

# Chicken Flock Transitions

It's nearly December already and we haven't had our first freeze yet. But, there is a chance that the predictions may be wrong and we have one tonight. For the past 2 years we have had our first freeze by November 15th. We are only a few days past, and I'm holding out on our green tomatoes, sweet peppers, and hot peppers that aren't quite ready. I'm also created temporary low tunnels for nightfall in the event of a freeze. I suppose I must cut some of the herbs too, if I plan on preserving them for winter (it did end up freezing as I'd predicted! It tends to be roughly 4 degrees cooler in my backyard probably due to the greenbelt). Which meant a busier day in the garden removing all of the frozen plant mass. The bees and butterflies, especially the Monarchs, have been migrating through here the past few weeks. I saw the last hummingbird pass through and our regular clan mid September. They seemed to be on schedule. I read that if you keep a feeder up throughout the year you may likely see a few of the more rare species. I may test this out this winter just to see.

We have a new flock of 12 chicks. This will be our 4th flock to date. So far our second flock was by far the most superior health wise and we selected them from Ideal Poultry in advance. For whatever reason we didn't fare well with our selectively

bred spring flock in 2016. They weren't given an immunization shot and perhaps that's what did them in, or the heavy rains and potential chemical run off from neighbors, who knows. Our place has been pesticide free and "organic" for 7 years now. There were a multitude of issues with this flock and after contacting experts from various purveyors including Fertrell and Penn State experts, and doing a necropsy, our tests were inconclusive. We didn't send them to A&M either.

The interesting thing is that the first days of a chicks lives are imperative and you may not see results of their first 5 days until weeks or even months later. So perhaps it was the feed, this seemed to be a concern when we lost a few chicks. We didn't have this issue in the past using our favorite local feed mill, but all ideas aren't off the table. We found ourselves giving them regular Vitamin E doses in their water when we thought it was feed issues. Again, any developmental issues that happened in the chicks first 5 days could have very well been the culprit.

We once again ordered a flock from Ideal and after 2.5 weeks old they are happy, lively, vivacious, and flighty as ever. In due part to the fact that we have Americaunas and they tend to be wilder to the core. We had a 20% success rate with our selective breed flock of Barred Rocks last spring, pretty brutal. One gloriously handsome Rooster that we recently culled (we aren't supposed to

have chickens, and he was no exception since he crowed at all times of the day and night, but we did almost have him for 1 year, he was spunky scaredy cat too), and one hen are all that remain from that flock.

We have a small backyard flock; 12 elder hens (3-3.5 yr olds, 8-2 yr olds, 1-nearly 1 yr old), and 12-2.5 wk old chicks (4 Black Australorp, 4 Cuckoo Marans, 4 Ameraucanas). We have learned a lot, and experimented a ton! From building multiple brooders and chicken coops, to experimenting with various dual purpose breeds, visiting multiple farms, researching how to sex chickens, to culling them and dissecting them, attending workshops, tours, clubs, fairs, and events. We are not chicken experts but we have had our share of trials and tribulations that would make one give up. Since we are a fan of pastured organic chicken egg production we also joined APPPA last year and nearly launched a joint venture with a neighboring farmer to go into a larger small scale pasture raised chicken egg production operation. I wasn't quite ready to handle that operation on my own but it's in my husband's mind that's what he wants to do when he retires. We shall see. Until then, we will keep our backyard flock manageable and try to be as simplistic as possible. I must note that this time instead of using a 250w heat lamp we used a heat mat and it has cut our energy bills in half. Once I placed the chicks in the brooder on our back patio, I also added a reptile black light

for additional warmth. They seem to be fine and we are pleased with the savings and the hassle. Plus they have normal sleep patterns without a light on all of the time. One thing that has remained constant throughout all of the changes is that we harvest rainwater and the chickens love it as their main source of drinking water.

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## How a Life Cycle Assessment (LCA) Measures Up With Energy Flows For Our Food System

**Figure 1. Life Cycle Assessment (Anctil and Fthenakis 2012).**

Understanding methodologies in calculating the energy flows of food systems is an essential part of making systems more sustainable and efficient. Is a good tool to measure the environmental impacts of a food product the life cycle assessment? The first LCA studies in the 1960s researched the impacts of beverage containers like Coca-Cola (Pray et al. 2012).

Within our food system, an LCA analyzes the various stages of the food cycle to prevent a shift to other life cycle stages (Pray et al.

2012). For a candy bar, this could include the impacts of manufacturing it through the production chain, including sourcing of ingredients, fuel to extract material, transportation for ingredients and candy, as well as the resources used in the “cradle-to-grave” life cycle (Pray et al. 2012).

The LCA can potentially measure emissions, water, waste, and help minimize costs but there are many downsides of the LCA model (Pax 2013). A standard life cycle assessment (LCA) has three phases; goal and scope, inventory analysis, and impact assessment (Pray et al. 2012). A fourth element could be life cycle interpretation (Reap et al. 2007). A **survey was conducted on problems with the LCA model** and it identified 15 problems concerning this scientific system (Reap et al. 2007). One of the six problems of utmost importance in using the LSA model is that the impact (phase 3) only takes the environment into consideration and not the economic and social impacts of the good that are being manufactured (Reap et al. 2007). Ingredients like corn syrup and synthetic chemicals that are used to flavor and color the candy impact nutrition, and the health of those who manufacture the candy, and unfortunately were not measured.

The functional unit for measuring food is unclear as caloric values, nutrition, and emotional value also play a role (Pray et al. 2012). Others argue that LCAs on food systems measure food systems differently like by mass or volume which makes it

challenging to compare different food items (Pray et al. 2012).

We should create policies that provide solutions for methodologies that are more sustainable. In regards to sustainable development, the LCA model doesn't necessarily promote sustainable decision making as sustainable production and consumption are lacking (Reap et al. 2007). These are a few reasons why we should question methodologies behind energy flows in our food systems so that we can create a smaller footprint for our planet. After I conducted three LCA assessments on an organic vegetable and fruit farm, an organic dairy cow farm, and a goat meat farm, I came to the conclusion that each farm is unique and presents it's own challenges when analyzing data and computing formulas.

Multiple considerations must be taken into consideration when conducting an LCA. Which includes incorporating the availability and access to resources, waste management streams, value added value chains, regional location, marketing channels, the farming operation and management system, and energy measured as consumed by humans and machinery from a cradle-to-grave perspective. Ultimately a farmer, small business, non governmental organization (NGO), corporation, and so forth, must determine if the LCA will add value and improve a company's triple bottom line. Otherwise it can be extremely inefficient due to

the lack of accurate data, thus taking an extensive amount of time to conduct an analysis, while it is extremely expensive to conduct a thorough assessment. Therefore conducting a SWOT analysis on a quarterly basis will allow you to measure your targeted areas of opportunity and weaknesses , perhaps in a more efficient manner so that your business enterprise can address alternative solutions for a more sustainable future head on.

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## Cover Crops for Central Texas

Three cover crops that are perfect for the soil in the Blackland Prairies ecoregion in Central Texas, include buckwheat, peas, and crimson clover. The benefits of peas and clover cover crops include adding nitrogen back into the soil. Peas and clover are members of the Legume family and increase organic matter in the soil, encourage beneficial insects, which increases pollination for your growing spaces when the flowers are in bloom. Clover also provides an excellent breeding ground for ladybugs, the larvae, and pupa thrive in the microclimate that they create. Allowing some of your winter and spring crops to bolt and flower may encourage aphids to visit but that's what ladybugs and larvae love to eat so you can boost your beneficial insects in your backyard just by making a few exceptions! This year has been incredible watching the lady bug populations go wild in our largest garden. It's hard to believe that just a year and a half ago our largest bed was a small butterfly garden, but



mostly clay covered by grass.

A disadvantage of using clover is that it can only survive in cooler months like spring, fall and winter, and withers in the heat of the summer. This year I planted crimson clover mid winter due to the mild temperatures, but often it's recommended to start before winter. Since we have mild winters in Central Texas growing them after the first frost isn't a problem, they just take longer to progress. Peas get stressed from heat as well and will freeze, but there are other varieties that contend with the heat much better. Crimson clover, Buckwheat and other green manures aka cover crops aid in attracting beneficial insects like bees to pollinate (Shirey n.d.). Some legume cover crops aren't good at suppressing weeds (Grubinger n.d.).

When the heat turns up Buckwheat is a more appropriate soil builder as it also blocks other weeds from trying to break through and takes one third of the time as clover to develop. Buckwheat produces large amounts of residue that adds organic matter to the soil (Sustainable Agriculture Research & Education 2012). Buckwheat also supports pollinator populations (SARE 2012). Buckwheat is very hardy, drought tolerant to some degree and efficient at separating clay to provide a better planting medium and bring nutrients closer to the plants (Taylor 2014). Within 30 days from planting Buckwheat is blooming which makes it

a great time energy source for soil building in between other plantings. Chickens love it, and it produces a great seed to make gluten free flour with, or add it or the leaves to your smoothie. **Buckwheat** can make your landscape and food plate more sustainable!

Planting in the right season is paramount to production growth and the ability to improve soil structure (Grubinger n.d.). Some downsides of cover crops and green manures are that they aren't produced for revenue but short term economic gain (Grubinger n.d.). Which is why alternating crops and planting a green manure during seasonal changes is a good time to grow these crops on your farm or in your garden because when your soil is bare, beneficial protozoa, fungi, and essential minerals are leached from the soil and it loses structure. This works against the Central Texas grower during drought season. The healthier your soil is, the more drought tolerant they are, and the healthier your plants become! Therefore diseases will potentially be decreased because of your balanced ecosystem.

It is important that cover crops are planted in succession of food crops in order to maximize biodiversity so allow enough time for the plants to enrich the soil before you plant your next food crop. Green manures can be worked into the soil at any time and harvested early if need be but in order to reach their full potential for

your soil it is best to wait until they are ready to bloom. Allowing them to grow beyond blooming increases agrobiodiversity and you will find that some make an excellent living ground cover. For instance, clover is an excellent living, green mulch that surpasses weeds that try to sneak through your nifty rows. It can be an organic and sustainable alternative to straw which is generally sprayed with chemicals if purchased in Texas, or man made ground covers that use excessive amounts of energy to produce and distribute, therefore decreasing the sustainability of your farm and your carbon footprint. Using clover as a living mulch will encourage beneficial bacteria, beneficial bugs, improves soil health, and increases biointensive growing capabilities. Plus, it looks pretty!

Cover crops maintain and improve soil fertility, prevent wind erosion and encourage biomass (SARE 2012). In order for cover crops to be the most beneficial they also need to be trimmed or turned into the soil which can take time. Leaving soil bare prevents bacteria, earthworms, and fungi from encouraging micronutrient production (Relf 2009). Cover crops and green manures should be planted in succession of other crops.

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