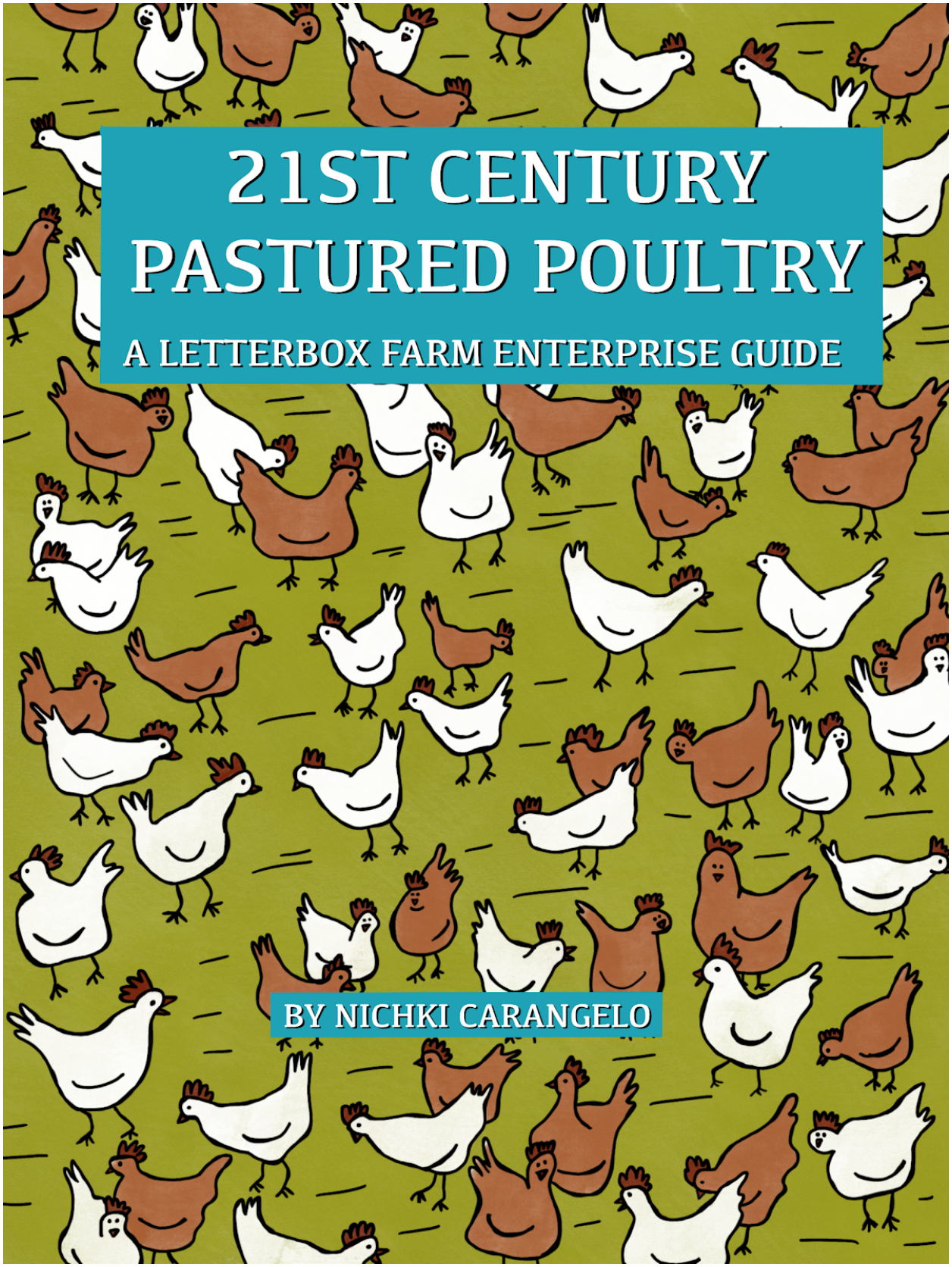

21ST CENTURY
PASTURED POULTRY
A LETTERBOX FARM ENTERPRISE GUIDE
BY NICHKI CARANGELO

THIS GUIDEBOOK WAS FUNDED BY A NORTHEAST SARE FARMER GRANT.

ADDITIONAL THANKS
Joel Salatin, Polyface Farm
Steven Hadcock, Cornell Cooperative Extension
Jamie Abbt, Letterbox Farm Collective
Tanya Moyer, Mulligan Creek Farm
Dave Perozzi, Wrong Direction Farm
Elizabeth Galeucia, Woven Stars Farm

ILLUSTRATIONS AND LAYOUT BY MALLORY MURPHY

NORTHEAST SARE
Sustainable Agriculture Research & Education

CONTENTS

WHY RAISE PASTURED POULTRY? 1
21st CENTURY PASTURED POULTRY 2
THE BENEFITS 3
THE CHALLENGES 3
THE BASICS OF POULTRY HUSBANDRY 4
CHOOSING YOUR BREED 4
ORDERING AND RECEIVING YOUR CHICKS 7
FEEDING YOUR CHICKENS 16
HEALTH AND DISEASE 19
CHOOSING YOUR PRODUCTION METHOD 23
FREE RANGING 24
DAY RANGING 24
PEN RAISING 25
OUR METHOD 26
OUR CURRENT SCALE 28
LABOR ECONOMICS 29
OUR DATA 29
COMPARATIVE CHORE LABOR HOURS 30
PROCESSING YOUR CHICKENS 31
FIXED PRODUCTION COSTS 31
FLEXIBLE PRODUCTION COSTS 32
MARKET RESTRAINTS 33
SLAUGHTER ECONOMICS 33
SELLING YOUR CHICKENS 38
BUILDING YOUR OPERATING BUDGET 40
ACCOUNTING FOR DEPRECIATION 40
PUTTING ALL THE PIECES TOGETHER 41
COMPARING OUR PERFORMANCE TO JOEL'S 43
CONCLUSION 45

WHY RAISE PASTURED POULTRY?

In his preeminent guide *Pastured Poultry Profit$,* Joel Salatin answers this question right from the start. The very first line of Chapter 1 emphatically states:

> *A couple working 50 hours a week for six months a year on 20 acres can NET $25,000-$30,000. What other agricultural enterprise can do that?*

It's clear from the first paragraph that Mr. Salatin firmly believes that raising home processed pastured poultry is *the* golden opportunity of the century. What follows this claim is more than 50,000 words of clear and passionate evidence gleaned from Joel's, and some of his industry peers', own very successful farm businesses. By the time the book is finished, the jury is out: pastured poultry is a solid bet for new and established farmers alike.

With a resource as good as this one what else is there to really add? Well, as the saying goes: *times they are a changin'* and it's been nearly thirty years since *Pastured Poultry Profit$* revolutionized the agricultural industry. We're now deep into a whole other century, we think it's time to check in and see if this opportunity is still golden as it was in 1993.

In order to make this assessment, we, like Joel, will be using data from our own established pastured-poultry enterprise as our primary information source, in addition to some survey information we've collected from other producers in our region. While we know this limited data pool isn't enough to be truly representative to the industry as a whole, we hope sharing our experiences will help save you time, money and energy as you assess, develop or refine your own 21st century pastured poultry enterprise.

21st CENTURY PASTURED POULTRY

In order to evaluate what's changed since Joel Salatin wrote his guide, the first thing we need to do is summarize the terms he's using to gauge his own success in the book. In order to fairly compare his data to ours, we need to bring it into contemporary terms. What follows are the basics of Joel's production as he outlines them. In the left column, we have the terms as they're cited in the book. On the right side, we've updated the terms in order to adjust for inflation[1]:

Economic Summary of *Pastured Poultry Profit$*

Land Use	20 acres	
Production Scale	10,000 broilers, 4 pounds each	
Year	1993	2020
Capital Investment[2]	$12,500	$22,395
Production Cost / Bird[3]	$4.45	$7.97
Gross Income / Bird	$7.20	$12.88
Gross Income	$72,000	$128,800
Operating Expenses[4]	$44,500	$78,730
Net Profit	$27,500	$49,270

[1] We used the inflation calculator at https://westegg.com/inflation/ to update our data.
[2] We averaged the $10,000 - $15,000 range given in the book.
[3] We divided his total operating expenses by 10,000 birds.
[4] While his exact expenses are not specified in the book, we can use the data given to surmise them using the gross and net profits that are shared.

So there you have it - the economic holy grail of pastured poultry enterprises shrunk down to 10 short lines. Don't worry if you're not sure what to make of them - we'll be diving into each number more thoroughly as we continue on. For now, let's continue answering the initial question: Why pastured poultry? Economics aside, there are several compelling reasons.

THE BENEFITS

Pastured chickens:

- ***Are simple to raise.*** They're small, easy to handle, have relatively few health problems and are quick to process and package.
- ***Are portable.*** They require comparatively light, portable infrastructure. This can be a major asset to farmers who lack secure land tenure and may need to relocate throughout their careers. (We moved our livestock 4 times before we landed on our forever farm!)
- ***Offer a quick return on investment.*** Most breeds of chicken can be raised, slaughtered and sold in 12 weeks or less.
- ***Are marketable.*** While the glory days of consumers traveling far and wide for pasture raised meats may be over, chicken is still a staple in most American households.
- ***Are easy to integrate.*** A chicken enterprise works well in tandem with existing enterprises and markets.

THE CHALLENGES

Like all farm enterprises, running a successful pastured poultry business still has its challenges. It is important to consider each one before making any investments. The success of your operation is directly related to your ability to manage the following:

- ***Keeping costs down and efficiency high.*** Feed, labor and other operating costs can add up fast.
- ***Producing at scale.*** Labor is expensive - profitability requires us to maximize our output for every hour spent.
- ***Processing Legally.*** Rules and regulations vary from state to state and USDA slaughter can be pricey.
- ***Getting a fair price.*** Factory farmed chicken is widely available at a much lower price.

We'll share how we've addressed each of these challenges as we walk you through every step of our own pastured poultry enterprise in the next two sections.

THE BASICS OF POULTRY HUSBANDRY

CHOOSING YOUR BREED

When it comes to raising meatbirds, you have a variety of breeds to choose from. Each comes with its unique strengths and weaknesses. Let's take a look at some of the more commonly raised breeds:

CORNISH CROSS

Cornish Cross chickens are a hybrid breed that results from crossing a Cornish with a Plymouth Rock. They have been documented as a broiler breed since the 1950s and are the dominant bird for commercial production.

How Long Do They Take To Grow? This breed can reach a 4 lbs. dress weight in 6-8 weeks.

Pros: Cornish Cross are currently the fastest growing breed on the market. They also convert feed into meat more efficiently than any other breed. As the predominant breed in commercial production, this type of chicken, which has ample white meat, is what the majority of consumers are accustomed to.

Cons: Due to their large size and rapid growth, Cornish cross are prone to certain health issues such as heart failure, heat stress and weak skeletal development. They are also slow moving and have poor natural instincts, making them more prone to predation and sensitive to the elements, if exposed.

Status: N/A

Market Potential: Most retail and wholesale markets.

Where To Get Them: Most major hatcheries, including Moyers, Murray McMurray and Cackle.

FREEDOM RANGER (RED BROILER/ RED RANGER)

Origin: This breed was originally developed in Europe in the 1960's in order to meet the standards for the French Label Rouge Free Range program. They've been steadily increasing in popularity in the U.S. and are often raised as an alternative to the Corn

ish Cross.

How Long Do They Take To Grow? This breed typically reaches a 4 lbs. dress weight in 9-11 weeks.

Pros: The Freedom Ranger grows at a moderate rate between the conventional Cornish Cross and the slower growing heritage breeds. It is hardy and able to forage and retain mobility as it grows, with fewer health issues.

Cons: This breed grows more slowly and converts feed less efficiently than the Cornish Cross.

Status: N/A

Market Potential: This breed has good crossover appeal between conventional and specialty markets.

Where To Get Them: Freedom Ranger Hatchery

AMERICAN BRESSE (BLUE-FOOTED BRESSE)

Origin: Originating from the Bresse region of France approximately 500 years ago, the first Bresse chickens were imported to the US in 2011. They are known for their signature blue feet, which are left on after slaughter to prove authenticity.

How Long Do They Take To Grow? It takes 16 weeks for this breed to reach between 3 and 4 pounds, dressed.

Pros: The Bresse chicken has been called "the best chicken in the world" and the price they fetch reflects this claim. Bresse

chickens can sell for as much as $25 per pound.

Cons: Chicks are expensive and can be challenging to procure. This breed is also comparatively slow growing.

Status: Rare

Market Potential: This breed would be best sold in specialty markets and higher end restaurants.

Where To Get Them: Bresse Farms, Greenfire Farms

SILKIE BROILER (TAIHE, BLACK-MEAT CHICKEN)

Origin: Known for their trademark black skin and signature dark meat and bones, Silkie broilers are most commonly found in Asian markets. They have a rich history of being used for medicinal purposes.

How long does it take to grow? This breed will typically dress at 2 lbs. in 12 weeks and 3 lbs. if grown to maturity (6 months).

Pros: Silkies are also productive layers and friendly pets, which makes them a good triple purpose breed.

Cons: Due to their atypical plumage (their feathers lack barbicels), they require extra protection from the rain and cold. They are also a much smaller and slower growing breed.

Status: N/A

Market potential: Silkie broilers are most popular in Asian markets, which are often underserved here in the U.S. There is also growing interest from domestic specialty markets.

Popular Hatcheries: Sheeran Farms, The Chick Hatchery

ON OUR FARMS

In his enterprise featured in *Pastured Poultry Profit$*, Joel Salatin uses Cornish Cross chickens. At Letterbox Farm, we use Freedom Rangers purchased from the Freedom Ranger Hatchery in Pennsylvania. No matter which breed you use, the basics of animal husbandry will remain the same.

ORDERING AND RECEIVING YOUR CHICKS

While some folks hatch their own chicks or source them from neighboring farms, most farmers order their chicks from hatcheries who ship them by mail. Packing newborn chicks into boxes and sending them off into the USPS without any food or water may seem cruel to the poultry novice, but in actuality baby birds are naturally designed for just such a journey.

This relates back to the fact that a hen can only lay one egg per day. Because of this biological restraint, a mother-hen-to-be has to lay her clutch of eggs over the course of a week or more before she can begin incubating them in earnest. This means the eggs laid first will begin to hatch as many as four days before the last eggs the hen laid do. Unable to leave her nest during this critical part of the incubation process, the hen fasts while she waits for the entire clutch to hatch and her early hatchlings stay right there beside her.

The yolk, which the chicks absorb right before hatching, is nutritious enough to sustain them for several days, by the end of which the rest of the eggs have hatched. Only then can the hen can bring everyone to find food and water. So in summary, baby chicks naturally fast for their first few days on earth and hatcheries are simply exploiting this phenomenon when they ship chicks in the mail.

CHOOSING YOUR HATCHERY

We recommend you choose a reputable hatchery that's in your region of the country. The closer your hatchery is to you, the less likely your birds are to be held up in the mail. Our farm is in upstate New York, and we use The Freedom Ranger Hatchery in Lancaster County, PA.

CHICK ECONOMICS

There are usually price breaks for chicks at orders of 50, 100 and 500, while shipping is typically a fixed fee. Consider these facts when putting together your orders and try to

maximize what you get from your money. Because we sell the vast majority of our chicken fresh (we process every week, May-October), we order 220 chicks every 2 weeks beginning mid-February. If we sold our chickens frozen, we would order more birds less frequently in order to save money and time.

The following chart illustrates the average cost per chick when purchased 100 at a time:

Chick Economics			
Price Per Chick For Batch of 100			
Cornish Cross	**Red Ranger**	**American Bress**	**Silkie**
$1.75	**$1.25**	**$5.00**	**$2.65**
Shipping			**$30**

THE BROODER

With no biological parent present, the chicks you pick up at the post office will essentially be orphans. Thus, it's your job to provide them a makeshift mamma hen, called a *brooder*. A brooder can be made a million and one ways - a quick google search on the internet will prove this. Which style you build doesn't matter so long as it adequately does these 4 things:

- ***Keeps chicks warm and dry.*** For the first 4 or 5 days, chicks need regular access to 90 degree heat. As they age, grow and feather out, they can tolerate cooler and cooler temperatures. By the time they are three weeks old, healthy chicks can withstand freezing temps without issue.
- ***Protects from predators.*** There are few things more vulnerable than a tiny baby bird. Make sure yours aren't at risk for becoming chicken nuggets.
- ***Prevents drafts.*** Drafts can cause pneumonia and other health issues in baby chicks, so be sure wherever you house them is free from wind.
- ***Provides access to clean water and food.*** Bell waterers, nipple waterers and gravity waterers all work just fine. Avoid troughs or bowls, as chicks are prone to drowning. If whatever you have is too wide or deep to prevent your chicks from submerging themselves, fill it with stones to make it more shallow.

SIZING YOUR BROODER

When building your brooder, provide a minimum of 0.25 square feet per chick. You can get away with less at first, but they grow quickly so be sure to have a plan in place.

OUR BROODERS

Our brooders are housed inside of our livestock barn, which is a 30' x 96' hoop house that's skinned in white poly plastic (instead of clear, like our vegetable houses) and seasonally covered in a 50% shade cloth cover. Our livestock house has a dirt floor, electricity and a frost free water source. Otherwise, it has no permanent infrastructure inside of it as it is designed to be a flexible space that can accomodate different animals at various times of the year.

Our barn houses our breeding rabbits year round, our winter flock of 200 laying hens November - March and occasionally 5 or 6 winter pigs. February through August, it also home to 2 or 3 brooders, in which we keep 440-660 chicks at a time.

Here's a picture of it at the height of summer, with our brooders on the left hand side and our rabbits on the right:

And here it is again in the middle of winter. You can see the shade cloth has been removed, the brooders have been broken down and the laying hens have been moved into newly built quarters in the back left corner.

Our dirt floor brooder pens are made using hog panel, t-posts, plastic mesh and wire. Each one is 8' x '8 and houses 220 chicks at a time, allowing for 0.29 square feet of space per chick.

To build our brooders, we simply drive the posts into the ground and mount the hog panels to them with wire. We then wrap the hog panel with plastic mesh (similar to bird netting) so the chicks can't escape. With the perimeter built, we lay 3 or 4 inches of shavings on the floor, hang one Plasson Bell Water, which is attached to a 5 gallon bucket and place in two trough feeders made from PVC.

Our barn is unheated but it is dry and draft free. To prevent predators, the sides of our greenhouse barn are wrapped with chicken wire, which allows us keep the sides rolled up day and night in the warmer months and increase airflow. We close the front and back doors at the end of each work day.

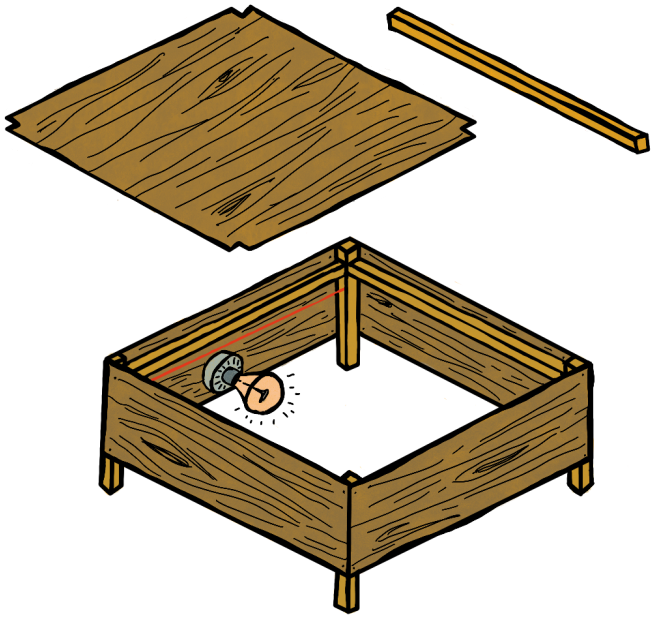
BROODER ECONOMICS - THE PERIMETER

Here's a complete materials list and the affiliated costs for one of our brooder pens:

Brooder Economics			
One 8' x 8' Pen Hold 220 Chicks			
ITEM	**QUANTITY**	**COST**	**TOTAL**
16' Hog Panel	2	$25	$50
4' T-Posts	4	$5	$20
150' Plastic Mesh	.5	$25	$13
100 Pk 6" Zip Ties	1	$8	$8
Spool Of Wire	1	$5	$5
		TOTAL	**$96**

BROODER ECONOMICS - THE HEATER

To keep our chicks warm, we have what's called an *Ohio Brooder* inside each of our brooder pens. An Ohio Brooder is a 4'x4' heated and insulated plywood box on legs. It was designed back in the 1940's by the Ohio Experiment Station as a cheap and efficient way to brood chicks. It can keep up to 250 chicks warm using just a couple of heat lamp bulbs.



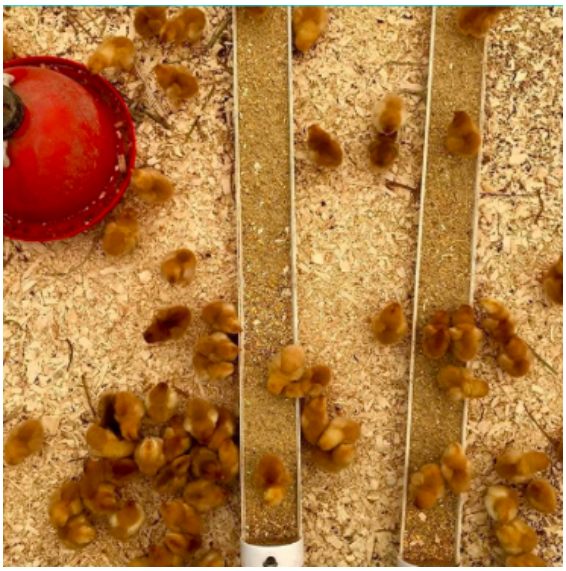
We built ours using the plans from www.plamondon.com . There, the author states they can be built for just $20, but we found ours cost more:

Brooder Economics

Building An Ohio Brooder for 220 Chicks

ITEM	QUANTITY	COST	TOTAL
¼" Plywood	1	$20	$20
1" x 1" x 8'	2	$2	$4
2" x 2" x 6'	1	$9	$9
Bulb Sockets	2	$6	$12
Electric Plug w Cord	1	$1	$16
Heat Bulbs	2	$5	$10
		TOTAL	$71

Here's a photo of our pen and Ohio Brooder in action, on the left:



Each brooder is furnished with a Plasson Bell Waterer and two PVC feed trays

Here's how much they cost us:

Brooder Economics

Feeders + Waterers For 220 Chicks

ITEM	QUANTITY	COST	TOTAL
Plasson Bell Drinker	1	$45	$45
10 ' PVC - 4" ID	1	$12	$12
		TOTAL	$57

When you put all the pieces together, you get the complete cost per unit,which includes the pen, Ohio Brooder, feeders and waterer:

Brooder Economics

Total Cost For Brooder Pen and Furnishings

$225

You can build your brooder in any secure, dry and draft-free location you have available. If you're starting small, this might be a cardboard box in your living room or a kiddy pool in your basement. Many folks use metal stock tanks with heat lamps or secure barn stalls to brood their chicks. Others choose to purchase premade brooder units like the stackable model seen here (available from Stromberg's Poultry). Do whatever your available resources and personal abilities afford you.

And just in case you want to build a mixed use livestock barn like ours, we've copied our expenses below. You'll see that the construction, site work and electric *Quantity* is listed as 0.33 - this is because we built three of these greenhouses at the same time and the cost listed for those items is total for all of them.

Brooder Economics

Building Our Barn

ITEM	QUANTITY	COST	TOTAL
96'x30' GH Kit	1	$7,833	$7,833
Construction	.33	$6,600	$2,178
Site Work	.33	$3,360	$1,208
Electric / Install	.33	$5,700	$1,881
Fans	2	$150	$300
Shade Cloth	1	$400	$400
		TOTAL	$13,800

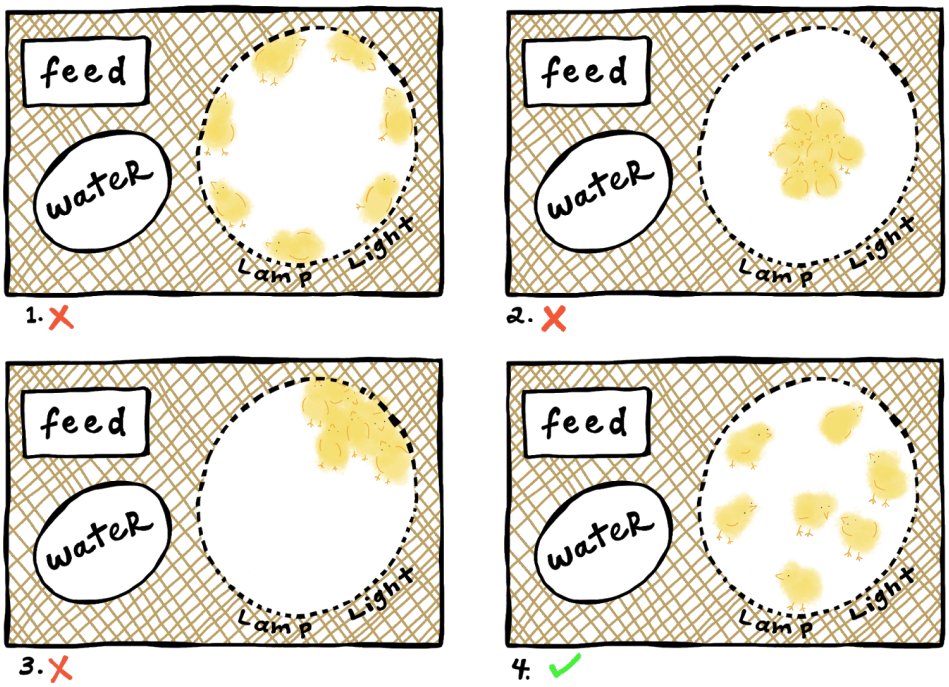
CARING FOR YOUR CHICKS

If you've built an effective brooder, you won't have to do very much once your chicks arrive. Simply fill up their feed and water, turn on the heat lamps and put your chicks into the pen.

Many folks, including Ms. Salatin, advise unpacking chicks one at a time and dipping each beak in water to ensure it takes a nice drink after it's journey through the mail. We used this time consuming method for many years until one day, we decided to skip it and see if anything bad happened. We were pleased to learn that our chicks did just as well without the beak dipping and we've never done it again. Now, we simply scoop our chicks from the box by the gentle handful and place them into the brooder in a jiff.

For the next four weeks, free feed your chicks as much as they'll eat and keep their water full and clean. Add fresh shavings as needed - we, like Joel, use the smell test as our gauge for this. If you pick up a handful of brooder litter and it smells like ammonia, add more shavings. If it smells like warm earth, leave it be.

If your chicks are gently peeping, eating and drinking everything is going fine. If you walk into the barn and they're eerily silent or chirping at the top of their lungs, something is amiss. First, check to make sure they've got food and water. If that's not the issue, check the temperature in the brooder. We always do this visually, never with a thermometer, as it's easy to tell if your brooder is too hot or too cold once you know what you're looking for. If you're still developing your instincts, follow this helpful guide from www.meyerhatchery.com :



FOSTERING HEALTHY CHICKS

There's a world of opportunity to bolster the overall health of your meatbirds while they're still in the brooder. Providing early exposure to the right balance of good and bad microbes will go a long way in building healthy immune systems, which will help your birds thrive once they're moved out into the great big world. At Letterbox, we do this by practicing deep bedding in our brooders. This means rather than cleaning out the litter from our pens between each batch of chicks, we leave what's there and simply topdress it with clean shavings before we put the new chicks in. After a couple of batches of birds have been through, the litter, which is now composting, is not only warm, but brimming with a healthy balance microscopic life.

How To Practice Deep Bedding

AFTER YOU REMOVE ONE BATCH OF CHICKS, TURN OVER THE BEDDING AND SPRAY IT DOWN WITH WATER.

NEXT, ADD 1-2 INCHES OF CLEAN, DRY BEDDING.

ADD NEW CHICKS

REPEAT AFTER EACH BATCH.

It's rare to find a husbandry practice that saves you time and money that's also better for the animals. Deep bedding actually does accomplish all of these goals. We first learned about the practice in Chapter 7 of *Pastured Poultry Profit$* and we're so glad we did. Before adopting this concept from Joel, we spent *hours* wheelbarrowing litter out of our barn and *tons* of cash buying shavings. At the end, the only rewards for our efforts were weaker birds and regular coccidia outbreaks. In our valiant attempts to keep things clean, all we did was make room for the bad stuff to move in, take over, and overwhelm our defenseless baby chicks.

Switching to the deep bedding system put a rapid end to this vicious cycle and our birds are healthier than they've ever been.

Many farmers provide a dish of free-choice grit or sand to their brooders, to aid their chicks in breaking down and digesting their feed. Others spike their water with a few tablespoons of apple cider vinegar or probiotic powder to provide a boost of healthy bacteria. We typically don't do either of these things on our farm and we've seen no noticeable negative effects as a result, but that doesn't mean they aren't still good ideas.

FEEDING YOUR CHICKENS

While it's theoretically possible to raise pastured broilers on forage and farm waste alone, these types of outside-the-box methods rarely work on a commercial scale and are often best reserved for hobbyists and backyard producers. Joel recommends using a premixed balanced feed ration - made from grains, beans and minerals - and we agree. No one on our team is an animal nutrition specialist, so we rely on our feedmill to formulate a balanced ration for us.

OUR RATIONS

On our farm, we feed a 21%[5] Chick Starter ration for the first 4 weeks and switch to a 20% Broiler Mash for the remainder. Both blends are made with corn, roasted soybeans, barley, limestone, kelp and Crystal Creek poultry mineral. The Chick Starter also contains a small amount of fishmeal, which is what boosts the protein up a bit. Beware of rations that contain more than 5% fishmeal, as too much can make meat taste fishy. In the past, we've skipped the Chick Starter and just used the Broiler Mash, and this works just fine.

CHOOSING YOUR FEED

There are so many varieties of feed on the market today and each comes with unique advantages and drawbacks. It's really worth taking some time to consider your options and your own personal priorities before you get started. Here's a quick summary of the most commonly available commercial feeds:

[5] This number denotes the percentage of protein in the ration

Conventional feed is made from ingredients that have been grown with the use of chemical herbicides, pesticides and/or fertilizers. Typically conventional feeds also contain ingredients that have been genetically modified. Because conventionally grown crops are more widely available and typically produce bigger yields, this is usually the most affordable option.

Certified Organic feed is made from non-genetically modified ingredients that have been grown without the use of chemical herbicides, pesticides or fertilizers. This is the most expensive of the three options.

Non-GMO Verified feed is made using ingredients that may have been grown using chemical herbicides, pesticides and/or fertilizers but does not contain any ingredients that have been genetically modified. Non-GMO Verified feed is inspected by a 3rd party to confirm it is free of GMOs. It is typically more expensive than conventional feed.

Soy Free feed blends replace soy (which typically makes up at least 25% or more of most livestock rations) with alternative proteins like peas, sunflowers, and fishmeal. They can be conventional, non-gmo verified or certified organic and are growing in popularity due to concerns about the potential for phytoestrogenic properties in soy. As alternative proteins are more expensive than soy, these rations cost more than their soy-inclusive counterparts.

SAMPLE FEED COSTS

The cost of your feed will vary depending on where you live and how you buy it. You can purchase your feed in **bulk**, several tons at a time, and have it augured directly from a truck into your grain bins. This is most economical, but not everyone can purchase feed in large quantities. For folks just getting started, we recommend buying your feed by the supersack (a big bag that holds 2000 lbs) or the bagged ton (a pallet of 40 bags weighing 50 lbs each).

Here's the current going rates for bagged tons in our area:

Calculating Feed Costs

Sample Costs Per Bag Ton In New York State

Conventional	Non-GMO	Organic
$425	$590	$780

A NOTE ON ETHICAL DECISION MAKING

For many of us in the field, ours is mission-based work. We're drawn to farming because we want to make a positive impact on the world around us. Food - how it's grown and how it's sold - is intrinsically linked to *so many* aspects of our collective lives and as a result, we farmers often find ourselves on the front lines of many big, broad, systemic issues: *climate change, land loss, food insecurity, food access, social justice, worker justice, skill retention, soil building, water pollution, erosion*… this list could go on forever and this fact, in turn, can frame the production and business decisions we make.

Unfortunately, the current state of agriculture in America - for reasons too complicated for this humble guide to get into - leaves most farmers with meager resources for accomplishing *really* big jobs. This means we're often forced to prioritize one valuable mission over another.

Choosing which feed to use is a perfect example of this. Let's say you choose a conventional feed: it's more damaging to the environment to grow but lower costs could allow you to sell your food more cheaply, in turn increasing access. Or, you might use the money you saved on feed to pay your staff a livable wage. On the other hand, you might prioritize environmental impact - an equally important issue - and choose a certified organic feed knowing you'll likely have to sell to a wealthier clientele or find another way to subsidize your production.

All of these are ethical choices, just in different ways. All we farmers can do is try our best with what we've got.

HOW MUCH TO FEED

We always free feed our meatbirds, meaning we make sure they've got feed available at all times. However, some producers (typically raising Cornish Cross) choose to limit feed access in order to regulate growth more specifically.

Either way, it's imperative you have an idea of how much feed you'll be using before you start your business, otherwise you won't be able to build a realistic budget. Conventional wisdom in the poultry industry says that it takes 15 lbs of grain to produce a 4 lbs chicken (dressed). If you're raising Cornish Cross this might be a good number for you to use as you build your budget. However, in our experience pasture-raising Freedom Rangers, it takes 21 lbs of grain to produce a 3.9 lbs chicken. In recognition of this discrepancy, we've provided both statistics in a feed cost chart below:

Calculating Feed Costs

Some Sample Stats

FEED TYPE	COST/LB	15#/BIRD	21#/BIRD
Conventional	$0.22	$3.30	$4.62
Non-GMO	$0.30	$4.50	$6.30
Organic	$0.39	$5.85	$8.19
		Our average feed cost per bird:	$6.30

At Letterbox Farm, we use a locally grown and milled Non-GMO Verified feed from Stone House Grain in Hudson, NY. We're lucky because our mill uses many Certified Organic grains in their Non-GMO line, so our feed is actually around 50% organic.

We recently installed feed bins on our farm so we could get our feed delivered in bulk, which saves us roughly $80 per ton and makes our feed $0.04 per pound cheaper than what's listed here. If you have the opportunity to purchase your feed in bulk, it will certainly save you time and money. It'll also reduce waste, since bulk feed is free of any packaging.

HEALTH AND DISEASE

The most difficult part of any livestock farmer's job is dealing with the heartbreak of death and disease. Like a lot of farmers, we rely on prevention being the best medicine. To this end, we follow a few simple rules:

- Keep feed and water clean
- Rotate animals through fresh pasture
- Provide good ventilation and air quality
- Maintain sanitary barns, brooders and tractors
- Protect livestock from the elements
- Limit outside contract as much as reasonably possible

For the most part, following these guidelines will keep your poultry enterprise running smoothly. At the end of the day, though, disease is all around us. No pasture-based livestock operation goes unscathed forever. When something inevitably erupts, stay calm and don't trust everything you read on the internet. It's full of pet owners and small scale

homesteaders, not livestock veterinarians and experienced production farmers. With the rare exception, advice found online won't be very helpful, and what you read will make you feel bad. If you can find one, build a relationship with a small livestock veterinarian and get in touch with other poultry producers and cooperative extension agents near you. They'll be your best resources in times of trouble.

COMMON HEALTH ISSUES

We don't often treat our chickens when they are sick - instead, we usually choose early processing or culling over medications. Even if this is the case, being a good diagnostician is still important. If you don't know what problem you have then you can't know how you got it. If you don't know how you got it, you can't effectively prevent it in the future. In this spirit, we've included a list of some commonly known ailments below.

The following list was curated and written by Jamie Abbt.

Coccidiosis

Symptoms: Decreased growth rate, severe diarrhea, bloody feces, mortality

Causes: This condition is found in almost all poultry raising operations. It is spread by the consumption of eggs from parasitic protozoans. It is infectious and spreads from an infected or treated member of the flock to susceptible individuals.

Treatment: Infected individuals who survive their initial infection will develop a resistance to the protozoans. Over time, a flock will develop a species-specific immunity, though reinfection is possible. Vaccinations and anticoccidial drugs are available to help prevent or treat coccidiosis. Management practices can also help reduce the risk of clinical infections.

Marek's Disease

Symptoms: Transient paralysis (loss of muscle function), early mortality syndrome, lesions, neurologic disease, tumors, enlarged feather follicles, graying of the eye, change in shape of iris.

Causes: A virus in the genus *Mardivirus* is responsible for Marek's disease. It is highly contagious among chickens and may exist for months in litter or dust as the disease is spread through chicken dander. Even vaccinated chickens will contract the disease if the virus is introduced to a flock.

Treatment: A flock of chickens showing signs of Marek's disease should be culled. There is no effective treatment for Marek's disease, and infected birds will never recover.

Water Belly (Ascites)

Symptoms: Distended abdomen, reduced growth, lethargy, paleness of comb and wattles, red abdominal skin, death (often lying on their back)

Causes: There are many causes of ascites. The condition itself is due to right ventricular failure from increased lung pressure. This can be caused from a lack of oxygen supply, such as dusty or cold conditions. However, broiler chickens may be genetically predisposed to succumbing to water belly due to their rapid growth and restricted blood flow.

Treatment: There is no clinically approved treatment for water belly. Some chickens may survive but culling is a humane option. To prevent it in a flock, try to raise slower growing broilers, restrict feed, provide mash diet, use a less energy-dense diet, or decrease daylight hours in a barn. Controlling environmental temperature, humidity, and air quality may also help prevent mortality.

Impacted Crop

Symptoms: Enlarged crop, reduced number of droppings, lack of appetite, increased thirst, twisting of head, lethargy, open mouth breathing, foul odor from mouth

Causes: An impacted crop occurs when a crop cannot fully empty. Any object that gets lodged in a crop can cause it to become impacted, including string, long grass, feathers, peels, bedding, or foreign objects a bird may try to eat.

Treatment: Depending on the cause of the impaction, the crop may be massaged to cause the object to pass. A veterinarian may also attempt to flush the crop.

Pasty Butt

Symptoms: Clogged vent area, prevention of excretion, viscous droppings

Causes: Most common in young chicks, pasty butt is caused by wet droppings sticking to the backside of a chicken. The droppings can become like this due to stress, poorly digestible ingredients, or extreme temperatures.

Treatment: Pasty butt is easily treatable. Some chicks may grow out of the condition as their digestive systems develop, often by 10 days of age. To treat the pasty butt, first examine the bird's vent and rub a wet, warm washcloth over it. Gently remove the material. Minimize pulling of skin and feathers. Vegetable oil may help loosen the dried manure. Be sure to keep the chick warm. Dry the chick completely before returning it to the brooder.

Fowl Pox/Chicken Pox

Symptoms: Lesions, scabs, and blisters on unfeathered skin (combs, wattles, legs, and beak), difficulty breathing

Causes: Chickens will develop pox if exposed to viruses of the *Poxviridae* family of the genus *Avipoxvirus*. These viruses are spread primarily through mosquitoes or wound contamination, but may be inhaled by chickens as well.

Treatment: There are two forms of this virus. Chickens that develop fowl pox on their skin will likely recover on their own in a few weeks' time. When a chicken inhales the virus and develops lesions in their respiratory system, they are less

likely to recover and may need to be humanely culled.

Worms

Symptoms: Lethargy, weight loss, diarrhea

Causes: Roundworms (ascarids) are the most detrimental endoparasitic worms for flocks of chickens. The eggs of the worms spread through infected birds' feces and must be ingested by other birds to grow. Feces can be consumed directly or infected feces can contaminate feed or water.

Treatment: There are a number of commercially available chicken dewormers. Separating infected birds from others can help prevent further contamination and spreading of the worms. Complete cleaning of a chicken house may be necessary to remove a heavy parasite load. Be sure to carefully read labels for dosing information and withdrawal times. Diatomaceous Earth can be used as a natural remedy, with some success.

Thrush/Sour Crop/Crop Mycosis

Symptoms: Listless, inappetence, lesions in mouth, odor from mouth

Causes: A yeast-like fungus called *Candida albicans* causes thrush when it infects the digestive tract of a chicken. It causes lesions to form in the respiratory tract of the animal.

Treatment: Early cases of thrush can be treated by a veterinarian. Supplements in the diet, such as copper sulfate or apple cider vinegar may help but the effectiveness is controversial. In severe cases, antifungal medications and flushing the crop may be attempted. Keeping litter clean and minimizing antibiotic use helps reduce the occurrence of thrush, as it commonly develops after antibiotic use or when drinking water is unsanitary.

Avian Bird Flu

Symptoms: Ruffled feathers, sneezing, coughing, ocular and nasal discharge, swollen sinuses, congestion, red discoloration on legs, wattle, and head, death

Causes: There are many species, or strains, of influenza viruses which cause different severities of bird flu. Domestic fowl contract avian bird flu from infected birds' saliva, nasal secretions, and feces, or surfaces which have come into contact with an infected bird. Some strains of avian flu are spread by wild waterfowl.

Treatment: Chickens diagnosed with bird flu should be culled, as well as the entirety of the flock from which they came. Bird flu may spread rapidly and has the capability of being transmitted to humans. Outbreaks should be reported to the appropriate regulatory authorities.

Heat Stroke

Symptoms: Open-mouth breathing, wings lifted, lethargy, reduced food intake, increased water intake

Causes: Heat stroke is caused by excessive exposure to heat and an inability to lower internal temperature.

Treatment: Once a chicken is identified as suffering from heat stroke, there are many management steps that can be taken to lower its body temperature. Ice packs, misters, dustbaths, fans, and ice cubes can be used in a shaded area to cool the chicken. Be sure to always provide

multiple shade areas and cool, fresh, clean water for the flock.

Aspergillosis

Symptoms: Difficulty breathing, increased breathing rates, gasping, drowsiness

Causes: Aspergillosis is caused when a bird is infected with the fungus *Aspergillus fumigatus*. It can be present asymptomatically in an adult bird but may cause mortality in young birds. It is spread through inhaling spores, mainly through dirty or moldy litter.

Treatment: There is no effective treatment for affected birds. Some birds may recover if the environment is cleaned and good hygiene procedures are enforced. Keeping chicks in a dry environment, free of mold should prevent this issue from occurring.

Bumblefoot (Footpad Dermatitis)

Symptoms: Discoloration of skin on foot, inflammation of foot, ulcers on toes and footpads, limping, removing weight from paws

Causes: Damp litter from leaky waterers and poor ventilation, sticky manure from diets high in indigestible carbohydrates, high stocking density, or inappropriate litter can all cause bumblefoot to develop.

Treatment: For chickens without extreme lesions on their feet, bumblefoot can be treated by changing the litter, bedding, waterers, or diets of the birds to set them to appropriate standards. Washing the chicken paws and soaking them in salts or skin softeners can help relieve bumblefoot. Once large lesions and swelling are visible, surgery and antibiotics may be necessary.

Over the past 10 years, we've been touched at least once by all of these, except Marek's Disease and Avian Bird Flu (which are exceedingly rare) and we still run a successful poultry enterprise. When things go wrong, spend as little time beating yourself up about it as you can. Farming is hard and stuff happens - freaking out about it will only slow you down. It's better to spend your energy identifying the problem and doing what you can to prevent it from happening again.

CHOOSING YOUR PRODUCTION METHOD

If we've learned anything from our tenure in the Hudson Valley, where we're lucky to farm alongside some of the best agrarians in the nation, it's that there is no one way to farm. Every piece of land, every business and every team is blessed with unique opportunities, skills, weaknesses and restraints. At Letterbox, we choose production methods that capitalize on our strengths and forgive our handicaps to the best degree they can. This rarely (if ever) results in a "perfect" system, but we do the best with what resources we have and we recommend you do the same.

But while there's probably infinite ways to effectively raise pastured poultry, there are three methods that are used more commonly than the rest: *Free Ranging*, *Day Ranging* and *Pen Raising*.

FREE RANGING

While the phrase *free range* can mean a lot of different things, for our purposes we'll define it as a system in which chickens are raised in large, fenced in outdoor areas with a central, seldomly moved or permanent shelter.

At their best, these types of systems:

- Are inexpensive to build
- Are simple to maintain
- Require little labor for daily chores
- Provide ample space for birds to roam
- Offer opportunities for birds to birds to engage in natural behaviors

The disadvantages commonly found with these systems include:

- High risk of predation
- Potential overexposure to the elements
- Pasture degradation
- Birds that are difficult to catch for health checks, weighing or slaughter
- Slower growth
- Requirement for fencing.

DAY RANGING

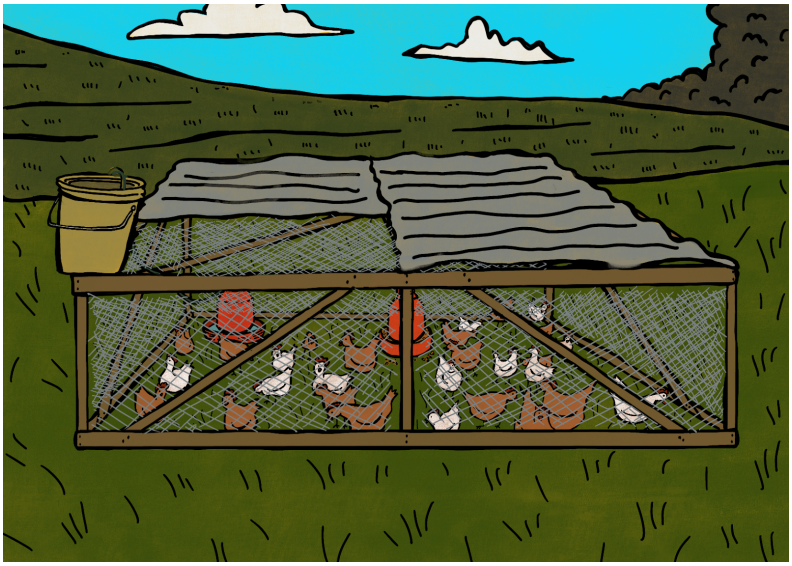
In day ranging systems, chickens are let out from mobile chicken tractors or coops into a small fenced in run so they can forage during the day. They are then closed back into a shelter in the evening. Both the shelter and the run are moved regularly, typically daily or weekly.

The benefits of this type of system include:

- More space for the birds to roam
- Increased access to forage
- The requirement of small, cheaper housing
- Moving fewer tractors

The disadvantages may include:

- Having to close the chickens in at dusk every day
- Increased risk of predation
- Additional labor of regularly moving fencing
- Being more challenging to keep birds if different ages separated from one another



PEN RAISING

In pen raising systems, chickens are housed inside open floor, movable pens. These secure pens, or chicken tractors, are moved once or twice per day to provide clean, fresh forage but the chickens are not permitted to exit them. A good chicken tractor protects its inhabitants from rain, wind and sun, is largely predator proof, is easy to move and is sturdy enough to withstand gusts of wind.

This is the system that Joel Salatin popularized in *Pastured Poultry Profit$* and it's still the most commonly used method today.

Benefits of pen raising include:

- Reduced risk of predation
- No need to close the birds in at dusk
- Increased control over pasture maintenance
- Protection from the elements

Disadvantages may include:

- The need for a most costly initial investment
- Less space for the birds to roam
- More chicken tractors to move
- The need to move every tractor daily

OUR METHOD

When it came to choosing our method at Letterbox, we asked ourselves the same question we do for every enterprise we develop: *Given our available resources, how can we provide the most benefits while mitigating the biggest risks?* While we've experimented in some way or another with each of these three options over the years, the answer for us in the end was pen raising. We settled on a version that is slightly different, but very derivative of the method Joel Salatin developed and so excellently expounds upon in his book. Since it's all pretty simple, we'll walk you through our process with some photos:

Once your chicks are between 3 and 5 weeks old, crate them up and move them from the brooder, into the chicken tractors.

We typically move ours out at 4 weeks, but if the weather is warm and dry, they can move out anytime after they're 14 days old. We prefer them to be a little bigger, so they aren't so good as escaping when we move the tractors.

Once your birds are out in the field, there are only two more steps:

1. Move your tractors once per day.
2. Feed and water your chickens twice per day.

From there on, it's just rinse, wash, repeat until your birds are big enough to process.

BUILDING A CHICKEN TRACTOR

There are a million and one ways to build a chicken tractor. At Polyface Farm, Joel uses a 10'x12'x2' rectangular unit of his own invention. The frame is pressure treated wood, it has aluminum sheets for its flat roof and is wrapped in chicken wire. He doesn't include a breakdown of what it costs to build one of his tractors in his book, but a farm we surveyed that uses the same model reported a materials costs of $200. Joel houses 100 Cornish Cross chickens per tractor.

At Letterbox, we wanted chicken tractors that we could stand up inside, so we built taller tractors with an arched roof made out of metal conduit and a heavy duty tarp. Our chicken tractor design is derivative of the 6'x9' model John Suschovich describes in his e-book *Stress Free Chicken Tractor Designs,* but has the same 10'x12' footprint as Joel's. Here's how much we spend on materials for each tractor.

Pen Economics

Building A 10'x10' Chicken Tractor for 80 Birds

ITEM	QUANTITY	COST	TOTAL
10x12 Tractor	1	$400	$400
Never-Flat Tires	2	$34	$68
Bell Waterer	1	$45	$45
PVC Trough	2	$10	$20
5 Gal Bucket	2	$4	$8
12'x20' Tarp	1	$28	$28
		TOTAL	$569

We purchase our tarps in bulk from discount factory outlets online. They are *much* cheaper there than they are at the hardware store.

As you can see, our pens are much more expensive than Joel's. They're also a lot heavier. However, the benefits of increased ventilation and having tractors we could walk into and out of were a fine trade off for us. Design and build tractors that work best for your unique preferences, abilities and circumstances.

OUR CURRENT SCALE

At Letterbox, we raise 14 batches of chickens annually, each with an average of 220 birds (we raise some bigger batches in the spring and in the fall, to capitalize on empty tractor space). We get our first chicks around February 15th, and then again every 2 weeks until the third week of August. We process around 120 chickens weekly for 27 weeks, beginning the first week in May and ending the last week of October.

We process by weight, not age, and pull whichever birds are the correct size for the orders and markets we have each week from whatever tractor or batch they may be in. This means we're often left with some tractors that have less birds in them than others. When this happens, we simply consolidate by combining emptier tractors with one another. This works just fine, so long as all the chickens are within two weeks of age.

LABOR ECONOMICS

One thing we heard frequently from farmers while we were researching for this guide was *I don't pay myself, so I don't have any labor expenses.* While it may be the case that you're not currently taking a salary (and don't have any employees), it's still important to count your time as an expense for a couple of reasons. For one, you can't really assess how an enterprise is performing if you're not including all of the affiliated costs. Secondly, you may want to hire someone to help you in the future. Raising animals is a 7 day a week job, and while when we were younger we just lived to farm, a decade later our team requires a more realistic work/life balance. If you don't factor in labor expenses from the beginning, it can be difficult to build them into the budget later on.

If you don't currently have a standard wage you're paying yourself or your staff, you can use your state's minimum wage as a place to start. The current entry level wage on our farm is $12 per hour, so that's the number we'll be using in our data moving forward.

To estimate your labor, you don't have to time yourself every day for the entire season - just time yourself or your crew a few times performing each regular task affiliated with your pastured poultry enterprise and get an average. Then, multiply that average by the number of times that task is done throughout the season. Remember to note how many people are performing a task at a time: if it takes 2 people 1 hour to do a chore, then that should be recorded as 2 labor hours, not 1.

OUR DATA

Here's how the economics of our daily chores break down at Letterbox:

Economics Of Daily Chores

Moving, Feeding + Watering, Feb 15 - Oct 31

ITEM	FARMERS	HRS PER	TOTAL HRS	COST
Servicing Brooder	1	.25	.25	$3
Servicing Tractors	2	.75	1.5	$18
Afternoon Chores	1	.5	.5	$6
Total Labor/Chores/Day at $12 / hr			2.25	$27
Total Labor/Chores/Season at 220 Days			495	$5,940

This final figure of $5,940 is actually a bit of an overestimation, because we're not actually serving tractors for the first 28 days of our poultry season, but it's close enough. While we want our projections to be accurate, we also like to have a bit of a built-in buffer, since past experience tells us something we didn't plan for will almost certainly come up at some point and suck up a chunk of unanticipated time.

The chart above is just for daily chores, but to complete your labor budget make sure you include every regular task dedicated to your pastured poultry enterprise, like picking your chicks up at the post office, processing your birds or driving to and from the slaughterhouse.

COMPARATIVE CHORE LABOR HOURS

On page 88 of *Pastured Poultry Profits* Joel reports that he can move and service each of his 26 chicken tractors in 5 minutes, which means it takes him 90 minutes to tend to a flock of 2400 birds. This is about 2.25 seconds per bird per day. On our farm, we spend that same amount of time moving and servicing just 9 chicken tractors which house a total of 720 birds.

Using the equation:

total minutes x 60 seconds per minute / total number of birds serviced = seconds per bird

Or

90 x 60 / 720 = 7.2

we can see that it takes us 7.2 seconds per day to move, feed and water each one of our chickens - nearly 3 times as long as it takes Joel. Why it takes us so much longer is a mystery. It may be because our chicken tractors are heavier or because our pasture is really uneven (and full of holes from orchard trees hastily removed long before we got here). It may also just be that our team moves slower than Joel Salatin does. No matter the reason, the fact remains that one farm's data is not every farm's data. It's important to adjust any projections you glean from others to reflect your own circumstances.

PROCESSING YOUR CHICKENS

When your chickens are the size you want them, it's time to process them. To make sure our birds will dress at the size we want, we weigh them while they're still alive using a hanging scale. To do this, simply hang your scale (we hang it from the roof inside our tractors) and tie a cord with a slip knot at the end to the weight sensor. Next, gently slip the knot around both legs of the chicken you are weighing and gently let go. Chickens are very calm when they're upside down, so this is generally a very quick and easy process. Of course, don't leave your bird hanging there any longer than it takes you to read the scale.

Once you have the live weight of your chicken, use the average dress percentage for your breed to approximate what size it will be after it's processed and ready for sale. You can use this chart as your guide:

Average Dress Percentages

Cornish X	Silkie	Red Broiler
70%	66%	68%

If we have a chicken on our farm that weighs 6 pounds live, we'll use that and the Red Broiler average dress percentage of 68% in the following formula:

$$6 \times .68 = 4.08$$

Now we know we can expect that chicken to weigh a touch over 4 pounds once it's processed.

When you slaughter your chickens will depend primarily on two things: your fixed costs and what your markets demand. Let's start with fixed costs.

FIXED PRODUCTION COSTS

A *fixed cost* in a business is any expense that is constant, no matter the quantity of goods or services provided. For our purpose here, we'll define it as any cost that stays the same, no

matter what size you raise your chickens to. Fixed costs can include the cost of each chick, the cost to slaughter each chicken, the cost of shavings in the brooder, per bird depreciation on your tools and equipment and so on.

Here's what the fixed production costs for poultry look like on our farm:

Letterbox Fixed Costs			
CHICKS	**PROCESSING**	**TOOLS / EQUIP**	**DEP. / MISC**
$1.25	**$3.29**	**$0.47**	**$0.67**
$5.68 Per Bird			

We'll get into how we got our processing and depreciation per bird later on, but for now you can see that each one of our chickens has $5.68 of fixed costs affiliated with it.

FLEXIBLE PRODUCTION COSTS

In addition to your fixed costs, it's important to determine your *minimum flexible cost*. While the term *flexible cost* can mean a few different things in business jargon, for our purposes here it's an expense that changes depending on how big or small you raise your chickens. Essentially, this category includes feed and labor.

There is a minimum amount of feed and labor that each chicken requires before it becomes a salable product. Here's what the minimum flex costs for poultry look like on our farm:

FEED	LABOR
$1	**$1**
$2 Per Bird	

When we add our fixed costs and our minimum flex costs together, we can see our minimum cost of production is $7.68 per bird. *We cannot raise a salable chicken for any less than this, so it's in our best interest to maximize this investment.* If things were simple, this would mean slaughtering our chickens as big as they'd possibly grow while still obtaining good feed conversion, which for Freedom Rangers is about 9 pounds live, or 6 pounds dressed. Unfortunately, we have certain market restraints that prevent us from using this fixed-cost optimization strategy.

MARKET RESTRAINTS

In *Pastured Poultry Profit$*, Joel Salatin raises his chickens to around 4 pounds and sells all 10,000 of them retail via on-farm, direct-to-consumer sales. We're going to talk more about marketing later on, but for now we'll just say we definitely don't have that opportunity on our farm. In order to sell 3,200 chickens a year, we really have to work for it and we often don't have much choice in where we sell our birds or for how much. Instead, each market tells us how many birds it can absorb, at what size and at what price - all we can do is listen and adapt.

We know it would make the most financial sense to raise all of our chickens to 6 pounds and retail them from the farm at $35 each, but that opportunity is just not in the cards - at least not for now. So, in the meanwhile, we slaughter our chickens at the biggest sizes and sell them at the best prices our available markets can absorb. Here's how it broke down in 2019:

Market Summary

Wholesale - 30%		Retail - 70%	
Age	**7 wks**	**Age**	**10-12 wks**
Live Weight	**3.8 lbs**	**Live Weight**	**6-9 lbs**
Dress Weight	**2.5 lbs**	**Dress Weight**	**4-6 lbs**
Sale Price	**$15.75**	**Sale Price**	**$23 - $34**

As you can see, we slaughter about a third of our chickens at a really small. This probably seems to counter everything we just said about maximizing your fixed costs - and that's because it does. However, that's the market opportunity we have right now, and while we only make a profit of around $2 per chicken from these wholesale birds, raising them doesn't add anymore work to our day nor does it require any additional investment in our infrastructure. So even though it's far from ideal, it's still worth doing.

SLAUGHTER ECONOMICS

Before you get your first chicks, you should have a plan in place for how you're going to slaughter them. The rules and regulations vary widely from state to state, so if you aren't familiar with the current laws in your area, contact your state's Health Department, Department of Agriculture and Markets or Cooperative Extension office to learn more.

In New York, where we farm, there are three commonly used options for slaughtering poultry: on farm processing, 5-A facilities and USDA slaughterhouses.

On Farm Processing

Small scale producers have the opportunity to slaughter their chickens themselves, on their farm under the *Producer/Grower - 1000 Bird Limit Exemption* which states:

Limited provisions of the Poultry Product Inspection Act (PPIA) apply to poultry growers who slaughter no more than 1,000 poultry in a calendar year for use as human food. A person may slaughter and process poultry that he or she raised on his or her premises and they may distribute such poultry without mandatory inspection when the following five criteria are met [PPIA Section 464(c)(4) "Section 15 (c)(4)"4; Title 9 CFR §381.10(c)].

Criteria

1. The poultry grower slaughters no more that 1,000 healthy birds of his or her own raising in a calendar year for distribution as human food;

2. The poultry grower does not engage in buying or selling poultry products other than those produced from poultry raised on his or her own farm;

3. The slaughter and processing are conducted under sanitary standards, practices, and procedures that produce poultry products that are sound, clean, and fit for human food (not adulterated);

4. The producer keeps records necessary for the effective enforcement of the Act [Title 9 CFR 381.175]; and

5. The poultry products do not move in commerce. (In this context, "commerce" is defined as the exchange or transportation of poultry products between States, U.S. territories (Guam, Virgin Island of the United States, and American Samoa), and the District of Columbia) [PPIA Section 453; Title 9CFR §381.1(b)].

To summarize, NYS farmers who raise less than 1,000 chickens per year can slaughter them on their own farm and sell them anywhere within state lines, so long as they keep the proper records and maintain sanitary conditions. You can read more about this exemption by visiting the Cornell Small Farms Program website (smallfarms.cornell.edu).

5-A Facilities

For farmers who raise more than 1,000 birds per year, or for those who don't wish to do their own processing, New York has state inspected 5-A facilities. While the exact wording

in 5-A rules and regulations can get a little tricky to decode, these are essentially poultry (and sometimes rabbit) slaughterhouses that can process up to 20,000 birds per year for themselves and for other farmers. Chickens slaughtered in 5-A facilities may be sold in most venues (including at farm stores, restaurants and farmers markets) within state lines. You can learn more about 5-A facilities at smallfarms.cornell.edu.

USDA Slaughter

Farmers in any state can take their chickens to a USDA Slaughterhouse, which is a federally inspected meat processing facility. Birds slaughtered at USDA facilities can be sold anywhere in the US, however these types of facilities don't always take small batches of poultry and those that do can be a bit pricey.

AT LETTERBOX

Our farm is in New York and we raise more than 1,000 chickens per year, so we use a licensed 5-A facility for all of our poultry processing. Since good slaughterhouses are hard to find around here, we drive 70 miles, each way, to get there. We pay $2.50 per chickens that are bagged in bulk for our wholesale accounts, and $3.50 for whole chickens that are shrink bagged and labeled for retail sales. We also pay an additional $1 per bird to have it halved or quartered and more if we want our chickens further broken down.

Processing currently makes up 22% of our expenses for this enterprise. Before you start yours, figure out how you're going to process and do the math. If you live in a state that allows onsite processing, you may want to consider doing the work yourself, like Joel Salatin does. If you're fast enough and your equipment was cheap enough, you might save yourself some money. For us, we found that once we factored in the labor, packaging, depreciation and other affiliated expenses, we were actually better off paying for professionals - but, full disclosure, we're pretty slow.

Fixed Costs

While it changes from week to week, on average we're slaughtering 120 birds per week, 30 of which are for wholesale and the rest of which are for retail. Of the 90 retail birds, we leave around 70 of those whole and quarter the other 20. Here's a breakdown of our average weekly bill, including the fuel we use to get to and from the slaughterhouse:

Slaughter Economics

Processing Our Birds On An Average Week

120 Birds / Week		Using NYS 5-A Facility	
ITEM	**QUANTITY**	**COST**	**TOTAL**
Transport (mileage)	**120**	**$0.25**	**$30**
Processing Whole Birds	**70**	**$3**	**$210**
Processing Quarters	**20**	**$4**	**$80**
Processing Bulk	**30**	**$2.50**	**$75**
		TOTAL	**$395**
Avg Cost Per Bird $3.29			

If you're using a slaughterhouse like us, make sure the numbers work for you as far as fees, travel-time and mileage are concerned. If they don't, see if you can get creative. For example, if your slaughterhouse is too far away for weekly trips, consider raising fewer, larger batches of birds at a time and look for accounts who will take frozen product instead of fresh. You can also get in touch with your neighbors - if another farm in your area uses the same slaughterhouse as you, see if it makes sense to take turns bringing each other's animals.

We make it work by combining our slaughter day with an office day. We send one member from our team to the slaughterhouse to drop off, and while they wait for the birds to be ready they use the local library to catch up on emails, records, payroll and anything else that can be done remotely.

Labor Costs

We have some labor costs associated with each trip to the slaughterhouse, as we spend time loading up the birds, driving, unloading and picking up at the slaughterhouse, and unpacking our birds into the cooler when we get back.

Here's what that looks like for us right now:

Slaughter Economics

1 x per week		May - October	
ITEM	**QUANTITY**	**COST**	**TOTAL**
Loading (1 hr, 2 pp)	**2**	**$12**	**$24**
Travel	**4**	**$12**	**$48**
Picking Up	**.5**	**$12**	**$6**
Unpacking	**.5**	**$12**	**$6**
		TOTAL	**$84**

With 27 batches per year, this labor expense adds up to around $2,300 annually.

AT POLYFACE

Joel and his wife Theresa use a modest outdoor processing shed on their farm to slaughter their chickens themselves. While he admits this setup is in the legal gray area, Joel encourages his readers to take risks and to exploit loopholes. Thankfully for many farmers, the rise in small scale poultry production that's occurred since the debut of *Pastured Poultry Profit$* has encouraged many states to provide legitimate and legal opportunities for on-farm slaughter.

It takes Joel and Theresa 3 hours to process 300 chickens - a breakneck pace that clocks in at just 36 seconds per bird. Back when we used to process our chickens on the farm, it used to take us at least a full 8 hour day to process as little as 100 birds - that's almost 5 minutes per bird.

Part of that was because we're a little slow and part of it was because we had inefficient equipment. But we'd also bet that a major factor in the discrepancies in efficiency between Joel's farm and ours was a major increase in market standards. Joel isn't parting, packaging, labeling or storing his chickens. Instead, his customers are picking up their birds directly from icy bulk tanks, just moments after they've been slaughtered. Every one of those 300 chickens he and Theresa processed are gone by 5pm that same day - picked up by eager customers, who willingly traveled great distances under specific time restraints so they could pay more for a better chicken.

In our experience, modern customers simply are not willing to buy their food under such specific circumstances anymore. Today's poultry farmers need to offer better versions of

what folks are used to seeing at the grocery store: parted chickens that are shrink wrapped or vacuum sealed with a label, a weight and ideally, a price. All these added features takes more time and costs more money.

Joel never does share his exact investment in his outdoor slaughterhouse, but if we use an educated guess that the equipment costs around $10,000 in 2020 dollars we can piece together what it may have cost him in today's terms to slaughter his chickens back in 1993.

EXPENSE	TERMS	COST	TOTAL
Depreciation	$10,000 over 10 years	$1000 / 33 uses per year	$30
Labor	2 people for 4 hours each	$12 per hour	$96
Miscellany	Propane, cleaning supplies, etc.	$100	$100
		TOTAL	**$226**

If we divide this total cost of $226 by the 300 birds slaughtered, we get a processing cost per bird of $0.75.

At Letterbox, we spend more than 4 times this, with a total processing cost of $3.99 per bird when we factor in travel and labor.

SELLING YOUR CHICKENS

In his book, Joel Salatin expounds about a seemingly limitless market potential for direct-to-consumer pastured poultry. He's able to presell 10,000 chickens each season simply by mailing out a newsletter and an order form. His birds are all reserved well in advance and when they're ready, his customers pick up freshly slaughtered chickens right at the farm, within a strict 4 hour window.

In a distribution system like this there are no marketing fees, no gas-guzzling deliveries, no flimsy EZ-Up tents to replace every year… Joel doesn't even need a walk-in cooler or chest freezer to store his chicken before market. It's a wildly efficient and profitable way to sell food. This is why Joel is able to sell his chicken at a very competitive price (equivalent to $3.22 per pound, today) and still turn a decent profit.

While much of Joel's book holds up impressively well considering how much has changed over the last 3 decades, it begins to show its age when it addresses marketing. While novel at the time, Joel's advice is really for days of yore - back when specialty foods were hard to come by and folks worked hard to get them. Joel wrote his book before the internet, before cell phones, before Whole Foods and way, way before Amazon Prime.

Today, retail farms have to meet people where they are at or risk losing their business. Selling food this way is expensive, so we need to charge more for our product to make up for the difference. At Letterbox, we retail whole chickens for $5.75 per pound and half and quarters for $6.50 per pound. This is 78% more than the modern day equivalent of what Joel charges, but when you take a look at our marketing costs below you'll understand why.

The following chart shows the average costs affiliated with our 3 most common market outlets, as well as the average sale price per chicken sold at each venue:

Our Marketing Costs + Values

Market Sales		Length	Wholesale		Length	CSA		Length
EXPENSE	COST	*28 wks*	EXPENSE	COST	28 wks	EXPENSE	COST	34 wks
Rent	$60	$1680	Fuel	$50	$340	Labor	$36	$1224
Fuel	$50	$2400	Labor	$24	$816			
Tolls	$8	$224						
Labor	$150	$4200						
Ice	$15	$420						
TOTAL	$283	$7924	TOTAL	$34	$1156	TOTAL	$36	$1224
	$31			$18			$26	

Average Sale Price Per Venue

Note: while our mode sale price for wholesale birds is $15.75 each, as reported earlier, we do wholesale some additional chickens at a larger size and higher price point. You can see those additional wholesale birds have lifted our average per bird value on this chart.

At Letterbox, we're always trying to sell our chickens for the highest price we can at the cheapest place to sell it. Keeping and reviewing this data allows us to make smarter decisions whenever our markets allow for it.

BUILDING YOUR OPERATING BUDGET

We've been laying out all of our expenses as we've been going, so at this point we've got most of the information we need to put together a complete operating budget. We now know:

- How much our chicks cost
- How much our feed costs per pound
- How much feed each chicken will likely eat
- Our labor requirements and expenses
- Our anticipated processing fees
- Our market demand and pricing
- The cost of our total initial investment

ACCOUNTING FOR DEPRECIATION

The final piece of the puzzle that we need for our budget is a value for *depreciation*. Depreciation is a reduction in the value of an asset with the passage of time, due in particular to wear and tear. To calculate it, simply add up the total cost of all the tools and equipment you need for your enterprise, and divide it by the number of years you expect them to last. On our farm, we prioritize purchasing and/or building items that are built to last and choose to fastidiously maintain them over the years. This often means we spend more money upfront, but spend less frequently. We depreciate our poultry investment over 10 years, and 7 years in we're quite pleased at how well everything is holding up.

This chart details our actual investment in pastured poultry and how we depreciate it at Letterbox:

Calculating Our Depreciation

We expect our equipment to last 10 years and raise 3,000 chickens annually

INVESTMENT	COST	$ / YEAR	$ / BIRD
9 chicken tractors	$5,121	$512	$0.17
3 brooders	$675	$68	$0.03
25% of the barn	$3,450	$345	$0.12
14 poultry crates	$980	$98	$0.02
Misc tools	$1,000	$100	$0.03
TOTALS	**$11,230**	**$1,123**	**$0.37**

Remember: our livestock barn is used for all 4 of our livestock enterprises, so the chickens need only be responsible for their fair share.

Each year, we need to add an expense line of $1,123 to our budget so we can make sure our enterprise is profitable enough to replace equipment and infrastructure as it wears out. If you're not making enough to cover these inevitable expenses, your enterprise won't be able to sustain itself in the long term.

Dividing our annual depreciation figure by the number of birds we're raising helps us build a more complete picture of what it costs us to raise each chicken. It's also a good reminder to maximize our investment whenever we can. At our current capacity, each chicken should carry $0.37 of our annual depreciation. Should we raise less, each chicken will be responsible for more.

PUTTING ALL THE PIECES TOGETHER

Now that we have this last critical piece of information, we can finally see how our enterprise looks. First, let's look at expenses:

Annual Operating Expenses

Raising 500, 1000, 2000 and 3000 birds using our actual 2019 expenses

EXPENSE	COST/BIRD	500	1000	2000	3000
Feed	$6.30	$3,150	$6,300	$12,600	$18,900
Processing	$3.29	$1,645	$3,290	$6,580	$9,870
Labor	$3.39	$1,695	$3,390	$6,780	$10,170
Chicks	$1.05	$525	$1,050	$2,100	$3,150
Depreciation	$0.37	$185	$370	$740	$1,110
Storage	fixed	$600	$600	$600	$600
TOTAL	**$14.40**	**$7,800**	**$15,000**	**$29,420**	**$43,800**

Now we've got a good idea of how much we should be prepared to spend in order to raise 500, 1000, 2000 or 3000 birds. It looks like a lot of money, but the saying goes *you've gotta spend money to make money.* Let's see if that's true in our case, and take a look at our

projected profits. We've used our actual average cost and sale price per bird that we obtained last season:

Annual Operating Income					
Average Cost Per Bird			**$14.40**		
Average Sale Price			**$23.97**		
Birds Sold	**500**	**1000**	**2000**	**2553**	**3000**
Gross Income	**$11,985**	**$23,970**	**$47,940**	**$61,208**	**$71,910**
Operating Expenses	**$7,195**	**$14,390**	**$28,780**	**$39,787**	**$43,170**
Net Profit	**$4,790**	**$9,580**	**$19,160**	**$21,421**	**$28,740**
Gross Margin	**40%**	**40%**	**40%**	**35%**	**40%**

A FEW NOTES ON OUR DATA

The purple column shows the actual enterprise records we have from the year 2019. You'll notice that we only have the sales of 2,553 chickens recorded, even though we raised 3,000 per year. Part of that 447 bird discrepancy is due to chicken deaths - we lost 214, or 7%, of our chickens last season. This is fairly inline with the industry standard loss of 10%.
The other 233 chickens, however, went unrecorded in our sales data. We know this because we have slaughterhouse receipts that tell us that we processed 2,786 chickens last year and we have sales records that say we sold 2,553.

So what happened to the rest? Well, we know we saved 50 of those 233 chickens to sell over the winter and spring of 2020. It's also likely our farm team ate or gave away another 100 throughout the course of the year. But, where the other 83 went is a mystery. A small amount may have been taken by CSA members who forgot to tell us, but in all likelihood the majority were sold at the farmers market and accidentally not recorded. We work really hard to keep records as accurately as we can, but like with most things on our farm, there's still room for improvement. An important takeaway here is that it's helpful to recognize the holes in your data. Only then can you make a plan to fix them for next year.

Another thing worth noting is that we successfully raised and recorded all the expenses for 2,786 chickens. Had we successfully sold and recorded all of them, we'd be reporting an additional $5,500 in profit for the exact same expenses. In this case, we'd actually have recorded a higher net profit and gross margin - $26,921 and 40% respectively.

COMPARING OUR PERFORMANCE TO JOEL'S

Fifty long, data-heavy pages later, it's time to revisit that summary chart of *Pastured Poultry Profit$* and answer the question that prompted us to write this report in the first place: *are the financial premises in Joel's 27 year old book still attainable today?*

Since Joel doesn't categorize his expenses in the book the same way we do here, figuring out how to best compare the data was a bit of a challenge. The first thing we did was adjust all of Joel's numbers for inflation. The next thing we did was estimate a labor expense for Polyface, since this is not something Joel accounts for in the book. To do this, we took his figure of 9 labor minutes per bird and multiplied it by the 10,000 birds he raises per year. This gave us a total labor requirement of 1500 hours. We then used the same $12 per hour wage we use at Letterbox Farm so as to keep things even. This gave us a total annual labor expense of $18,000, which we added to Joel's operating expenses.

Just to be safe, we also worked under the assumption that Joel includes *overhead expenses* in his budget, which we did not in ours. So, to remedy this in the comparison below, we've added $4,408 to the Letterbox operating expenses. If you're not already familiar with the term, an *overhead expense* refers to an ongoing cost of operating a business. These expenses are ones that can't be conveniently traced back to any particular enterprise and can include things like website hosting, vehicle maintenance, fuel, rent, etcetera.

To determine how much to allocate to each enterprise, use the formula:

total overhead / total labor hours = overhead allocation rate

Because our farm is still fairly new and is still servicing a lot of debt, our overhead is especially high at $46,000 per year. For 2019, our overhead equation looked like this:

$46,000 / 8200 = $5.60

For every hour spent exclusively on poultry, we need to apply $5.60 worth of overhead. Last year we spent 787 hours on poultry, so we used the following equation to get our final number:

787 hrs x $5.60 = $4,408

We'd also like to note that the following chart compares our pastured poultry enterprise to the one in **Joel's book**, not to his current operation at Polyface Farms. The point here is to see if the information in *Pastured Poultry Profit$* is still relevant, not to try and guess how much the farmers at Polyface are making today. We think it's safe to assume that their farm has evolved with the changing markets over the years as all great farms have, and this chart

in no way intends to estimate their contemporary operating budget. For example, a quick trip to www.polyfacefarms.com confirms that today, they charge about $5.50 per pound for chicken, while just adjusting for inflation would assume they charge $3.22. This one change alone would alter their bottom line dramatically.

With all the disclaimers behind us, let's compare the data:

Comparative Annual Operating Budget		
Average Cost Per Bird	**$14.39**	
Average Sale Price	**$23.97**	
	Polyface 1993	**Letterbox 2020**
Scale	**10,000 birds**	**3,000 birds**
Cost / Bird	**$9.77**	**$14.39**
Income / Bird	**$12.88**	**$23.97**
Gross Income	**$115,920**	**$66,780**
Operating Expenses	**$96,730**	**$44,195**
Net Profit	**$19,190**	**$22,585**
Gross Margin	**16.5%**	**33.8%**

If our farm could be considered representative of an average small-scale pastured-poultry farm today, it would seem fair to say that this enterprise has only gotten *more profitable* over the past 3 decades. Twice as profitable, in fact! Are you as surprised as we are?

We surveyed 3 other pastured poultry farms in our region and our data also tracks closely with 2 of them, which leads us to believe we're not a total anomaly. Of course, broader reaching studies will need to be done in order to prove the theory.

CONCLUSION

The concept for this research project was born as the result of a single offhand comment someone made a few years at Letterbox. A worn copy of *Pastured Poultry Profit$* was laying on a table in our pack shed, when a crew member picked up and said aloud *Twenty-five grand in 6 months? Maybe that made sense in 1990*… It got us thinking - is the preeminent guide to pastured poultry still relevant?

Even having been in the industry for close to a decade ourselves, we fully expected this to be a report about how production, markets and regulations have gotten steadily worse for chicken farmers over the past thirty years. After all, modern agricultural, economic, and culinary landscapes look *so different* than they did in the early 90's. We can rattle off examples of how the industry's degraded without hardly even thinking about: pasturable land is scarcer and more expensive, "big organic" has filled grocery stores with similar-seeming products at lower costs, we experienced a long lasting economic recession that changed the way people spend their money, severe and unpredictable weather is increasingly prevalent due to climate change - and a whole lot more. The fact that direct-to-consumer pastured poultry operations almost identical to Joel's original model can still succeed in today's economic landscape is truly a testament to the staying power of really good ideas.

However, we think it's worth noting that while small scale pastured poultry may be on the rise in some places, the overall health of the agricultural industry is pretty poor and there are sadly still no silver bullets in farming. Running any successful livestock enterprise requires razor sharp focus, total dedication, extensive business savvy and, unfortunately, a fair degree of plain old luck. What are merely familiar facts to us farmers are parameters that folks in most other industries couldn't even dream of wreckoning with. Farming is unfairly hard and risky work, but it's also *really* important. With that being said, we hope this report will prove useful in some way to any of the brave and essential agrarians who read it. We wish you all the best as you carry on with work worth doing.