at least once a day to new pasture.

Mortality:

In the brooder, for the first 23 days, 5 chicks from the Crumble group died. No chicks from the Soy group died. On day 23, before moving out to the pasture, we culled 10 chicks from the Crumble group which were having trouble walking. In the pasture, through Day 42, 2 chickens from the Crumble group died, and we culled 8 more chickens. No chickens from the Soy group died or needed to be culled during this time frame. In the last twenty days, from Day 42 – Day 62, we culled 13 chickens from the Crumble group. Total mortality in the Crumble group was 38 out of 100. Total mortality in the Soy group was 0 out of 100.

A sample of the chickens were weighed every 5-9 days until the first butcher day, and then the Crumble group was weighed one more time before they were butchered. We sampled 10 chickens from each feed group.



"Soy" chick in back, "Crumble" chick in front : Day 24



"Crumble" chicken on left, "Soy" chicken on right : Day 37

Trial Results:

Live Weight Averages

	Soy	Crumble
2 days old	0.1 lb	0.1 lb
9 days old	0.225 lb	0.175 lb
16 days old	0.625 lb	0.318 lb
24 days old	1.2 lb	0.7 lb
30 days old	2.15 lb	0.96 lb
37 days old	3.125 lb	1.225 lb
42 days old	4.1 lb	
51 days old		3.0 lb
62 days		4.0 lb

Carcass Weight Average

Soy	2.90 lb
Crumble	2.97 lb

Feed Conversion

	Total feed	Feed per bird	Feed conversion; finished carcass weight
Soy	801 lb	8.09 lb	2.79
Crumble	718 lb	11.77 lb	3.96

Other Trial Observations:

Many of the chickens in the Crumble group developed leg problems. Their legs turned inward at the knee. Some would sit back, with their legs in front of them. A few had a leg sticking back and to the side. The chickens that we culled from the Crumble group had such bad leg development that they couldn't walk along as we moved their shelter.



Crumble chick : day 24



Crumble chicken : Day 37



Crumble chicken : Day 44



Crumble chicken : Day 62

Compared to the Soy group, the Crumble group seemed to lack an appetite. At any given time, there were less Crumble group chickens at the feeders eating, than the Soy group of chickens.

In the 2017 feed trial (comparing the pellet version of the Soy Free Protein blend with standard soy-free feed, and standard roasted soy feed) the pelleted Soy Free Protein blend didn't hold together very well. It resembled concrete mix and was mostly powder, which the chickens didn't eat very well, and a lot was left behind in the troughs. This year, the Crumble feed was a better consistency, leaving less powder.

The final observation included here, is that this batch of soy feed had more whole corn kernels and soybeans than normal. Too many whole corn kernels and soybeans slipped through the mill. This flock did not gain as much weight in a comparable time frame as previous flocks of Cornish crosses fed the same organic standard roasted soy feed ration. As a comparison, Cornish Crosses that we raised spring 2017 weighed 5.5lbs live weight at 41 days, while the Soy group of this flock weighed only 4.1lbs at 42 days. The weight difference may be related to the inedible nature of the whole corn kernels and soybeans, although there were other differences between the flocks.



Example of whole corn kernels and soybeans left behind in the trough.

Conclusions:

The Soy group outperformed the Crumble group in growth rate and feed conversion. The Crumble group took 20 more days than the Soy group to reach a live weight of 4lbs. The Crumble group had a high mortality rate of 38%. The Soy group had 0% mortality.

Comparison between 2017 and 2018 feed trials

Both the Soy and the Crumble group this year did not do as well as their 2017 counterparts. In 2017 on day 38 we switched the Soy Free Protein blend group to standard roasted soy feed (to salvage their marketability.) Comparisons between the years will only be using data up to day 38.

Comparison : Live Weight Averages

	2017 Trial : Day 38	2018 Trial : Day 37
Soy	5.7 lb	3.1 lb
Soy Free Protein blend	2.3 lb	1.2 lb

Comparison : Feed Conversion; live weight

	2017 Trial : Day 38	2018 Trial : Day 37
Soy	1.52	2.05
Soy Free Protein blend	3.65	5.24

Further Questions to Explore

- How does soy-free feed effect the beginning growth of chickens in the brooder stage? Some farmers start their chicks on standard organic soy feed, and then switch to soy free feed, either standard organic soy free, or Fertrell's Soy Free Protein blend, at 2 weeks old. Farmers who do this, have better results with their birds. This is something we may trial in the future, to gather data on a 'mostly soy-free' chicken. Whether we would grow 'mostly soy-free' chickens beyond a trial would depend on customer considerations, and how marketable that type of chicken would be.
- Does breed effect the chickens' ability to thrive on soy-free feed? Another farmer raises Freedom Rangers using soy free feed. The Freedom Ranger takes 11-12 weeks to reach market weight. This farmer has had better success with the Soy Free Protein blend than with the standard soy-free feed. Is there something about the Cornish Cross breed, which is a fast-growing meat chicken, that demands a specific nutritional requirement that cannot be met with soy-free feed?

About the Researchers

Joella Neff along with her husband Tyler Neff, operate a diversified, pastured livestock operation which includes pastured organic chickens, turkeys and ducks, pastured hogs, grassfed beef, and pastured rabbits. They farm 55 acres, including land at The Fertrell Co., where they run side by side farm trials. Joella has her B.A. in Geography from Millersville University. Before farming full time with her husband, Joella worked for a non-profit land preservation organization for 7 years, where she visited over 500 farms on a regular basis, and worked with farmers in land stewardship that included writing Ag. Erosion and Sedimentation Control Plans and Manure Management Plans. Tyler partnered with his father for 10 years in running the family farm that included conventional dairy, crops, and broilers. He then started farming on his own, with a more wholistic, perennial/pasture-based mindset. He planted 4 acres of fruit and nut trees, and began raising livestock on pasture.