

REALTIME FILE

EVENT: USDA: PREVENTATIVE HEALTHCARE IN ORGANIC DAIRY PRODUCTION

DATE: JUNE 27, 2023

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>> JENNIFER RYAN: Greetings welcome to today's webinar entitled Organic Livestock & Conservation - Building Healthy Systems. My name is Jennifer Ryan, and I am a Natural Resources Specialist for the Natural Resources Conservation Service's, East National Technology Support Center. I will be your host.

I want to take a moment to remind participants that the use of tradenames during any of our webinars is for information purposes only the mention of a tradename does not constitute a guarantee of the product by the US Department of Agriculture picked nor does the imply endorsement by the department or the natural resources conservation service is over comparable products that are not named. With that we will get started. At this time, I would like to welcome Marina Oriel who is in Organic Specialist, NRCS and Oregon Tilth. She works to provide technical assistance and training to NRCS staff on organic topics. Marina you may now begin.

>> MARINA ORIEL: Thank you. I am very excited to introduce our speaker today. Dr. Guy Jodarksi is based in Wisconsin and serves as the Lead Veterinarian, CROPP Cooperative/Organic Valley, La Farge, Wisconsin. He works in organic and sustainable livestock practice with an emphasis on dairy cattle health. Dr. Guy Jodarksi has been in practice for over 35 years per he serves on the One Health

committee for the medical Association. He is also a member of the American Association of bovine practitioners and the national mastitis Council. With that I will turn this over to you Dr. Guy Jodarski.

>> DR. GUY JODARSKI: Thank you and good afternoon. Is the audio, okay? The sound?

>> JENNIFER RYAN: Yes.

>> DR. GUY JODARSKI: Okay great. Welcome and I am happy and thank you for the invitation to speak with the group. So, for NRCS I wanted to say a few words about NRCS. Mainly, I am very pleased that NRCS is paying attention to organic agriculture, and I am happy to see that. I would like the thing NRCS for the educational support and financial support for meetings that have happened in the last several years. We have in Wisconsin, what is called an RC ND Council which is research, conservation and developing councils and they are involved with grazing and some of the funding has gone away for hosting those pastor walks in meetings and NRCS stepped in and helped get the meetings make them happen. I appreciate that. We work together in so many ways and I think ultimately, we will talk today. Health starts in the soil. It is good to see those from NRCS come and talk and I love the rainfall simulator and what that shows of different types of ground, and so that is that.

So, one thing I would do is that I would read, what I found on the website for NRCS, it says that in two regards with organic agriculture, organic farming is an ecologically based system that relies on preventative practices for weed, insects, and disease problems. It uses non-toxic methods to manage problems if they arise. And improves the natural resources of the land including soil and water quality. I thought that is a really nice description. I like it.

I am looking at the survey, have you worked with organic livestock grazing yes over half. And cattle are at 80%. If we could put that into the background that would be great.

So, if you've questions as we go along, you are welcome to ask we will get to those questions at the end also.

Let's go over an outline of today's topic. A little bit about organic farming we have mentioned that already. The NRCS definition which lines up with a lot of other people's thoughts. I want to talk about the relationship with Ag in comparison. We will talk with the USDA National organic program to pick up the rules and regulations of the system we are under in the US. I will talk a little bit about the tools, what is allowed for veterinary use. I work mainly with dairy cattle but other animals as well. So, in general we'll talk about that. It's really all about prevention. We want to stress that highly. I will give you a little bit

about what people use when there are problems but really when we have a healthy system we do not have as many problems and that's what we want to talk about. The benefits of grazing on health, the animals, health of the land, health with people. We will talk about that. I would like to talk about parasites because parasites control that is a good example of how we can approach a holistic thinking to health. For the animal health challenges and not just think about what the inputs we give something to treat. How can we do that? It's a good example of how good holistic management will get rid of the need to use anything. And then we'll finish up talking about health in general.

So, organic farming what is it? I like to start off with what it is not. I would say it is not input substitution and what I mean by that is it is not finding alternative inputs so let's say there is an infection instead of using antibody! You use herbal remedies. That exists in we use that. But that is not what the focus should be. The focus should be on preventing or preventing infection in the first place. So, we do not need antibiotics. It is not neglecting things and letting them go. Sometimes people think that maybe organic is just letting it take its course with nature.

We want to support things and be involved in that and not just be passive. So, it's a new way of thinking, it is fresh and innovative, and it involves close observation of what is happening, being in contact and having an experimental mindset. I tell a lot of organic farmers that you are running an experiment to form, we have principles that guide us. Conditions in different regions are in different regions in the different years, they could so we always have to adjust. We have to be in touch. That is what I think about organic farming.

How do we tie in with agriculture? I think there is a lot of common ground. All the farmers and ranchers, and some use the term producers. I try to be careful not to overuse producers. There are some good writings and opinions about producer being an industrial word like a steel producer or an oil producer. I know we use that in agricultural, but I do not see what is wrong with farmers and ranchers. We have a lot of shared goals. Values and challenges as well. So, food safety, producing high quality food, all people in agriculture, which is what we are about to make safe, wholesome, high-quality food. Environmental stewardship and making sure that we take care of the land, and everyone is concerned with that. Good animal welfare, we have to make a profit. That is part of sustainability is profitability. And I think most people would like to have a positive relationship with other people. Most people really want to get along with others. We have challenges that everyone has to adapt to change that is always happening.

We have cooperation as well this is one that we should key in on because we are taught all the way from grade school about how to compete on different levels. But really, we do not get a lot of teaching and instruction about cooperation. I think the multifaceted problems that we face in society enter at the really will need cooperation to overcome.

This is the USDA organic symbol. This is the seal in order to put the seal on a product, a food product that would have to be produced under the national organic standard. That production is supervised by a certified agency. That would send an inspector once a year to the operation to make sure that all the rules are being followed.

So, let's get specific. So, the word certified organic means that it is produced under the system and following the rules. We have had an inspection. The inspector has given a report to the certifying agency, the certifying agency then decides whether the operation is organic. That has to happen in inspection has have to happen every year. All the input has to be recorded. And then as first room making around the program, the NOP there is something called the national organic standards Board this is an important committee of 15 volunteers. Some are farmers and ranchers, and some are from the organic industry. Some are just environmentalists. So, it's a mixed group. They would look at different questions about the rules. So, if the rules are not set in concrete they evolve. They meet a few times a year and they look at the materials being allowed and decide whether they can continue to be or not. That is what is called a national list so there is a national list in the Federal Register of synthetic inputs that are approved and what is prohibited. So those things would be reviewed by the NOSB and recommended to the NOP if there needs to be change. So, all this falls into the Department of Agriculture USDA. So, the FDA also has a say because we work with food. So, FDA can oversee what the NOP says from a substance the FDA has to go along with it. They are in Health and Human services, which is a separate branch.

State officials could have different rules about the labels like certification or they are more restrictive of a few things than others. But it's a national program, the USDA, and then there are a lot of alternative labels. You will see labels like grass fed, anti-biotic free, natural, regenerative. It can be difficult to know what you're getting there. I will pause at this moment and see if there are any questions?

There can be fears about what happens when health problems arise if there are tools I cannot use. So really, with experience it is that the people that go organic because the system will talk about what is some of the things that we do, they have less problems. There is less need. Even if there is some

problem, we can address it with some of the specific materials. Mostly vitamins and minerals are allowed, vaccines are allowed, there is a group of synthetic materials and will talk about those.

I mentioned to nationalist picked a nationalist would give the specific list of the synthetic materials that could be used. Natural products are often used like herbal remedies things that you would grow in the garden. Those things are generally not regulated. If it's an in all that is ill you can generally use those, and that is what that slide says.

Natural materials are allowed, and synthetics are prohibited unless they are on the list. The approved list and NOSB have to say that it is okay. The NOP has approved it. Then it is published in the Federal Register are that is the general outlook. Which do we mean by natural?

These are just some examples, it is interesting that farmers discover and develop some of these things pick one of these conditions that we see in grazing cattle is pasture bloat that this is when we raise legume that are lush, alfalfa, clover, etc. We can have a problem where the cattle will bloat. The reason is that the lush legume is rich in compounds that make a foam. The room is always making foam and gas, the cow could burp that out, but if it is determined to foam the cow cannot burp and that is a big emergency. That is to get the foam to go away. To get something to dissolve the foam and what people have discovered over time, and observant former who made maple syrup noticed that when they had people serve syrup and it foam, they would put a pat of butter on a huge container in the foam will go away. And maybe some of you that cook knew that so you would put oil or butter when filming. And it goes way. So, for a cow when blokes, we would use half a stick of butter in a cold state like frozen, so its firm and use something to give it to them in the bloat would cure. Another example is sugar. Sugar by itself is actually antibacterial because it drives things up in it takes the water out of the situation. We learned this one time speaking with farmers in Wales in the UK, and woman brought this up that she used the sugar cubes that you would put into your coffee and put them in the uterus to retain fetal membranes and placenta. This was interesting because I have had people call that do not have anything else and they will try the sugar cubes and we have gotten good feedback that sugar works. You take a handful of sugar cubes and push them through the cervix and actually use it as an antibacterial. It's very simple.

There's also apple cider vinegar and molasses for ketosis, they are natural substances. If we had a cow that had a condition of ketosis, that is a negative energy balances, and they needed energy we could drench them with apple cider vinegar and molasses. The certifier will be happy if those inputs are

organic in nature. But actually, the way the rule is, natural substances are allowed. If you have an emergency and you have to treat an animal, you do not have to use organic vinegar. Or organic molasses. You can use it regularly. You cannot feed those things to organic cows. Anything that goes in the feed has to be certified organic.

That may be a little too much detail but that is natural substances. As far as the list for synthetics is concerned, like I mentioned. Vitamins and minerals are allowed, vaccines are allowed, electrolyte solutions are allowed, calcium is important. Cows when they have their babies may be: On calcium so they need infusions. They could die if they do not get it in that is allowed. There are things like dextrose which is some sugar. Aspirin is allowed. Anti-inflammatory, pain relief, and disinfectants like iodine and alcohol. Flunixin, xylazine, etc. We use it for pain control or sedation. If an animal needs a surgery or it is injured for animal welfare, we can use some of these drugs and then they would have extended withdrawal times.

This is basically from the federal registrar. I pulled these as examples. So, this drug flunixin is a strong anti-inflammatory and with the NOP requires is that you have to withhold the withdrawal time with wheat or milk is two times for conventional. They'll be actual regulation put on a lot of these things. By the NOP. So Xylazine is a tranquilizer sedative, and it has to be come from a licensed vet in it has to be in an emergency. There has to be a meet withdrawal in a milk withdrawal. The NOP will put additional restrictions on some of the synthetics.

Here's an example, let's go through this. If cattle have a respiratory infection, this is common. Feedlot cattle or other. Instead of using an antibiotic they will use an antibacterial tincture like garlic is the most common. There are others out there like gold or steel. Or oregano. An antibacterial tincture. There's an anti-inflammatory, vitamin C we use a white bit it's an antioxidant. And that helps to counteract the talks of the effect of pneumonia. There are other things allowed as well as some specific products like aloe vera. That is herbal and anti-inflammatory and supports the immune system. That would be an example of if we had the problem, we could have an alternative. We are covering for basically anything that would normally be used for that.

That is a lot of information, any questions?

>> MARINA ORIEL: We did have a question come in. Is Ivermec allowed?

>> DR. GUY JODARSKI: No Ivermectin is not allowed. The two that are allowed or flunixin and xylazine. So, safeguard, moxie decadent, polys action, those would be allowed if we had a bad parasite situation, and it was not fixable with herbal. But I will go to parasites in the end. But yes, Ivermectin is not on the list.

We talked about pneumonia treatment, but prevention is important. Prevention is where I think we need to go with these things. I would just say that air quality is important. Yesterday we are having smoke in our area with the fire from Canada and air quality is an issue. Air quality makes a big difference with livestock. This is a good example is the Cavs being raised in a barn, and they have deep dry bedding, good ventilation, and instead of having a curtain that would be solid, these folks used to have a solid curtain. This is Wisconsin and we are looking through this screen here to the north. This is oriented to the south of the feeding, and the late fall in November, the winds really come from the north. Sometimes not. And it blows and so they would put the curtain up and when they would pull the curtain the cabs would cough. They would not get sick, but they would cough there was an era Tatian. When they switched to a shade cloth, there was an 80 percent coverage shade cloth it allows air to flow through but not a draft. We stopped the heavy wind and the coughing stopped as soon as they put that up.

The environment is very important for vaccination. We can use vaccination and the colostrum for baby calves, nutrition is important. Parasite control for calves in particular they but parasite called coccidia is an immune suppressive and it takes the animals resistance down. We need to control that. That's the whole topic. When we talk more about prevention, we have to think about all the things like bio security, bringing new cattle and are they isolated? So, prevention is much more rewarding than treatment. That's what I try to preach. Is prevention.

We are talking about being holistic. In looking at the whole system. We will get into this now a lot more but really, we need to always take this holistic approach and notches look at individual parts in isolation. Marina, are there any questions?

>> MARINA ORIEL: No, we can continue.

>> DR. GUY JODARSKI: I'm sorry?

>> MARINA ORIEL: Go ahead.

>> DR. GUY JODARSKI: Oh, I see it here could you discuss livestock? That's when talk about. So, I love Fred and I talked to him, and I've spent time with them, and I believe a lot of things he says. I know he is right. Yes out on the range, cattle out of buildings we have less respiratory issues. The point, very good point.

In grazing ruminants, ruminants in general, these are the things that we find promote health. To prevent disease. I was in conventional dairy practice for 12 years and we had a lot of problems that were preventable. These are the three most important factors, a high forged diet, grazing, soil mineralization and biology. These are not in a hierarchy or priority. They all work together. They are a triangle.

What is the high forge diet? It's less grain. This is a problem with the livestock systems and ruminants at this point. Both beef and dairy cattle. They are giving a lot and fed a lot of concentrates in grainy, in these animals really developed in nature as forage eaters high-fiber diets. We like to limit grain to less than one person of body weight, so we do not like to feed more than ten pounds of grain per head per day. A be one person. Yes, of good quality forage any of the graze. This shows a cow that is shorter and wider. A high forge diet is very healthy for the ruminant. There are a lot less problems. With the NOP, the rule says there is a grazing role. We have the grace to cattle for at least 120 days. That could be longer if you live in a place where you see it is taste on the growing season. So, places with a longer growing season should have longer than 120 days per that is the minimum. During this time, the animal must be using at least 30% of this diet from the pasture directly. We find the inspections look at how much cattle are being sold. How much the consuming but the stock radius and so forth. It is an estimate. And needs to be over 30%, it's an average. If we had 50% and 10% for another month it would be an average. You document for each class of livestock that you have. In calves before six months do not have to be grace, but we encourage that they should be. We see a lot of ground conditions this year. There may be exceptions and that will depend on the declarations from the USDA. And the certifier has to say yes. That's the grazing rule.

Grazing and the effect on health is very important. This was a UW Madison study done several years ago and it compiled data from several years. And basically, it showed that these are confined adult very cattle on the research farm. It's in Wisconsin. They would raise the pastures on heifers on pasture and those raised on pasture produced 2000 more pounds in milk average for lactation. So, there was a bump in performance. This study also showed how grace and grazing management affect the pasture and it affected how well the animals performed. So grazing management is very important.

This is a similar study in Minnesota. I like this one because it's healthy and there is condition and dairy cattle called displaced abomasum or twisted stomach, and it really is something that comes out of heavy grain feeding. It comes out of not enough exercise. We do not find this much with dairy cattle, we found half as many of the displaced abomasum. 60% less calving difficulty. In the Holstein breed there is less in that breed. So, we reduce that by 60% and that the exercise and moving around. Better muscle tone for the animals. That shows up with less skeletal injuries pick less problems with leg injuries and being able to get up and all those things. Exercise, the fresh air, the green fields, all of these are good for your health.

This is a summary about grazing, if you do well, if you manage well, you have high quality forage, demise disease, increase beneficial nutrients in meat and milk, promote healthy soil in sequestration. The Omega fatty acids are more beneficial, there are more antioxidants. We see these in the pasture, milk, and meat and what we want to talk about is that this also has healthy soil. If you do this right, we can actually sequester carbon and for the farmer's sake good grazing improves those profits.

Let's get to the soil, this is where a lot of you work. This is the interface. This all starts here in all health starts in the soil. If people have not been thinking about life, this is changing a lot of soil health and soil biology. 20 years ago, it was all chemistry, physics, soil health. Soil is a living and breathing community. There are all these different Classes of organisms. We need to treat it that way. The concept of life in biology. It is really where we learn a lot about performance and crops and livestock. This slide is one of the most important. You folks have probably seen something like this.

Basically, root structure, a root structure with plant type. The Prairie soil, this is Prairie plants, but any perennial system, is any diverse perennial system will have many types of plants per if it is perennial there will be root structure that develops over multiple years. This is really important. If you look at the man on the right-hand side standing next to the experiment station, I believe this was Kansas. I do not know if this is Indian grass or switchgrass, this man is six-foot tall. So massive root structure. In over his head you have the annual wheat. You can see the puny root structure in the annual. When you look at annual crops sometimes, they are a field of corn or whatever looks impressive. What is going on below the ground is much less impressive.

We are about encouraging perennial systems and over systems and using these grazing's overtime. We know that we can increase carbon flow. We have photosynthesis with the sugars going down to the roots and feeding them microbial fungi and this is how we sequester carbon. This is one approach to climate

change. This is good grazing management. This is what we try to do. I am sure most of you folks are familiar.

Someone said I believe they are both wheat. They are doing a lot in Minnesota, but I do not know. To me it just looked well, I will have to go back and find out where that came from. Anyways, perennial versus annual that's a big thing. And then there is a question.

>> MARINA ORIEL: Yes, I will read this not only do the pasture dairy cows produce milk, but many people also suggest this is healthier can you elaborate?

>> DR. GUY JODARSKI: Yes, that was what I was talking out was the Omega fatty acids. So, omega-3 and omega six both use essential fatty acids and many those. Omega-3 comes from grass fed animal products or fish oil. Omega six comes from grains in corn and soy and other canola oils are rich in omega six. The problem with the American diet is it's based on processed foods using a lot of grain products. So, omega six can be very high. Omega three is anti-inflammatory and omega six is pro-inflammatory. We could talk about that for quite a bit. That is a huge difference. Things like CLA can be anticancer and anti-inflammatory. There are things like antioxidants. Which I think we are learning about some of that stuff and scratching the surface but so you mentioned taste. So, we have a disclaimer about trademarks. But put butter on a plate and put Kerry gold next to it. Irish farmers are in seasonal pasture-based systems and their cattle graze on grass. It is not organic but produced in a grazing fashion.

I want to talk about parasite management. To do that let's talk about biology. So, there are a lot of different worms that are parasites. Their job is to get into the system. They make more worms by laying eggs. Most of the ones that we think about are in the digestive tract in the stomach or intestine. So, in cattle, sheep, etc. They would be sucking nutrients out of the animal system and making eggs and passing those eggs into the ones which come out and maneuver. They come out in the manure, and they fall down the pasture. Then we'll meet turn the pointer on. So, the eggs come out of the manure they go on the pasture, they become larva and hatch into worms, they go through a lifecycle. This takes time. It depends on the weather. About a month is the minimum. That they will mature. Once immature they will go up on the blades of grass. This is a blade of grass. In a dew drop. So, you were looking at these little white hairs those are the baby worms. When the animals are in true development of bigger worms, we start the cycle over again. That is the lifecycle. Can anyone, just thinking about the picture, this is a typical situation. The cattle that are younger are susceptible. They are put on the pasture not rotated. This is continuous grazing and grazing short. So, the problem is when you graze short, you get a lot of

worms. These worms are very sensitive to heat and sunlight. As the dew comes off the grass in the day heats up, they migrate close to the ground. To stay cool. So, if you allow some residue, if you have 4 or 6 inches of residue, you will not pick up parasites as much. If you overgrazed, you get a lot of parasites.

The solution is rotation. This is challenging to farmers because they are rotating cattle and it's a job that takes more land. The principle is you have to move the cattle. How you accomplish that is up to you. These are all different systems. This is an enclosure. This is one my favorite systems the enclosure. This is putting hutches out on the pasture and moving hutches along. This is temporary net fencing. When they chew it down to 4 to 6 inches. They open it and make a new area. When they start doing this, they notice a huge difference in how they almost perform.

That is parasite control. This is the same, 20 x 20 enclosures. They raise about ten heads and each enclosure. With the babies on milk, they move it once a day as they graze more. They move it twice a day if they graze more. It's a simple system to prevent overgrazing. They do not have issues with parasites. So, they do not use natural dew warmers are just a good system. Milk itself is antiparasitic.

This is a summary site for what we do with parasites with organic holistic management. Nutrition and milk are important. Grazing management is the big one we talked about that, do not hurt the dung beetles. This is why Ivermectin was outlawed, it was tough on dung beetles. We need dung beetles to recycle the manure. And that would break it down so the manure, remember, the worms are laying the eggs, and they are going out to the manure. So, if that goes way faster the home for the parasites and we do not have that worm burden.

So, chicory is an example of a plant that is antiparasitic so diversity in the pasture. Genetic selection if we have 20 calves and one that is worm in the system, then it's not the system we have one calf at a 20 may be the calf should go. That is what I mean by that. And we have this emergency treatment we talked about earlier. If we have to get there in if we have bad management and we have a worm calf, if you do that, I like them to take a fecal sample to show that they actually have worms. To document for the certifier. And then you have to say what is called the organic systems is to say how you will prevent this. You cannot do emergency every year. You have to say how to change the system to relieve that. The good news is we have very little problems with parasites.

Marina, are there any questions? To shift gears.

>> MARINA ORIEL: There is a question on could you discuss how soil health and water quality in soil infiltration?

>> DR. GUY JODARSKI: Yes, we'll talk about that. So, soil, health, and water quality. So, let's talk about micro biomes. You have probably heard of micro biomes. This is a term that is a concept. It's a very exciting area. You have probably heard the saying that a handful of soil has more organisms than all the people on earth. On the right-hand side of the picture there is a lot of bacteria, and it is very mixed. Every environment has its own mixture of organisms. So, this is a busy slide. The plants have micro biome in the soil has a micro biome.

There are bacteria inside the plant leaves. There are bacteria on the plant leaves and there are bacteria in the air. So, the point is we need all these micro biomes and are they really that different? Where is the root micro biome? They are all interacting. We categorize in organize things in put them in boxes because we are people. But really, it's a dynamic open system. These things are all interacting. There's a lot of complicity here. There are really interesting things. This is finding over here that we see a big change in the micro biome.

That is from the practices, the way we have compaction, Utah while water, that's important. So, we want the open soil, porous space, which does not happen with compaction. It does not happen without microbial life, we need air, and water, and balance. So as far as what it does, too good healthy soil, going back to the rainfall demonstration. One of the striking things was the first number so that I was blown away. They took out a piece of ground from the cornfield and a piece of ground from a pastor that was maintained well in the put it in should have 42 inches of rain. In it was just stunning to see the water runoff. This was actually a piece of ground, this is real. This is a piece taking out of the field. Nothing is infiltrating into the soil.

The other one the water was going into the soil and coming through the roots and coming out the bottom of the different jars and they are clear. So, I think that is where this all ties together. This study actually showed that we are changing micro biomes and it is having an effect on human health. So, the soil micro biome affects plant micro biome and the animals. It affects quality health. That is the important point. These things all work together.

This is one of the things with chemicals because with chemical inputs, they are really shown to kill a lot of the micro biome. So, if you start breaking down parts of the systems it's not very healthy.

So, the ruminant connection is where we connect with the grazing, the cattle of course, can digest the cellulose in the fiber. Because of the bacteria in the micro biome. The micro biome is actually one makes this possible. To make these indigestible things into beautiful food that we can eat as people. The amounts are staggering. Basically, this calculation shows the big number on the bottom that is 1 quadrillion so with billions, trillions, and that's quadrillion. Each cow has their own micro biome and the hurt in the pattern in the region. They have patterns. This is really important for adapting through the grazing is with the micro biome is doing.

A few last thoughts. Wendell Berry said it best about health and that it is really the concept is wholeness. The word health is in the family of heel, whole, wholesome, hollow, holy holistic. It's about unity, things working together. That's what health is. When we have breakdowns, it's when things break apart. They are not working well together. On the right-hand side is a subject the universe is a communion of subjects not a collection of objects. All these beautiful insects are very impressive but none of them exist in nature on their own. If we look at the Monarch butterfly or the new England asked her, there is a relationship. There is a community going on and they feed each other. There are micro biomes interacting. So, if we want to have a healthy system, we have to have all the parts working together.

So, in summary, we have talked about organic livestock farming in general. The USDA program. The tools. Prevention of disease is key. Good grazing promotes health. The soil, the plant, the animal. Parasite control was talked about. And health is everything working together. So, let's go to questions. I am not keeping up with the chat so Marina if you want to paraphrase something.

>> MARINA ORIEL: Sure. Folks feel free to type any questions you may have into the chat. We have a question. Could you talk about how much soil health, soil carbon and soil infiltration are due to the remaining dung beetles? Dung beetles are vital to soil health and one of the reasons that organic livestock are better for people in profits.

>> DR. GUY JODARSKI: Yet there is a whole book... [LOST AUDIO].

>> JENNIFER RYAN: I think we lost your audio.

>> JENNIFER RYAN: We have lost your audio.

>> DR. GUY JODARSKI: Can you hear me?

>> JENNIFER RYAN: Yes.

>> DR. GUY JODARSKI: Okay. Are we connected?

>> JENNIFER RYAN: Yes.

>> DR. GUY JODARSKI: Am I there?

>> JENNIFER RYAN: Yes, we can hear you.

>> DR. GUY JODARSKI: Okay. I cannot hear you. I do not know why. Can you still hear me? I am sorry. So, the question was about dung beetles. There are different types of dung beetles and some of the best ones are the ones that live in warmer areas. This places like North Carolina or even other areas, the big ones are called tunnels. And they go down into the ground. They roll the manure ball away and they lay the eggs in that, and they incorporate in drill down into the soil. Making pores in the soil. There are little pieces of manure down and they recycle nutrients. So that is an overview of dung beetles.

>> MARINA ORIEL: Yes, the next question is do these grazing practices of dairy also work with goats as far as worms?

>> DR. GUY JODARSKI: Yes, goats and sheep are more difficult because they have a humongous worm, the barber pole worm. You have these techniques and also some of the plants, it's an important question. Goats are browsers in browsers help with the goats. It is tough with sheep and goats in some situations. Yes, the small ruminants or challenge.

>> MARINA ORIEL: So, among the producers you work with what are some of the biggest challenges that they experience? In the pasture?

>> DR. GUY JODARSKI: This is the concept of One Health. One Health means everything working together. This actually starting with veterinarians and medical doctors talking to each other because there is an overlap between the two systems. There are diseases that go back and forth between people and animals. That all started working together in then adding an environment so really this is an important part. If they take care of the environment. To foster health and in all the levels. This is a committee I work on called One Health. If you put a surgeon for One Health, you will see a lot of stuff about this. It is a concept that Linda Berry was talking about but it's more of a refreshing and different areas. So that's whereas collaborating with you folks at NRCS that's part of One Health two. You all are

out there helping people do the practices. That is very important for soil health. That is reflected in animal and human health.

What are some of the biggest challenges experiencing pasture management?

Drought is the big one. We cannot do a whole lot about that. We have seen flash drought in the Midwest. That is difficult. People manage well, have let the pastures grow and then they do not graze all the way down. So, when the plants stop growing, they stop moving the animals. It leaves that residue and when it comes back and rains, they come back. The other thing about pasture management is that people go back and forth as to whether you need to renovate. So, we really want to get more of the perennial, and we do not want to tear pastures up and receive them all the time. That's another thing that is a big discussion. It depends on the site and soil type.

What are resources for organic livestock farmers? Yes. What is it called? There are grants what is the outfit called that has all the publication? Sustainable agriculture research education is familiar with that? They have a lot of things organic, livestock also. That would be any of your regional, organic conferences that would have livestock people there. A lot of the conferences have vegetable growing years and things like that. The Midwest, the East, there are a lot of conferences that would have some things on livestock. A lot of books out there. Acres USA is a big website. If you are a real scientist, but just doing searches. There is an organization in Wisconsin. Used to be called Moses. There are a lot of good resources there as well.

So, One Health concept question. So, One Health started off as my awareness was about 10 or 15 years ago, veterinarians and medical doctor started talking to each other a little bit because one of the things in training is that medical doctors do not get a lot of parasites. Humans have such clean lives they do not have a lot of parasites, but they are exposed and there are conditions where dogs and cats can put parasite eggs into sandboxes. And people can catch that. So, there's a discussion between medical doctors in veterinarians. We started going back and forth in that is, where it started. I am not sure who put the environmental part into it but that is very important. Of course, everything relies on the environment.

I am not sure what else to tell you about one's health although there are a lot of people coming from a lot of different angles. Actually FDA, has a big part. They have a big One Health website. Go into look at that. They were involved a lot with the COVID-19 outbreak. Because COVID-19 over spilled into animals somewhat. And we were concerned and watching the avian influenza. That is part of where it started.

We would like to see it brought in and become more about working with systems in making everything healthy. As far as agriculture goes. Okay.

Last question. And now we are out of time.

>> MARINA ORIEL: Thank you so much let's wrap up.

>> JENNIFER RYAN: Thank you some much on behalf of USDA and the Natural Resources Conservation Service I wanted to say thank you to Guy and Marina for providing an excellent presentation today. Thank you again to everyone attending today's webinar. Participants do not forget to provide your feedback about the webinar and if you selected to earn CEU, please return to the open browser window to continue the process offered by Step 2 at [conservationwebinar.net](http://conservationwebinar.net). This concludes the webinar presentation. Thank you everyone.

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