Poultry Feed Trials – 2017

Purpose:

The purpose of these trials is to compare the performance of 3 different feeds, particularly soy-free feeds, 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 299 Cornish Cross day-old chicks from Reich's Poultry on Sept 18, 2017, and divided into three different groups, each fed a different feed ration. Group 1 ("Soy") was fed the standard organic soy-based ration, from Panorama Feeds. Group 2 ("Pellet") was fed a new soy-free feed that Fertrell formulated using sesame seed as the protein source, instead of soy. Not all of the ingredients are certified organic. It was also mixed by Panorama Feeds. Group 3 ("Standard Soy-free") was fed the standard organic soy-free ration, from Panorama Feeds, which largely uses peas as the protein source, as a soy replacement. Except for the feed, the chickens were raised in as similar situations as practically possible, and butchered 54 days later, on November 10, 2017.

"Soy" chick on left, "Pellet" chick on right : 11 days old

On Day 39, we switched the Pellet group to the standard soy-based ration, after observing their languishing health and growth, and considering their marketability. This report will compare all three groups through Day 38, and then will compare final live and carcass weights, and feed conversion for the Soy group and the Standard Soy-free group.

The chicks were in the brooder till day 28. They were moved to the pasture on day 28. They were in 5'x10' shelters, approximately 30 chickens in each shelter. The shelters were moved at least once a day to new pasture. The weather was cool during their time on pasture, and many times damp. When the chickens were first moved to the pasture, for about a week we put tin sheets on the north/west side of the shelter to block the wind. We resumed this practice the last week of their life, and at different times in between, for less favorable weather.

Mortality:

In the brooder, for the first 27 days, 4 chicks from the Pellet group and 1 chick from the Standard Soy-free group died. We culled 1 chick from the Soy group, and 4 chicks from the Pellet group. In the pasture, through Day 38, we culled 10 chickens from the Pellet group. In the last trimester, from Day 39 – Day 54, we culled 2 chickens from the Soy group, and 1 chicken from the Standard Soy-free group. In this same time period, 10 chickens died from the Soy group, and 2 died from the Standard Soy-free group.

Towards the end of the trimester, the weather continued to get colder, and some chickens developed respiratory issues, especially the large birds in the Soy group. They would turn purple and listless before dying. We were losing about 1 chicken a day from this group for the last 10 days. The late term mortality of these full grown birds skewed our overall feed conversion rate.

A sample of the chickens were weighed every 6-10 days, with a sample size of 10-20 chickens from each feed group.

Trial Results:

Live Weight Averages

	Soy	Pellet	Standard Soy-free
8 days old	0.30lb	0.25lb	0.20lb
14 days old	0.675lb	0.375lb	0.375lb
22 days old	1.738lb	0.725lb	0.963lb
32 days old	2.7lb	1.5lb	1.7lb
38 days old	5.7lb	2.3lb	2.4lb
47 days old	7.2lb		3.6lb
54 days old	8.3lb		4.3lb

Carcass Weight Average

Soy	6.2lb
Standard Soy-free	3.0lb

Feed: Day 1 through Day 38

	Feed : Day 1 - 38	Feed per bird	Feed conversion; live weight
Soy	898.75lb	8.641lb	1.52
Pellet	613lb	8.40lb	3.65
Standard Soy-Free	761.13lb	7.45lb	3.11

Feed : Day 1 through Day 54

	Total feed	Feed per bird	Feed conversion; finished carcass weight
Soy	1,681.75lb	18.28lb	2.95
Standard Soy-Free	1,551.38lb	15.67lb	5.29

Other Trial Observations:

Comparable to our other flocks, the standard soy fed Cornish Cross chickens grew quickly, and they developed leg trouble and were difficult to move in the shelters. As the chickens grew larger, they seemed more susceptible to the weather and developing respiratory issues, as we saw with increased mortality in the last 10 days.

The Pellet group had much higher mortality (24 out of 91) than the other 2 groups. The Soy group had 13 out of 105, with 12 of those dying in the last 10 days. The Standard Soy-free group had the lowest mortality, of 4 out of 103.

At 38 days: Left-"Soy" chicken, Center-"Pellet" chicken, Right-"Standard Soy-Free" chicken.

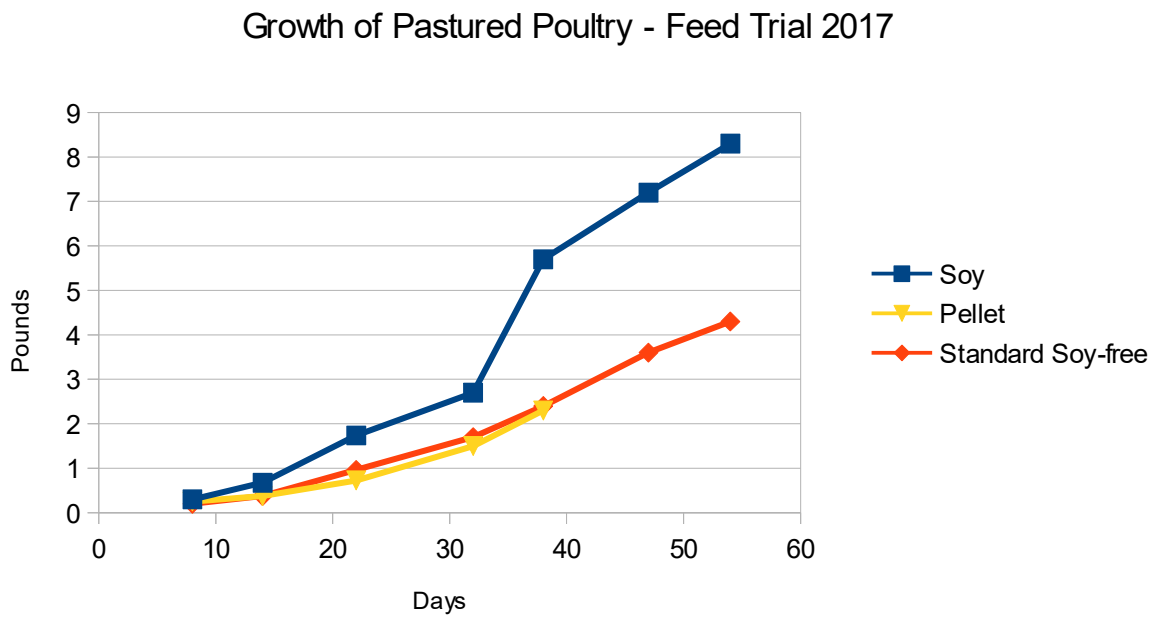
The Pellet feed didn't hold together very well. It resembled concrete mix and was mostly powder, which the chickens didn't eat very well, and a lot was left behind in the troughs.

The Standard Soy-free group always seemed hungry. Out of the three groups, they foraged on grass and bugs the most when moved to new pasture. They also drank significantly more water than the other two groups, and their manure was wet. There was a noticeable difference between the locations left behind after the Standard Soy-free group and the other two groups when we moved the shelters to new pastures. Where the Standard Soy-free group chickens slept, that area would always be plastered with wet manure. Because of this, we ended up moving the chickens three times a day towards the end of their life. The Standard Soy-free group were dirtier than the other 2 groups, especially their breasts. Their feathers were never full, thick, and healthy looking. It was clear that they were not able to metabolize the feed well.

The final observation included here is an observation between this flock, and earlier flocks. After processing, packaging, and freezing the chickens, the chickens in this flock (among all groups) were more purple in the package than the chickens from flocks earlier in the summer.

Conclusions:

The Soy group significantly out performed the Pellet group and the Standard Soy-free group in feed conversion. The Pellet group had a higher mortality rate, but even as such, had a similar feed conversion rate as measured in the first 38 days, although it was a bit less than the Standard Soy-free group.



Further Questions to Explore

We would like to explore if there is a taste or texture difference between the differently fed groups.

We would like to run the trial again earlier in the season when weather is more conducive to chicken health and growth.

If the Pellet feed could be better formulated to stay together in larger particles, we think there would be a marked difference in the amount the chickens would eat, reduced waste, and better feed conversion. We would like to trial again the same feed, but in a better particulate condition, and run the feed for the entirety of the groups' life.

A few other farmers raised pastured chickens comparing Fertrell's new soy-free formulated feed (Pellet) with the standard Soy feed, or with the Standard Soy-free feed. In their comparisons, the Pellet feed preformed more favorably than it did in our trial. Their trials were based mostly on visible observation, and didn't include regular weighing of the live animals, nor as detailed records on how much feed was being fed, which our trial included. The one comparison trial was done with the same breed as the one we used, Cornish Crosses, but was done in a southern climate. The other comparison trial was done in a climate similar to ours, but was done using a different breed, the Freedom Ranger, which takes 11-12 weeks to reach market weight. We would like to do the trial again in warmer weather, or with a different breed (perhaps the Robust White) to see how that effects the Pellet feed performance in our context.

Research Farmers' Choice and Modifications

The farmers running this trial currently do not have a large enough market for soy-free chickens to merit raising a flock of chickens fed soy-free feed, and getting such low feed conversions. Our business also values healthy, clean animals, and do not wish to raise chickens that are dirty, hungry, and do not appear healthy, such as the Standard Soy-free fed chickens were in our trial. We are not interested in developing a market that requires us to raise chickens that we're not confident in their health and

metabolism. We do think this is a growing market for organic soy-free pastured chickens, and would be interested in a feed formulated such, that doesn't produce poor looking poultry. If the Pellet feed is developed as such, or we alter a different variable (ex. weather, breed), we're interested in raising expanding their market to include soy-free chickens, and would simply charge a higher price for the meat to make up for the reduced feed efficiency.

About the Researchers

Joella Neff along with her husband Tyler Neff, operate a diversified, pastured livestock operation which includes pastured organic chickens and turkeys, pastured hogs, grassfed beef, and pastured rabbits. They farm 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.