So with that I'm [David Lamm, NRCS] going to turn it over to Sarah Brown, who's doing a wonderful job as our organic specialist here across the country. And she's going to introduce today's speaker.

I am very excited about today's webinar. I actually had an opportunity to view one of Spence's webinars in the past. And it's one of the most informative that I've seen. So we feel very lucky to have him here. A little bit of background. Spence is the owner of Across the Creek farm in West Fork, Arkansas, one of the largest pastured poultry operations in the US.

He and his family started with their first batch of chickens in 2007, a small flock of layers, and a 34 acre homestead that was on a steep, wooded, hillside slope. So years later, they are now raising thousands of broilers and hens on GMO-free grain and pasture. And just recently Spence was also the poultry specialist for the National Center for Appropriate Technology, part of ATTRA there. So thank you, Spence, for joining us and I'm going to turn it over.

OK. Hey everybody, my name's Spence. And I'm a pastured poultry farmer. That's all I do right now. I used to work for ATTRA. Quit that to farm chickens full time, and what an adventure that has been.

So we're going to kick off just by saying this is a pastured poultry webinar. So if you're not here to learn about chickens, you're probably in the wrong place. Just real quick to give you an idea of what we're going to do-- this isn't in any particular order. But we're just going to go through, we already did a little introduction.

We're also going to do-- I'll just do a little bit of my history and how I got here, to where we're at now. We're going to talk about the benefits of raising poultry on a pasture and some of the disadvantages. We're doing this for Oregon Tilth and NRCS and so we're going to focus a lot more on conservation aspects versus actual making money and production techniques, not finances, that kind of stuff.

But we will briefly hit on just how we raise broilers, some of our layer production, some of the pitfalls and challenges, a little blip about multispecies grazing. We'll have some questions about halfway through, around slide 15, and we'll also look at other poultry types, turkeys and that kind of stuff, grazing them out on pasture.

So just a quick thing about me. I actually was in the army. I was in probably the worst punk band ever. And that didn't turn out to be a good career move, and I was broke and just about homeless. So joined the army. They took me in right after September 11.

From '04 to '05 I did a tour in Iraq. That's me and my machine gun there. Came back, I had some issues, let's just put it that way, from my service over there. And then I finished out and enlisted in the reserves. And just found a

lot of peace in gardening.

Around 2006, 2007, I kind of got hit real hard with some of the things that happened. I dropped out of grad school and all that. At the same time my kid was born, my first one. And we also bought land, a steep holler. I think Sarah referred to it as a slope. We call it a holler in these parts.

It's just a real narrow valley or draw. And mostly woods, and so part of my getting right again was I cleared acres of land by hand from hardwoods turned into pasture. So in 2007 we got a couple laying hens and were just homesteading eggs. Because the farmer that we bought eggs from, he actually stopped producing eggs. So we didn't know what else to do or we couldn't find anybody that we liked their eggs, so we started doing our own.

So in 2010 we started our own farm, 300 broilers, 50 hens. And then 2011 we got a grocery account from a store. Another pastured poultry producer went out and we were kind of the only meat producers at the time.

We also got started with goats. A lot of our land at home farm in the holler is actually great goat land. And so in 2012, last year, we became a full blown LLC. With the 3000 broilers, we got leased land that we're able to find. We needed flatter land.

And so we went GMO free just kind of as a way of distinguishing ourselves in between the organics customer market and then just conventional chicken. We also started horsing around with high tunnels, that kind of stuff. And then this past year we did around 10,000 broilers. Which-- going from 3,000 to 10,000, there was some learning.

We were able to get-- we made a lot of infrastructure. We switched over to bulk feed, started forcing [inaudible] locally, a large hatchery. Just made a lot of necessary infrastructure, kind of getting the stage set up to grow even more. Set up our goat herds. Finished our first EQIP project for NRCS.

And at the end of this year we're starting to go national. We're being picked up by a national distributor. And I've also got two farmers that are going to be growing under my brand. So next year we're looking at getting at least 20,000 broilers at our pasture.

So that's kind of a brief summary of who we are and our growth. And it's actually pretty typical for pastured poultry farms. Especially-- we're able to outsource our processing to a USDA-inspected processor. A lot of places do it on their own farm, under exemption, the farmed poultry processing exemption. And since we don't have to deal with the processing end, we're able to scale up a lot faster. And we'll talk a little bit more about that, some of the advantages of pastured poultry as a farming operation.

This is real heavily focused on conservation, NRCS. I wrote what I wish my NRCS folks would have known when I

got started. One of them's just kind of what we're doing here, something about how I farm. It's difficult when you're paying $18,000 feed bills at a time and sometimes people still look at you as a hobby farmer. Sometimes my expenses in a month or two are more than what some folks make gross in a year. We have to operate like a business and all the things.

And so I felt like for a good portion of what we did, even up to this year we weren't-- sometimes people don't take you seriously in that. Whereas someone, a conventional poultry grower may get anywhere from $0.10 to $0.25 a bird in their [inaudible] growing for an integrator, we can net $15 a chicken. Not net, that'd be awesome. We can gross $15 a chicken. And so we don't have to grow 100,000 birds because we make a lot more per bird.

The other thing is there's a lot of things that I needed help, especially out on the pasture side. And we were very fortunate to have some great NRCS agents or state grazing specialists that spent a lot of time. I actually had one grazing specialist come out and just work with me. He showed me how to build my first high tensile fence. He spent a couple hours with me and another guy on our farm and that was enough to get us to get going.

And it's just kind of hit or miss with the agents. Another thing was, I wasn't stupid. It's kind of insulting to come on to a farm and you're doing something, and then have your agent kind of roll his eyes and make-- essentially dis what you're doing. And there's also a lot to cost shares as we went through this that would be extremely helpful. Those are just kind of something I wish coming into it that our agents would have known. We are legitimate, I feel like we are legitimate farmers.

All right, so I thought a great way to start this off was distinguishing between free range and pastured poultry. And so we see a couple pictures here. You see a picture on the left of a whole bunch of hens and you see kind of the outside of a chicken house.

And these are pictures that I took as an organic inspector of free range organic land operation. In that the birds hadn't been let out in at least 90 days. And so it'll all be free range, well, the USDA defines free range as access to the outdoors. Now access and actually getting outdoors are not the same thing.

If you look at the house to your right you can see little pop holes. And that was only on that one side. And there were I think around 30,000 birds in this house. And that, you can see how little space all those chickens had. And they didn't have to be let out. So free range doesn't necessarily mean that the birds are out on pasture or out on porches or the outdoors.

You can have 100,000 chickens and a two story chicken laying operation with a four by eight porch with one pop hole and be able to market your eggs as free range. So what's pastured poultry then? Well, pastured poultry-- it sounds pretty easy. Raised out on grass. And the thing is, there's no official definition of what pastured poultry is.

So a lot of the bigger marketing of pastured poultry-- this operation here could make the claim that these hens are raised on pasture. So it's just something as you go in it to understand. But for the purpose of this, we're going to talk about actually raising your chickens on pasture, not legal semantics.

And this is a picture of just one of our old lay houses. Our first egg mobile that's out had 150 hens in it. And this is out on a sericea mix, a sericea lespedeza mix. Very infertile ground, the only thing that'll grow on it is lespedeza. But turns out that was actually a real good thing for these hens.

And so why do people raise chickens on pasture? Well, the first one is the forage consumption. We like our birds, as poultry producers, to eat as much grass, legumes, forage as possible. And also there's a whole lot of insects in there, too. And so feed savings, you can normally expect anywhere from 5% to 25% and a reduction of feed.

A lot of the plants that the birds eat-- they're very selective, they know what's good and what's not-- are very nutrient rich. Not only in things like the vitamins, the fat soluble vitamins, and that. But also things like beta carotene, which directly affect the quality of the fat or the meat and the broilers. And also the eggs-- I mean, we've had eggs that are almost blood red because they're so nutrient-dense or they've got so many beta carotenes and xanthophylls and all these other things in them.

So it produces a different product, something that the industry-- the commercial poultry industry and the organic poultry industry that are kind of based on more confinement systems, they understand customers want that. So you've seen a trend where they switched to brown eggs and where they feed marigold petals or something else to try to darken the yolks. But it's really hard to fake a pasture raised egg.

But on normal pastures, just throwing them out there, unless you're really managing intensely we count on 5% or less displacement in feed rations. The birds put down a lot of fertility. A hundred broilers, depending on how long you take them, you take them to nine weeks, and they're going to put out about a ton of manure. They eat a lot. A typical broiler, look a white Cornish cross-bird, has around a two-to-one feed conversion, if you're doing things well. So that means if it eats two pounds of feed, one pound of that becomes bird and the other pound, well, that goes back out on the pasture.

One of the other advantages with fertility is that the animals apply it. So we don't have to spread litter. Which means that you don't have to have a skid steer and a manure spreader, which is pretty important for infrastructure and capital expenses. We talked about the meat and egg characteristics with the vitamins, omega-3s. And there's a plethora of research about this stuff.

I wrote, when I was at ATTRA, there's a pastured poultry document that I wrote. So if you'd like you can learn

more about that. You can go to ATTRA and download that publication.

And then they're outside on grass versus inside on litter. And you don't have to manage litter. That's a whole art in and of itself. Litter's the shavings that are in poultry houses to absorb the manure.

And then a big factor is sanitation. On pastures, we're able to move our birds. The more frequently we move them, it's like changing out the litter in a chicken house. So we don't have ammonia problems.

We don't have to typically give antibiotics or drugs. Like for coccidiosis, it's not listed as an antibiotic but even a lot of antibiotic-free chickens have amprolium. It's really close to an antibiotic because of a disease called coccidiosis. On our pasture, it's very rare to get that. You really have to be doing things wrong.

And there still is disease threat, though. In my experience that comes from poor biosecurity from other farms. Especially, not so much the big confinement operations-- I feel like they tend to be very good at what they do. So more just backyard flocks, other small producers that don't really know what they're doing.

Our products are increased marketability. We get higher gross per bird and higher net. We shoot for around $2.50 a bird net to $3 net per bird sold. And it's an easy in, easy out. It's a lot cheaper to get started in pastured poultry than to get started up with a chicken house, which will run $300,000 or so to get one up. So it's a fairly minimum investment.

Why not pasture? The first one, weather. There's a seasonality. It's either too hot or too cold, it seems like. Right now I was talking to Sarah and David mentioned at the start, it's going to be 16 degrees here tonight. It was 67 yesterday.

My birds are-- they're going to be cold, freezing their nuggets off. That's just something we say here. And winter, for a lot of us, we can't grow in winter. It's just a losing proposition. In parts of the south or southwest it may be the summer, the birds just can't make it out there without having high mortalities.

So labor, pens and watering systems-- we have an automatic watering system which is critical when you do the number of birds that we do. And then you can also deal with predation. And we'll talk a little bit more about that later.

This is one of our early attempts at a pastured poultry design. And you can just see there's like a $100 of material in there. So it's something you can get started on small scale.

And with predators, they can really kill your birds. They wipe out your profits. Wet weather, when you're pasturing poultry, is kind of a two-handed threat. Not only because the birds can get cold and stressed, they eat more feed.

It makes them more susceptible to disease, so you make less money.

But the birds also can damage the pasture. If you get wet pasture, when soil gets wet, it doesn't have its strength. And so it's able to be compacted and smushed up and it turns into a brick. I think that's actually how you make bricks, those old adobe kind of things. You pack mud together. And that can happen very quickly, especially with laying hens.

Processing is a huge issue that could have its own webinar. But if you're doing broilers, where and how. If you're doing layers, how are you going to get rid of them? And then the labor, moving pens, feeding, and water. I mean these, the more you grow, when you try to actually make a living at it, these becomes significant challenges.

And weather, predation, and labor, well, these are the reasons that chicken production moved to confinement operations. And when you work as hard as we do, sometimes automatic feed lines starts with augers sound awesome.

Some of the conservation advantages are fertility, especially nitrogen, phosphorous, calcium. The birds lay down sheets of organic matter in the case of broilers. This is a really neat picture. This is after the first year that we farmed, this is-- we took over some really, some land that had just been abused and hated for years.

A guy had stolen hay off of it and the landowners didn't know because they were out of state. And just kind of robbed, mined all fertility out of land. And so this is where one of our broilers had been stopped the season before. And this is early March, so things are finally starting to wake up.

But the only difference in this picture is-- I mean, we walked out there and saw this. Wherever the pens stopped you could see this kind of design. Where you have this high nitrogen, where there is a nitrogen input, and the soil responded. And things greened up earlier. And you could go four inches on the other side or wherever that line stopped and it'd just be bare dirt or whatever. As you can see, it's jump starting the soil biota. So calcium, it helps lime the soil. And that's something that's pretty critical in the South and the East where our soils tend to be acidic.

And the other thing is, kind of like mob grazing, the disturbance that the birds put. Especially in layer hens, like scratching, they could really tear through barnyard grass or broom sedge, some of the less desirable species out there, and bust them up. And open up the soil, open up the canopies, so you get new seedlings, new growth. And we'll talk a little bit more about that later.

And also they just work well with multispecies grazing, especially with cattle. With the control of flies, instead of spraying insecticides or putting up those little sponges that the cows rub on or insecticides, having to use a lot of insecticides, farmers will trail in a rotational grazing system, trail the cattle with an egg mobile, an old--- kind of like we saw before, an old hay wagon modified to hold some layer hens.

And the layers destroy the cow pies which destroys the fly larva. It removes their habitat. So it's a very unique way of controlling flies and not having to use insecticides for that.

They have the kind of mob grazing effect of trampling and laying down the manure. This is pretty neat. The only difference here, you can see where this pen had been through and just the kind of difference, how the grass wasn't able to mature. It kind of reset it so the grass stayed vegetative and palatable longer.

One of things that happens is, when you run them in tall grass like this, they knock down the dead grass. They throw their manure on it. And you get that carbon plus nitrogen. You get a nice mulch over it that breaks down and composts and really stimulates a lot of seedling growth and protects the soil in droughts.

You get an explosion of insects like cricket and earthworms and that, all kinds of insects. We've seen dung beetles. Apparently there are dung beetles that use poultry manure, which is interesting to us and to a lot of other rotational grazers, I'm sure.

And the laying hens, especially, they'll scratch a lot. The broilers tend to just drop their load and take [INAUDIBLE]. Essentially what we do with broilers is we're doing mob grazing, if you're familiar with that with cattle.

I thought this was neat. I saw this this summer. These two pictures were taken, same soil series, same aspect, same slope, all that kind of stuff. But they were taken about 30 foot apart from one another. And one had had two years of birds and the other hadn't.

And you can see how the one that had, in the summer drought, was still green. There were still insects in it. The birds would still eat it. And you could see a bunch of greasy grass and fox tails. And then you go over the 30 foot, and that's what you get. It's all desiccated and dried up. And it was pretty much, you could see the clear demarcation, kind of like that earlier picture, where the hens had stopped. That was in spring. This is in summer under the drought.

Probably a lot of it has to do with the organic matter applied to the soil, the water holding capacity that's been added, the earthworm activity, all the good things that happen when you start jump starting the soil and the life in it. So there are-- not everything was rosy when it comes to pastured poultry, though. There can be very serious conservation disadvantages.

And just like any other farming operation, these stem from mismanagement. And so one of these is where you can get this dirt yarding effect. This is especially true in laying hens, but all poultry, but they just destroyed the vegetation, denude it. Here, and you get too much nitrogen, which can be a problem, especially when you get runoff into streams.

And then in our area, there's actually been law suits by Oklahoma into Arkansas over a watershed near us because of phosphorous. Which really-- you want to make some algae grow and clog up a lake or a river, you get phosphorous in it. And the thing about phosphorous is it typically adheres to the soil particles really well. So when you start having phosphorous problems that also means you're having typically soil erosion problems.

That layers going in, but into the creek in that, it's all part of that manure going into the creek, the nutrients, but it's also going in there with soil. So here you can see this little-- I took this a couple days ago from one of our pastures. But you can see that denuded spot. That was about four or five months ago.

I had started some hens on an egg mobile and we kind of just set them there and didn't get around to moving it. And that was the area right under the egg mobile. And that's the concentration of all the manure and so it just made the soil pretty hot. Now you can see how lush all that grass is around it, but that's [INAUDIBLE] that.

And if you look further down, you can see the other spot and that's where we kind of got behind moving. So you can put too much nutrients and make the soil too hot. I will say when you walk on that bare piece of ground, it's just [INAUDIBLE] got all kinds of dead grass on it. It's like walking on a pillow because of all the earthworm activity. So at some point that's just going to be this gold mine of fertility. But it's still pretty hot right now.

And so the other thing is soil compaction during wet conditions. Especially laying hens tend to be the worse. They can turn soil into just about concrete if it gets wet at all. Doesn't seem like much, but five pound hens with 200 or 300 of their buddies on the same piece of ground, wet, it can really pack the soil down.

And then here in this picture you can kind of see how our operation works with the different hoop structures in that. We'll talk a little bit more about that later. Layers, like we mentioned, really rough on pastures. They scratch, they can bust around soil. But the thing that drives me nuts is when the soil has the right moisture content, they act like gophers.

And they will dig holes. And some of them can be up to a foot deep. And it's a great way to break your ankle or potentially maybe it might be an issue with cattle. I've found that over time the holes will fill in pretty quickly. But if you leave the birds out there too long like I'm showing here, they can make a moonscape out of a paddock.

And then the basic kind of how we do rotational grazing applies to pastured poultry. It's how frequently do we move them, how densely are they stocked, and what's the forage density. And all those things affect when we need to move things, as well as the soil moisture, soil type. But just like rotationally grazing cattle, the same principles apply to do pastured poultry right.

And now's a good time to break for some questions. And so I guess if you have questions, ask them. I'm sure Holli

or Sarah will tell us what to do here.

Yeah, thanks, Spence. If folks have questions, please use the notes function on the side of your screen to type them in now to all moderators. I can make sure that we get those questions voiced and hopefully answered here by Spence. So a couple, just to start.

First of all, thanks for painting what I saw as a really clear picture of both the advantages and disadvantages. I appreciate hearing both sides. I was wondering if you-- you've been doing this for a number of years now. Have you had to do any pasture reseeding or restoration in areas? Has it gotten worn out at all or have all the benefits been positive?

Well, we-- over the long run, all the benefits have been positive. I have kind of learned, especially this time of year, when the grass starts slowing down as the daylight and the colder temperatures happen we do do some reseeding and that kind of thing. The biggest concern that I always have around here is soil erosion.

Winters, it seems to be when we get all of our rain, or a big chunk of it. And if there's no soil cover, that can be an issue. Overall everything's been positive except where I've left birds too long and erosion has happened because of that.

And are you doing any soil testing to go along with it? I know you mentioned nutrient levels no obvious signs of too much nitrogen, but have you done any soil testing to just observe, try and improve organic matter?

No, our state, Arkansas, we can get soil tests for free. And we're in a nutrient surplus region because of all the poultry production and litter spreading in our area. We have a nutrient management plan that the county conservation district comes out and makes soil tests to make sure that we're not too hot for phosphorous or nitrogen.

But all of our soils are so poor, I know that I'm not having excessive levels. So the way we know that is because of the change in the plant species in our pastures. We're going from things like lespedeza, which I actually like in the goat forage. But lespedeza or thistles, broom sedge, barnyard grass, these things are growing into-- we're getting vetch, wild asparagus, greasy grass, crab grass, chicory.

These things are starting to replace them, the more we run birds. And clovers, a lot of wild clovers, and red and white clovers as well. And we didn't sow any of that, which is pretty cool. Now, I will say with the level that we're doing, as we kind of expand and we hit that 20, 30,000 bird level, which is kind of where I'd like to be in a year-- you're putting down a lot of chicken manure.

And over time, pretty quickly, I think, we're going to start having surplus nutrients in there. And so then it kind of

becomes a haying in reverse. So one of the things that floated around was getting the pasture certified as organic, that would be very easy under our system, and selling organic square bale hay or something.

The quality will be high, and it will be organic. And we'll just sell it normal price. That's kind of our planned break for nutrients. If we start getting too high, we can cut hay and sell it off the property and we're selling the nutrients off.

Great, and just one last question here, I think just for clarification. So once you get your birds and their chicks, what I understood is that after they come out of the brooder, I guess, they're on grass permanently, is that right? Until the day that they're processed?

That's right. For our broilers, and then for our layers we actually pull them off pasture in the winter and we put them in the coop houses or high tunnels. So that's just something we've been playing with. We don't do layers in nearly the size that we do the broilers for a couple of reasons. But yeah, so the birds are out on grass until their last day.

How long is that usually? How many weeks?

It depends. In summer we can get them out there as early as two and a half weeks. Although I like to get feathering on the birds, which is normally around three weeks or so. There are some things that affect that, but around three weeks. They're pretty hardy.

This time of year I'll take the birds. Granted, we've got everything out on pasture, but when spring comes in and then going into a fall, you have to pay attention to the weather. So especially in the spring, mid-spring, where you can have cold snaps and long periods of rain, we may take birds four and a half weeks. I've even taken them as far as five weeks.

And then they finish. So essentially we finish them out on pasture at that point. You just kind of have to balance weather, the hardiness of the bird that you're using, and temperature.

OK, and one last question here before I let you finish your presentation. You mentioned that the layers go back into a high tunnel during the winter. For your broilers, do you have any sort of permanent structure area when weather or soil conditions warrant?

No. Once we get the broilers it's actually really labor intensive, because the chicks in the brooder, load them up at night and hauling them up at pasture, especially because our leased land is eight miles away down the interstate. So the broilers, when they're out, they're out.

And then the way we kind of deal with that is, our deal with weather and that kind of thing is, we shut down for the winter. And so if we can't grow birds outside, we don't do pastured poultry if we can't finish them outside. As we've expanded, and kind of more national markets are starting to, I've actually sourced a former confinement grower. We're re-figuring his houses.

There's a lot of days in winter here where it may be 60 degrees or 55, and that's good weather for birds. So we're looking at doing more of that free range kind of style, simply because we have to gain access to the market since they need a continuous supply over the winter-- so, kind of hybridizing the two. But, yeah, over winter we just don't do pastured poultry.

I have to say, I've moderated a couple of these webinars now. And I'm seeing more questions for you than I think I have in any other presentation. But I do want to make sure we have time to have you finish the slides you put together. So why don't we get back to that and then at the end, we can take a few more questions.

OK, sounds good. All right, so we'll pick it back up with poultry forage consumption. So this varies on bird height, bird species. So by bird type I mean, are we talking about a broiler? Are we talking about a hen? Talking about a pullet? So layers, broilers, or maybe show birds.

And then species, ducks, turkeys, geese-- you run the spectrum from a broiler chicken, which will eat a good amount of grass to a laying hen, which will eat more grass, to a turkey, which-- those things are grass eating machines. Ducks, all the way to geese which can live almost exclusively on grass. So that all affects consumption.

And then the other thing is the time of day. There's been a lot of times, not a lot, but there's been research on this. And your birds are going to consume the most forage during that dusk hour before sunset. So when you give them new pasture, if you really want them to eat it, that's a great time.

Experience is a big thing. Just like, we had to work with my kids there, to get them-- well, they've always kind of just grown up eating chard and cabbage and that kind of stuff. It's not as easy as getting them to eat chips or when the grandparents come over they give them sodas, which drives us nuts. They have to get that experience of knowing that this is good for me and I feel good after I eat the clover or the grass, just like we do when we're growing up.

As the birds get older, they tend to figured it out. In The earlier you get them on pasture, though, with broilers-- that's pretty critical, we've found to getting good forage consumption. That will really affect the meat.

And then the palatability. If I give you an oak leaf or if I give you a bag of spinach, a bunch of oak leaves or spinach-- they're going to taste different. One of them, nice little salad, you're gobbling it down. The oak leaf you'll be spitting it after one bite. So the palatability is critical.

And there's some forages which the chickens don't like which are useless. Barnyard grass is a great example. They'll eat some broom sedge. Although it's worth saying that just about everything's edible to a chicken at some point. Lespedeza, they'll wolf it down when it's little. If it's older, not so much.

I've seen them eat little thistles when they first come up. But a big thistle plant, they're not going to eat. So typically the younger a plant is, the more palatable it is. And then of course legumes are preferred, because it's got the higher proteins. They've got more methionine, which is something chickens crave in limited amounts. And that compared to grasses, then the grasses tend to be more nutrient dense with your vitamins and omega-3s and that kind of thing.

And some grasses are sweeter than others. And you can taste this. If you go eat yellow wood sorrel, it's very tart but it's pleasant. If you go grab some lespedeza and eat it, it's not as good. Even on our own tongue we can taste the differences. So if tastes sweet to you, the birds are going to love it. And they also tend to love sour things, like wood sorrel, that kind of thing.

And then the stage of growth and height. You know, as the plant gets older, the reason that plant's growing, it's building up it's root system and then to throw off heat. So when it starts lignifying or that stem starts getting woody, it's converting all those sugars in it and the starches to kind of hold that up. And that affects how it tastes and that affects how much they eat.

And then also the height of the forage. They like eating it about chest high, or they can just kind of nibble down on grass. Although you will see them rip up an eight inch piece of fescue and just swallow it down like spaghetti.

And the other thing that can really affect it is, we recently got a bad batch of seed. Very low on phosphorus, and the birds went crazy on the grass because they were trying to make up the deficiencies in the seed with the grass.

So in your area, pastured poultry-- It's not right for everywhere. If you live in the high desert of Nevada, it's probably not going to do pastured poultry. When I worked at ATTRA I'd hear from folks who wanted to irrigate pasture out in the deserts for chickens. I don't know about that. It seems like you could do more profitable things, for a 5 to 10% cut in your feed.

Your growing period-- if you don't have natural grass around you, that may be a problem. The other things that affect it are how close are your markets? If you're out on an island in Alaska, that may not work.

Not only markets but things like hatcheries, there's quite a few of those. Where are you going to source your feed from? If you're not going to do the processing on the farm, is there a USDA-inspected processor? All that kind of stuff.

There's a variety, a hodge podge of state laws for processing. And that is something that I helped a lot of people on when I worked at ATTRA. And that is worth a whole webinar in and of itself, processing poultry on a farm legally.

And the other thing is, too little land for growth. Or maybe there's not the right type of land. We're having to pick up leased land, because we're first generation farmers. Well, my wife is third generation, but they're rice and soybean farmers in the delta of Arkansas. To do what we do, we're not around there. We don't have access to family land. Land's super high around here in our area and so we lease land to compensate that so we don't make our land poultry sick.

So good examples of forages, here's a nice little list. You can get the printouts later. These are things that I've seen personally my birds eat or heard other folks say. Some of them historically, like kale, in California, Petaluma. They used to grow acres of kale and hand feed the birds that. That's before vitamin premixes came in the '50s.

Some people tell you vetch seeds are poisonous and don't have vetch. But I don't know, that's contrary to every experience of every pastured poultry producer I've seen and talked to. Clover, alfalfa, all the legumes are good, and then your grasses. If the cows really like it, chickens probably will too.

Your plant height, we talked a little bit about this. This is tall grass that these guys are in. They've trampled a bunch of it down, but you can see a lot of it's broom sedge or barnyard grass. If it's over their heads, it's too tall.

It's still fine to grow it, you just have to understand that you're probably not going to get as much feed reduction. But you can have those birds really kill out those species of plants that you don't want and really kind of improve the soil, that kind of stuff, by running the birds through there and getting that mob grazing effect. You can mulch the soil, seed it and that kind of stuff.

To plant or not to plant. Sarah kind of asked this. What forages do I spread? And when you spread seed-- I don't know if you've priced clover seed, but it's high. And you've got to remember, you're trying to offset your feed. That expense has to be able to offset a feed savings. Which means that you've got all these variables of weather and everything else to get a good crop when you sow the seed.

A lot of times you have to till the soil or work it in, run a harrow through it to bust up the pasture. And you spend a lot of labor and money on things that could probably be used elsewhere. Sometimes it is the right choice, though. Right now I'll kind of go to more of the sacrifice paddocks for my layers this time of year.

I've been sick a lot lately, so I haven't moved them nearly as much as I want to. And so when it kind of gets away from, I'll go back and I'll spread some rye this time of year. That way the rye grass will sprout, cover up that soil.

And I'll protect the soil over the winter.

One of the things that we operate by is, work with what we have. Running chickens, I've taken nasty clay benches and ran turkeys and broilers over them for year. Come back the next year and we've got clover, and all kinds of-- maybe crabgrass and that kind of stuff growing where there was nothing.

It just-- there wasn't enough fertility to support a lot of plant life. And then we call it new species magic. You will see things pop up in your pastures, assuming you can grow pasture and you're the right part of the country for that, but you will see things pop up that you've never spread there and are awesome. Bird's foot trefoil and asparagus, interesting things, wild flowers-- it's just like you can change a plant community through burning, or controlled burns, you can also do it by fertilizing and changing the soil.

So just real quick we'll kind of hit on the pastured broilers and why we do them. They're a real quick return on investment. These are Cobb 500's. They're just your standard Cornish cross. Eight weeks, boom, eight to nine weeks-- you put your money down. You get it back or you have a product that you can sell.

And you get them out on pasture around three weeks. You've got your Cornish cross and other breeds. Right now we're running a Naked Neck hybrid. Typically you want a feed conversion around two to three. I've actually had it lower than two in spring, when they get a lot of nutrition from the pasture.

So what that feed conversion is, is that says how many pounds of feed-- that's that number up there, will produce a one pound bird. And so a two pound feed conversion is awesome. I've had it as low as 1.7. Which is just as good as any chicken house if not better. I've also had it much higher when I mess up or the weather gets like how it is now, or something else goes wrong. But the important thing on that is, if that bird eats two pounds of feed and makes one pound of bird, well, where does the rest of it go?

It's going out on pasture. And so one of the things with pastured poultry and even in the conventional industry, because they spread it out on pasture and raise beef cows, is a real common thing. That's a way-- we paid for that fertility coming out of the back end of the bird. If we can grow grass and then find some way of harvesting the grass and using that to sell, then we're cutting down on the waste of the business.

So we run automatic waterers. You've got to have them, as far as I'm concerned, once you get over a couple hundred birds a year. It allows us to raise birds in 100 plus degrees temp, because I can purge the lines, get cool water through and I hose down the birds if I have to. The labor savings is huge.

There's a potential, you know, there's watering systems and NRCS cost shares for EQIP. There's a potential that if you're running other birds, other animals, like goats, cattle and things that the NRCS is more familiar with, you

may be able to do double duty. Or not-- ask your local NRCS agent.

The big thing with broilers, though, is have processing figured out before you get them. Because eight weeks comes around, and you don't know what to do, from experience you can get yourself in a bind. Our broiler pens at this point are just 10 by 12 frames. They're about six feet high. They're tall, they allow air flow.

A lot of people are familiar with Joel Falcon's set up with the kind of Salatin pens. I don't like them because I like to be able to walk in and walk around my birds. And I'm over six foot tall.

They're fairly heavy. Ours have survived 70 mile an hour winds and we haven't ever had one slip over. We can put one stake of rebar in the corner and it seems to work miracles. We can roll up the sides and tuck them in in hot weather to get a breeze.

Fit about 60, 70 broilers-- they've got automatic waterers in them. We use them to sit on-- the bottom picture is a dolly. And we put that underneath the back of the pen. Flip it, pull that dolly down and that kind of puts the back of the pen on wheels. And then there's a rope at the front. I just put them on my shoulders, stand up, and walk it.

For laying hens, this is kind of one of our first egg mobiles. It's kind of neat. You can see them kind of knocking down and mulching the bed, grass bins there. We use that netting, though, to put around the laying house. And it's electrified and that helps control predators.

That field that you saw earlier and the same one you see here, we still don't have our high tensile electric fence up. And that was a huge priority but it's a lot of time to get that thing through all the wood lines and brush. We just don't lose birds to predators in that. It's on my winter to do list.

Layers are great foragers, just real quick, on insects, grasses, vegetation, seeds. Markets like brown eggs. I think if you do anything other personally, than the red sex-link, whether it be a Hyline or a Brower, whatever, I think you're going to have significant challenges in making money in layers. You can get away with white layers. Although people are funny, they like brown eggs even though a brown egg and a white egg taste the same.

Overwintering, or maybe in the middle of summer if you're in the southwest, these can be problematic since you have to have planned for them. But they're the easiest poultry. They're hardy. It's hard to kill a layer. It's really easy to mess them up so they're not as productive egg layers, but typically they'll keep on clucking. And you'll have success when you start off with laying hens.

And they're kind of the gateway poultry. Every market just about that we've had is contact, we got in through eggs. Egg sales, and then they got interested in the broilers. The other thing, though, something to keep in mind with the laying hens is that these guys can be little feathered disease bags.

And they can accumulate diseases. You see farms where they have a five year hen, it's like a pet, old Henny Penny running around. Well, Henny Penny has accumulated every disease that's been tracked on to the farm, or all birds, or whatever. And continuously infects the broiler flocks or the other hens. And is kind of like a little chicken Typhoid Mary.

So one of the things that we've learned from the poultry growers, the conventional guys, who've really helped us and we wouldn't be here without their advice is, do an all in all out on your laying hens. So start a flock, a new flock, while you get rid of the old flock. And keep them separate if they're on the farm at the same time. That way when disease builds up in a flock, when you cull them out, you've cleaned out, sanitized, and gotten that disease off the farm.

So we've kind of found that we need to overwinter our hoop houses. When grass goes dormant in the winter up here, it helps us protect the soil from compaction. You don't get any growth, so any green that is out on pasture and in the packet and quickly kill it. And that's so they can very quickly, even a few hens, can really tear up a dormant pasture.

And so this also is good for the hens. It keeps them healthy. We can drop the sides on the coop house and keep them out of the wind. We've got them near our house, so even though we don't have any broilers here in the holler I'm able to just walk 100 yards from the house, take care of them. I can run lights to them to keep then laying in the weather.

And so we do a deep bedding system where we put in lots of carbon. The chickens poop in there. They scratch it all up and it composts down. it gets some heat off. It's actually quite pleasant.

And so we're still working this out, but my goal is to even grow heavy feeding crops like sweet corn in the high tunnel. Because we actually bought the high tunnel for the hens, which is not useful. But if the hens pay for the high tunnel and then we can grow sweet corn and tomatoes in that, then it's just another way of making money.

The reason we would do like a heavy feed crop first, though, is because you're going to have crazy high nitrogen. So if we can grow a crop in there and harvest it, it's kind of like harvesting hay. It's a way of pulling out a lot of that nutrients so the soil's not as sweet or hot.

So the big thing with layers is it's definitely a margins game. You've got to be careful on layer pasture housing. There's advantages to having fixed housing but I just really believe in mobile housing. If you try yard birds, eventually you just destroy the vegetation around the house.

So fixed houses are just difficult over the long term. You get overgrazing. You get manure build up. You get

disease build up. It's just really hard to have a large herd, a long standing, effective fixed housing while still giving the birds good access to pasture.

And then the other thing is with mobile housing, you can move it around. And you can balance in between. You can have something large on skids. I've seen stuff that's like a trailer. That you leave there for a week, or two weeks, or three weeks and then you move it to fresh new pasture.

Mobile housing, to me, is the way to go. I'm kind of partial to the way we do things, though. The big thing, once again with the layers, is please plan for winter. They have feathers. They do very well in cold weather as long they're dry.

And when you first get started, maybe you don't have a hoophouse. Well, you could have a sacrifice paddock. A place where you keep the birds, and this is something we've done where we pick an old limestone bench or something like that. And we put the birds on there with a lot of carbon and hay, trash hay, that's got seeds in it.

They just kind of do their thing. It goes out the back end. And you've transformed a rock bench to something that's covered with a foot and a half of mulch and manure and that's loaded with seeds that the hens haven't found. And then in the winter, or spring comes, and where there used to be a clay bench or shale or limestone outcropping, it's absolutely covered over and you have grass. And we talked about hoophouse.

Very quickly on nutrition-- nutrition is critical. You can't skimp. We've actually went to a bulk feeding system, which will save us $10,000 to $20,000 next year. But poultry feed's high in nitrogen, phosphorous, potassium, and calcium. Which are all things-- NPK. That's stuff farmers throw on the fields.

It's also high in organic matter. Which is, when you put down nutrients in the form of organic matter, you only get half of it released the first year. Then the next year you get half of the remaining half, and half of the remaining half, et cetera. So instead of just chemical fertilizers which can be runoff or lost, chicken manure gets drug down the soil by earthworms, dung beetles, and it's slowly releasing. You're still getting benefits four years later.

And so, and you got to remember, with nutrition, 50% of what goes in comes back out. And how do you harvest that to make money off of it and not lose it? And then layer manure, especially, is very high in calcium for egg shells and that. We've seen that has a pretty significant liming effect in the species that come up.

Other poultry types-- processing is a big issue with these, but turkeys. Turkeys are awesome foragers. It's a joy to raise turkeys. Never ever raise turkeys where you have layers. There's an actual document I wrote about black head. It's a great way to lose your shirt, running turkeys over ground where you have layers. Anyway, you can look up on the ATTRA site about that.

Turkeys are great seasonal. You produce them in Thanksgiving. It's great, because people will pay a lot for something really big. We're selling turkeys for $4.45 a pound this year. We could easily sell them for-- in the past, I've sold them for $5. And you're talking about something that's 15, 18 pounds.

Turkeys are great. You just have to have-- if you're using a processor, your processor has to be able to process them. Ducks and other water fowl, very good foragers. Geese will only eat grass. Plucking is very problematic, though.

There's a word that rhymes with duck and pluck that you often hear when people are trying to pluck a duck. So a lot of people won't do them. And if you have a processor, they may charge you $10 a duck to process, because they don't want to do it.

And you can spend a lot of time processing a few ducks. There may be a niche for them, though, because they're very cold tolerant. So maybe something you do on a smaller scale and offer in the winter.

And finally, things like predators-- predators are a part of conservation. Everything eats chicken. Our chicken is very popular with everybody in our county. And if I'm not careful, it's just as popular with coyotes, foxes, bobcats, bears, and cougars, that kind of stuff.

So the successful strategies are physical barriers, fencing, netting, electricity works very good. And train local predators. And you'll say, what does that mean? Typically you've always got predators around you. You can get yourself in a lot of trouble when you kill those predators.

And it's kind of that if it ain't broke, don't fix it. So if I see a coyote, and I'm not having lots of coyote problems, I'm not going to shoot that coyote. Because that coyote knows kind of the lay of the land. And it knows it's going to get zapped.

The other good thing, if you get a predator that isn't trained that may attack your chickens, if it comes in around your farm and that's another coyote's territory, that's his home and he's got an intruder-- he's going to chase off that coyote that doesn't know, hey, we don't eat these chickens. And so he actually acts as kind of an insulation for predators that don't know how to live in peace with you. And it's very difficult to shoot or trap your way out of predation problems, unless maybe it's something like a bear.

You've just got to find the proper way to keep the predators at bay. When I first got started, I just about lost my shirt to predators. And we kind of had a state of mind shift, if you will, where it's like, the problem isn't the predators. The problem is the way that I'm raising my birds. And once we started tackling it that way, then we stopped having predation losses.

And there's the conservation aspect, you know. The law, especially when it comes to raptors like hawks, maybe eagles. Those are protected species and you have to learn to work with them. You can't just-- guns a-blazing in that.

And multi-species grazing, we talked a little bit about it. The ruminants can mow the grass and the poultry spread the manure. They attack the pests that plague the ruminants. And it's a great way to utilize acreage multiple ways. You've got a fixed cost for those acres.

So one of things we're doing on our leased land is we're fencing it off, so we can rotate our goats through there in the winter. And they then-- all that vegetative growth that grows longer in the season, all the fescue and the rye grass. That grass stays green a long time. If we can double graze that with goats and reduce our hay bill, and land was sitting out there because we did poultry anyways, well then our business becomes more profitable.

It's kind of a great way to holistically improve your operation and your profits. And you can also do things like grow broilers in between orchard or vineyard rows, design pens that would fit well, possibly even gardens. Although you have to be worried about salmonella and campylobacteria, that kind of stuff, After contamination of fruits and vegetables when you do that.

And that is all. So more than happy to answer some questions. I'll turn it back over to Sarah.

Great, thanks so much Spence, lots of good information. I do have a couple questions here. How many chickens can you graze an acre? What do you plan on for that?

It depends. It just depends where you're at, the time of year. In the summer, a drought, you know-- it's just, it all depends. With our broilers we try to avoid growing over land where you can tell there were chickens before. So if the manure, like when you do broilers, if you're kind of moving them back through, and you still see signs of manure, you don't want to raise the bird stock over there.

The layers, you just have to play it by ear. Or by sight, you know, like how is this affecting the ground? And this leads into a really great point, Sarah, that I'm glad you've nudged me over to.

If you're interested in pastured poultry, don't go big fast. And it may seem like we kind of did. But we did a lot of work in those three or four years. And there's things that weren't put on here-- a lot of tinkering, a lot of system designs.

And I met a friend who was further along and helped me fix some problems. So go slow. Get a feel for it before you try to make money at it. Just see if you can grow them just for you and your family.

And then another great way to figure out that question, Sarah, say you have a piece of property and it's whatever length and width. This is for broilers, you can do it for layers, too. But you know the size of pen that you have and you can calculate how many square foot that is. You can calculate how many square foot of pasture. If you know you're going to put the birds out at three weeks and you're going to take them eight and a half weeks, well, that means you're going to need so many square foot of pen space per day. And you can work out this problem.

And then you've got to allocate-- for us, if it's good weather, by the time we hit the end of the field and run two batches of birds, I can reset the pens at the top of the hill and the grass has already absorbed it. And what you'll find, too, is that the more you do this, the more-- it's kind of like a snowball rolling down the hill. The more biologically active and stimulated your soil gets, the faster it's able to like suck up those nutrients.

And the more earthworms come in and they start pulling manure underground, and getting rid of it. The dung beetles come in. So the longer you're on a field, the more capacity that field has because the sward, or the grass thickness and the grass species composition get denser and it's able to absorb a lot more manure faster.

OK, great. Fair answer, I like that. So two more questions and then I think we'll have to finish up. You mentioned keeping the layers in high tunnels over the winter and I was wondering how many birds per tunnel or per square foot you plan on for that?

Yeah, I know we have-- we get our tunnels like the clear stand and the fairly inexpensive tunnels. And they're 50 by 20. And 250 hens in there isn't a big deal. With I would say you at least want to give them three and a half or four square foot of space. And then we also put like perches and things that they can hop up on. They have their nesting boxes so they can kind of get out.

And then if you can, you can actually build up kind of like the pop holes that we saw on that when organic confinement operation, if you remember back there. If you set pop holes out and just that electrified poultry netting, and you can day range them in nice weather, too. I'd say start off small and don't start off with 2,000 hens. Start off with 100 or 50 hens and kind of get a gauge for how they'll act.

And the more things you throw in there, like if you can find old rotten hay bales and put them in there, you may be setting yourself up for a weed problem. But the hens do a pretty good job of getting all the weed seeds. But if you can put those in there. And that also gives them, or the deep litter, even just the wood chips. As long as they have something to scratch, and kind of things to express the hen energy and twerk, they like to be kind of jerks to each other.

As long as there's something for them to do, they're not really that mean to each other. But it's whenever you get a lot of hens and they're bored, that's when things start getting ugly.

OK, one last question. You mentioned that ATTRA has a number of resources. And I was able to dig up a publication that you authored. So ATTRA, A-T-T-R-A, if folks want to Google that and look up and info on pastured poultry. Are there any other resources or just a basic book that you would recommend to folks who are just getting started?

There are. First thing, there's actually a pastured poultry trade magazine, and it's APPPA, it's A-P-P-P-A And it's the American Pastured Poultry Producers Association. They have a magazine called *Grit*, that comes out six times a year or so. It's very inexpensive. And then they also have a listserv when you sign up, where you can ask questions to people like me or other growers with a lot of experience.

And a lot of authors that write about chickens are on there, too, like Harvey Ussery, that kind of stuff. So APPPA is an awesome place. I think Mike Badger heads up recruitment, or membership. So shoot him an email. It will be the best $20 or whatever, $30, $30 it is a year. If you're interested in this, it's some of the best money you can spend.

They've also got a book called *10 Years of Success and Counting,* or something like that, which is a collection of the past decade, like the best APPPA articles. And it's I think several hundred pages long. It deals with everything.

And then the ... Just the standard, *Pastured Poultry Profits,* Joel Salatin's book, which gets a lot of people to kind of drink the pastured poultry Kool-aid, so to speak. That's a real good book. Joel's very opinionated, for good reasons.

But there's not tons of resources. And honestly some of the best ways that I've found are finding growers that you like, like say you like what you heard here, our Facebook page is real good. I actually have learned quite a bit from Facebook pages.

We train veterans from the wars in Afghanistan and Iraq out at our place. So a lot of times those guys, when they get to their farm, they forget something or whatever. And they'll look at pictures of our pen design and it's a lot easier to talk about when they find the picture. And how do you do that brace, or do a watering system, blah blah blah?

So just doing some internet stalking on Facebook pages, or that kind of stuff like ours, is great. *Pastured Poultry Profits*, but definitely check out APPPA. I think it's apppa.org. That's probably the best source of pastured poultry information out there.

Excellent, well, Spence, thanks again for taking the time to join us today and being patient during the shut down so that we could reschedule and get folks on. And I think that'll wrap up today's presentation. If folks have questions,

my information is available on conservationwebinars.net. And you can email me, and hopefully we can get back to you. That is a wrap. Thanks everyone.