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Resilient ranching workshop: food chain and soil health

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BEGIN TRANSCRIPTION
00:00:00:00 - 00:00:31:21
Unknown
Of the reasons I get so excited about soil is seeing the impact in rural communities of when we start to build soil health. Those of you of that read the book, you'll see in the final chapters, I started to realize as I'm talking to ranchers and farmers about how a focus on soil health actually transformed their family life, like it's transformed everything for them because they've started to see the world as a world of possibility or opportunity, instead of who am I going to kill today?

00:00:31:23 - 00:00:52:12
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You know, it's gets a little bit depressing. I was doing a workshop on the High Line. I had 30 conventional cropping guys. It was no women. First time I'd done a workshop where there was no women, and I said to them, who wants to see their kids come back to the farm? No one did. At 30, people was real weird.

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And then this big gentleman, a little look like your fine self, stood up at the back of the room. But he had a baseball cap on and he said. We have so many inputs. There's so many costs. I don't know what's happening with the weather and I'm so stressed. Why would I want my kids to come back to this?

00:01:12:25 - 00:01:35:20
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Right. And it it was so impactful for everybody. But what I see is we start to shift what becomes possible in landscapes when we start to build soil health again. Right. Can we reduce those inputs? Can we reduce those costs? Can we have zero animal health bills? You know, the ranches that I see chasing pinkeye around like that looks hilarious.

00:01:35:20 - 00:01:55:12
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Let's do that all summer. You know, I can think of better things. Or chasing hay all summer, right? That's finding ways to actually build resilience back into these systems. And it brings back creativity and joy

and fun. And I just love it. I absolutely love working with people that have been on this track for a while, because they have a spark.

00:01:55:15 - 00:02:18:00
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But I feel like agriculture's lost, you know? And it's big AG that's done it in my mind to take the joy out. But a big part of this well-being comes down to nutrition. Right? And what are we putting in our mouths? What are we doing to restore our gut microbiome? And what's fascinating to me is the the linkages between soil microbiome and the human gut microbiome.

00:02:18:01 - 00:02:39:08
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So we're going to go down the angle of human health right now. If you're happy to do that. And so I want to talk about nutrition. I want to talk about what's possible. Right. So I've had this statement made to me that, the agriculture.

00:02:39:10 - 00:03:00:22
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There's no connection between human health and what happens on farm. And I've been in meetings with agricultural scientists who have walked out of the room stamping their feet like little babies. How we grow food has nothing to do with human health. Like, oh, that's interesting. One of the scientists said we're living longer. I said, no, no, we're dying longer.

00:03:00:25 - 00:03:21:13
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Right? There's a difference. You just drag it out, right? I think in America, by the time you're 65, you're on 2 or 3 medications, the average. None of you guys, the average American out there, right? Everybody here. What I make up for everybody. You make it. You're on more than three medications. Okay. All right, so Greg's got you covered.

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Okay, so there's some interesting work, and you can have a look on. The World Health Organization has food composition charts. So if you're interested in what has happened to food compositions, we have more yield. But we've lost nutrition. So we have here in the US what we call the hidden hunger is that you're not getting enough trace elements.

00:03:44:05 - 00:04:15:11
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You're not getting the same nutrition that we did 70 to 120 years ago. So since 1940, based on these charts, things like vegetables have 50% less sodium. Fruit has 30% or, 19% less potassium, 16% magnesium, a 60% reduction in zinc in vegetables, and a 76% reduction in copper. What do you need that for? What do we need copper for?

00:04:15:13 - 00:04:45:01
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Thyroid function. Yeah. For what? Thyroid. Not that anyone has any issues with thyroid. Right. So if you hear from turning gray, I, some of you know Graham site, he, he read about how a hair color, like turning gray is a copper deficiency. So he took a tablespoon of copper sulfate. Don't do that. Hospitalized. Yes. Okay. So we want to get copper back naturally into our food.

00:04:45:04 - 00:05:10:17
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Okay. So we've seen these reductions just in fruit and vegetables if you go to light week right. Like, you know we grazing cows on grass. It should be good. So this is a historic, essential mineral depletion. So from 1940 to 2002, this is 20 year old research. I can promise you it hasn't got better. Okay. So notice that in every industry, from vegetables, fruit, meat, cheese and dairy.

00:05:10:18 - 00:05:49:16
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So this is dairy. Dairy was the beef, the light pink is beef. All right. So notice that. In beef, even though we market beef based on iron, that beef has lost 50% of its iron. 55% of its copper and 50%. That's iron calcium, 30% of calcium. Right. We've lost that nutrition. You know, when you talk, sometimes your grandparents will say, how an apricot tasted when they were a child.

00:05:49:16 - 00:06:11:12
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And it was so incredible. Like the flavor was amazing. And you're like, it's because your taste buds are dead, Nana. I'm sure that's what you said to Nana. Is nutrition, these trace elements, the enzymes and the things that come from microbiology is what gives food its flavor. All right. So we've we've created these very flavorless. It was a shock to me to come here and try to eat fruit and vegetables.

00:06:11:12 - 00:06:34:23
Unknown
I had to force myself because your fruit and vegetable has no flavor unless you're eating at a Nancy's garden. Good garden. But we've lost all that flavor because it's microbiology that give us the flavonoids. Right. It's funny talking to the viticulture industry who's so interested in terroir and soil and all of that. And I'm like so what's the flavor profile of glyphosate.

00:06:34:25 - 00:07:04:16
Unknown
Because that's what you're doing right. They don't think I'm very funny. So it's fine. Yeah. So they did, Dairyland Laboratories did some testing comparing 19,000 feed samples to 300 regenerative properties. So places that were really focusing on nutrition and soil health. And from those samples, they found that the regenerative had a 6% increase in crude protein, a 47% increase in calcium, increases in phosphorus, potassium and sulfur.

00:07:04:19 - 00:07:28:09

Unknown
Okay, it's all about what we're doing with soil health. So you guys read Sacred Cow by Diane Rogers. I take issue with this idea that there's no difference, but she says there's no difference between grain fed and grass fed nutritionally. Like the beef. And there's a reason for that. If you just average average this, it's not going to show any difference.

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It's the same with organic. We can do nutrient density testing on organic and say it's worse than conventional or it's better than conventional. On average it's the same, but it's because you're just averaging out averages. You want to look at who's the outlier, who's doing something extraordinary and so there was a ranch called, Prairie Creek. Those ranches are now going on and they're not ranching there anymore.

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But what they did is they looked at they did a beef. So a meat analysis. And you can do this with Eurofins.

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They have really difficult lab to deal with. I would prefer to deal with it prevents it, quite frankly. And maybe some of the Utah State, doing some of this meat testing. So there's metabolomics testing as well as meet nutrient density. Right. So what you're looking at here and the total trace elements and a regenerative managed. So he was doing cover crops.

00:08:27:28 - 00:08:47:03
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He was addressing trace elements. He was feeding microbiology compared to high forage organic to grain feed. Now this is the high forage will ganic has less trace elements than the grain fed. Why soils are depleted. Well they were grazing together. Quite possibly soils are depleted. What do they do in grain fed.

00:08:47:06 - 00:09:00:29
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What are they going to do. Yeah you're going to you're going to be on a ration right. You're going to supplement or whatever. That then looked at clay. What's clay cholesterol.

00:09:01:01 - 00:09:24:06
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Conjugated linoleic acid. Right. It's a fat fighting fat. Now you want a good marketing tool. Here's your marketing tool. Eat my beef. Lose weight. I'd buy that. I would buy. And so what they found was the CLA was twice as high. And the grass fed than it was in the grain fed. But even the high forage organic was higher than the grain fed.

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Why was that conjugated linoleic acid coming from?

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Grass. Grass. So when we feed on corn, it drops your clay. Okay. So it's an anti-inflammatory when people think like a lot of the beat up about beef is like it's an inflammatory. And when it's a saturated fat and it's grain fed, that's true. But if we're grass finishing or trying to give them the balanced ration when you're finishing them, and you can measure this, then you can show to your customer that you're actually growing quality food.

00:09:58:15 - 00:10:24:06
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So we can look at omega three, omega six ratios. What what diet should you be eating. What should your Mega three omega six be. And what what's good ones bad ones good one fed should be. Yeah. So you should eat a diet of equal omega three to omega six. Do you know what the USA diet is? This is it's.

00:10:24:06 - 00:10:49:20
Unknown
Yeah, it's around one to 1 to 24. Okay. There's your heart disease for two, isn't it, 24 old. Sorry. Isn't it a 4 to 1 ratio of threes of a 3 to 6 I don't know. Do you think it is a one. No. I'll take your which is even further from 1 to 24. All right. So the issue with this stuff is it's inflammatory right.

00:10:49:20 - 00:11:08:11
Unknown
A diet high in omega six like a of what some feedlots where they're feeding like brewery waste whatever it is. And you look at those animals and they're like, oh look, they put on weight. And it's like, if you lift those animal just eating that, how long's it going to live? And then you're going to feed that to somebody.

00:11:08:13 - 00:11:29:06
Unknown
Like there's a common practice in New Zealand to spray glyphosate, to sweeten the grass and then feed lambs and ewes on that. And we used to do lamb and our sheep producing neighbors would buy lamb from us because they wouldn't eat their own lamb. But you're happy to sell that. So thinking about the quality and what are we growing?

00:11:29:09 - 00:11:37:23
Unknown
We want to be pushing up that omega three ratio on the sixes, not on the on the threes.

00:11:37:25 - 00:12:02:03
Unknown
So it's 1 to 4 oh 1 to 401 Omega 6 to 4. Oh. So you just flip that. Yeah. Yeah. So that's fine. Sorry. That's right. Yeah. Probably talking back to

front. So omega 3 to 6 not 623. What's that. Oh that's CLA okay I have one here for omega 3 to 6 ratios.

00:12:02:05 - 00:12:24:18
Unknown
So this is the this is back to front then isn't it. Four okay. So what we did here is we actually had 15 regenerative biological operations. And we compared that to 15 conventional grass fed. This is only this bit grass fed. But the only difference was that these guys are using super phosphate, which is what new Zealanders used to grow grass okay.

00:12:24:24 - 00:12:48:16
Unknown
So they're using super phosphate. These guys were using guano. So a natural phosphate form and doing things with diversity and building this soil health. But that ratio is around that 1 to 1. This is perfect for what we should be eating. And down here this is if we were looking at that ratio. It's one. This is 1 to 4.

00:12:48:19 - 00:13:12:05
Unknown
Yeah 1 to 4 okay. So still not still not what we're aiming for. Or that we've changed it. These are still grass fed. All right. So if you average grass fed which is what Diane Rogers research that she looked at the whole picture. And I think she's an awesome researcher. And I like what she does. But if you just average average you're not going to be able to demonstrate anything.

00:13:12:05 - 00:13:46:23
Unknown
You've got to look for who's the outliers. What do these people doing. Right. They're building soil health and they're lifting that omega three. So cool okay. So. What we're talking about is rebuilding that soil gut microbiome. So what sort of things are you doing for your own health to do that? So human. How do we restore the microbiome?

00:13:46:26 - 00:14:24:03
Unknown
Why is the microbiome even needing restoring. Antibiotics. So people who take antibiotics, that's going to disrupt it. What else is in your sugar? Yeah. So we think about that disturbance stuff. It's a little bit like we're doing this to our our own bodies. What's the disturbance in our body? So what I sugar what kind of pollutants? We what have you got in your rainfall here.

00:14:24:05 - 00:14:48:02
Unknown
Caffeine. They did samples around the US and found 90% of your rainfall contains glyphosate. It is literally your country's national drink. All right. It's coming down in the rain. You know that beautiful jasmine smell? I was talking about it to guys on the High Line in Montana. I said, don't you love it? They said, when it rains here, it smells like two four day dude.

00:14:48:04 - 00:15:04:21
Unknown
All right. So we've got that. We've got herbicides in our water. You've got herbicides on the food, fungicides on the food. What else? Stress. Oh yeah. Hands up if you've never been stressed, excited.

00:15:04:23 - 00:15:20:03
Unknown
Yes. Estrus antibiotics. What else? Processed processed food.

00:15:20:05 - 00:15:44:06
Unknown
What else? A complete lack of good microbes in our food. So you're saying there's no microbes? No good microbes on the food. You're eating just a lot less than what they used to be. So let's inoculation some population. All right. So some people eat less inoculated foods like in general. Yeah. Yeah. So they have something that they call the farm effect.

00:15:44:11 - 00:16:07:19
Unknown
So people growing up on farms, you've got dogs and cats and calf scours and all that stuff that we're exposed to. Our bodies have much more microbiology and a much more resistant than those in the cities. And I don't want to get into Covid. But if you look at a Covid map of parts like one death per 100,000, it's on the coastlines, right?

00:16:07:19 - 00:16:23:24
Unknown
Those concentrations, you come further into the middle of the countryside. We're seeing less prevalence per 100,000. It's just my theory, but we have a gut microbiome, right. That's functioning because of what we're breathing and petting and hanging out with how you were born.

00:16:23:26 - 00:16:50:29
Unknown
Were you born by C-section? The first person that breathes on you? The first person can either breathe good bugs. So there's a strip organism you have. You get breathed on by that person. You have good strip or bad strip for the rest of your life, which means you either have halitosis and so throats or you're healthy. So my microbiologist teacher, when I was at university, had a tablet called bliss, and he was selling it for people to chew on in the birthing room.

00:16:50:29 - 00:17:09:21
Unknown
So when you first breathed on that baby, you inoculated them with beneficial microbes that they had for the rest of their life. So cool. And you can't change that. You either have bad bug or good bug. So tell me this I was born with a stomach ulcer. And they said when I was three years old I was cured.

00:17:09:21 - 00:17:36:07
Unknown

But I've had a problem with my wife. So that's what caused her. Yeah. So if you had stomach ulcers and normally from something called Helicobacter pylori somebody brings that. Yeah. They're great don't you. Because I got on the, veterinary care of them. Yeah. The ulcer part. But they still have trouble. Yeah, yeah. It's a good bacteria, bad bacteria nutrition.

00:17:36:07 - 00:18:07:07
Unknown
Right. So thinking about nutrition. What are we eating? I also want diversity. The other thing that's missing is fiber. When you guys think of fiber, what do you think of this? What's it made me so oatmeal fiber. Yeah. Whatever. Like I think of old people. Like really old people. Like, just like in their 90s. Yeah. They fiber, no.

00:18:07:10 - 00:18:29:11
Unknown
So you got the American population on a whole. It's only 10% of the fiber that they should be eating. Where do you get fiber from? Fruits and fruits. It's not rocket science, right? Fruits and vegetables. Diversity. Okay. We want to be eating a minimum of 30 species of different things in a week. Iceberg lettuce and hamburger is not diversity.

00:18:29:13 - 00:18:57:07
Unknown
All these are tomato in there. Oh tomato sauce. It's we got sugar in tomatoes. Not strawberries but strawberries. Yeah. So increasing our fiber loading. So, I just did something called a Dutch taste for you ladies might be interested in the Dutch test. It looks for, hormonal imbalances and the whole picture. But what I'd identified is that I don't.

00:18:57:07 - 00:19:21:24
Unknown
I have a genetic defect on the gene that helps my body detox. Okay, so they're trying to make me eat more fiber, so I'm eating fiber tequila. I I'm eating fiber. Like, I'm eating fruit and vegetables three times a day. So even with, a piece of bacon. So bacon is very high in nitrates. So there's downsides with that.

00:19:21:24 - 00:19:41:12
Unknown
Eat it with some spinach or some lettuce. It converts those nitrates to laughing gas. It's awesome. Really. Yeah. So it just it's one way to get rid of the nitrates is to to be eating more fiber. But we really need to be eating more fiber because so much of that gut health and restoring gut health comes down to that.

00:19:41:12 - 00:20:03:02
Unknown
What if? So? Those are the things that we're doing, and it's very similar to what we're doing to soil. Okay. Just to bring it back to soil, I'm just going to say I'm not a nutritionist, but I spent my life looking at how this relates to my own health, my family's health, and how it relates to soil. Okay.

00:20:03:02 - 00:20:15:12
Unknown
So what kind of things could we then be doing to help restore our gut microbiome?

00:20:15:14 - 00:20:38:14
Unknown
Saying C-section. So doctors now, when you're born with C-section, they take vaginal juices and they slap that on the baby right to re inoculate that baby and get that baby healthier. But they found these serious developmental issues from not having that microbiome. From the moment you're born. So there's lots and lots of work happening in this space. Very exciting.

00:20:38:17 - 00:20:58:23
Unknown
We have what we call the tight junctions, right? So if your entire stomach lining was stretched out, it's the equivalent of about a tennis court in size and it's the thickness of a piece of cellophane. Okay. So that's your entire stomach lining. And it's very important because it's going to defend your bloodstream. And it's where nutrients are passing, where enzymes are passing everything else.

00:20:58:23 - 00:21:25:19
Unknown
All right. So there's these things called the tight junctions and that system. And most Americans have leaky tight junctions. Right. It's not tight. It's leaky. Right. So stuff is passing into your bloodstream which causes inflammation. So we talked about 100% of immunological disorders come from gut function. It's often because of these leaky leaky tight junctions okay. So there's things that we can do to restore tight junctions.

00:21:25:19 - 00:21:40:14
Unknown
You guys know what they might be if you listen to inexact Bush's stuff. Yeah. Yeah. What what is he talk about taking that voiding, glyphosate.

00:21:40:16 - 00:22:03:28
Unknown
Yeah. So you've got this syndrome. Yeah. So avoiding glyphosate or any, you know, glyphosate. It's getting a big beat up, but it's only because you guys are drinking it by the bottle out. I don't want any herbicides in my food or any insecticides or fungicides, but they should be labeling what they're spraying on. It's not what they haven't sprayed on it.

00:22:03:28 - 00:22:28:24
Unknown
That's what I want to see. That would be cool. Then you'd be like, I can't even pronounce this. I don't want to eat that. Okay, so one of the things that we use in soil. And for livestock is humic acid. What it does if we were giving it to cows, to cattle is it works to restore the tight junctions in the gut.

00:22:28:26 - 00:22:50:16
Unknown
Right? It relaxes the value of the gut and it increases nutrient uptake. I usually make a lot. I kind of think if you don't have free choice, you might out there. You're crazy, right? So we just put it out on tabs. We actually did some work with Alberta University with, collars on the cattle to look at what cows would take it and how much would they take, right?

00:22:50:16 - 00:23:17:01
Unknown
On average, they're taking about a tablespoon of humane per cow per day. It's very cheap. What it does, not only does it relax of the life of the gut, it binds to mycotoxins. So what kind of mycotoxins do you guys have out there? So mycotoxins or fungal toxins. What things do we see growing on our grass? Rust. Yeah.

00:23:17:04 - 00:23:42:08
Unknown
You guys have ergot. Ergot? Is that like what's on fescue? Yeah. The big black seed on the fescue. Okay. So I was working in a Californian operation ergot stop circuit, blood circulation to hooves and tails and ears. And worst case scenario, they fall off. This case in California, the hooves were falling off. We gave them you may. They did a blood test within six hours.

00:23:42:08 - 00:24:12:01
Unknown
All of that ergot was out of the blood. Okay, so some kids, they were used to feed, just put up coal in the cattle with you? Yes. You could do it with coal. Why I like you might better. Is it's got the biological signals in it. Okay. It's quite different than just coal. So if you had alkaloids which you guys are grazing on native pastures, you have all sorts of plant species out the high and alkaloids.

00:24:12:06 - 00:24:31:18
Unknown
Okay. Worst case scenario, you know, you see joint swelling. I've seen horses where they blaze's a peeling off or they get photosensitivity. But a lot of it's just chronic. Right. So there's just a little bit of inflammation. It's not really a big deal. But those animals are not as comfortable as they could be. So it will bind to those alkaloids.

00:24:31:18 - 00:24:38:12
Unknown
It'll bind to the mycotoxins.

00:24:38:15 - 00:25:00:25
Unknown
Toxins. A study done in Australia showed that there's soil carbon lifted there. No. Soil nitrogen lifted the.

00:25:00:27 - 00:25:35:22

Unknown
The methane and animals went down. Just kind of cool, but not really what they're after. Oh, you blighter! Right. Who's a computer geek? I want to show a video on that screen. Oh, there it is. Okay. What I want to show you is, after using. After using hue mites, we counted 700 dung beetles. And these cow pies.

00:25:35:25 - 00:25:58:18
Unknown
Dung beetles. Love you, mate. Love it. It costs about $160 a tonne for this stuff. 700 dung beetles. They also send a sample off to Jonathan Lundgren. And he counted about the same number. We had a trench and there was a cow pie in there, and I threw it to get it out of the trench, and it sounded like a swarm of bees, like it was terrifying.

00:25:58:18 - 00:26:21:06
Unknown
It was like what? And they were just dung beetles flying in for this cow pie before we started working together. He had no dung beetles whatsoever on the ranch, they will fly about two and a half miles to the smell. The dinner bell ring of good, healthy manure. All right, so for me to find females you guys have seen all over the country.

00:26:21:06 - 00:26:40:11
Unknown
So there's some down in New Mexico, the Mesa Verde, the Leonardo that comes out of North Dakota. They send it to New Zealand in Australia. And we've been using it over there for 20 years of a product that most people here have never heard of. And in New Zealand it used to be free. We could buy it from our local mines as well.

00:26:40:11 - 00:27:02:28
Unknown
And then they realized what the price, what it's worth, and now it's worth 3500 dollars a tonne. Here in North Dakota it's $160 because they don't realize what they're sitting on. Don't tell them to say you want to put it around a trough or something like, you know, yeah, a mineral. Is that what it is? It's the compressed carbon material from 65 million year old trees.

00:27:02:28 - 00:27:25:08
Unknown
And plants and diatoms. They find it, they minor. It's shallow mined. So it's a it's what sits on top of the coal. What I like about the Leonardo place is they're doing a shallow mining and then they rehabilitate right behind it. So they've re grass right behind. So there's no big opencast mines. I'm not a big fan of mining, but I like this.

00:27:25:10 - 00:27:55:11
Unknown
We talked about yes. Yes that's different than the human. Not really. It's doing the same thing. So a coal type material about I mean you could use biochar but again it's not living this, this has been living so it's

full. When we talk about the quorum signals, the biological signals it's full of in the human. It's not in coal and it's not in biochar.

00:27:55:14 - 00:28:21:02
Unknown
But the studies have done in Australia feeding cows. They were feeding cows a pound of biochar per animal per day. And so massive, like 90% reductions in methane. Right. And they show similar effects. Right. So you could use biochar if that's, that's what the option is. So in you give it up for that. And you can get it wet.

00:28:21:06 - 00:28:40:05
Unknown
You don't need to worry about it. But yeah, I use it for my horse tub by itself, by itself, and they'll take it. So we have we have a coal horse and we have the, we have the coal, you know, just sitting out and one of our horses just discovered it. And it's like, that should be covered. Couldn't keep her away from it.

00:28:40:08 - 00:28:59:21
Unknown
And I asked everybody, you know, what's going on with this and this. I mean, this is like last year. Yeah. Yeah, that she's probably been exposed to alkaloids or something. So she's looking for something. Not that anyone here drinks, but if you were to drink, you can take this before you go to bed. And it it it helps pull the toxins out.

00:28:59:21 - 00:29:06:06
Unknown
You'll feel a lot better. Some of you are like. That's the only thing I'm taking from today.

00:29:06:09 - 00:29:29:09
Unknown
Yeah. Here. Here. But similar to activated charcoal. Right? So I buy it for myself as folic acid. Oh, yeah. So back on the human microbiome side of things I'm going to I'm going to take it when I'm stressed. I'm going to take it when I'm traveling. If you are scouring, take it. If you see your livestock scouring, get them on the humane.

00:29:29:12 - 00:29:54:01
Unknown
Okay. It's Scouse happen when those veal I tighten right. They're not getting feed efficiency. You're losing grass okay. So get them to relax. Give that efficiency. But you'll see that manure breakdown really fast. So yeah for humans folic acid really good research on how it restores these tight junctions. So anyone with any kind of inflammatory autoimmune anything this is just going to have allergies.

00:29:54:01 - 00:30:09:15
Unknown
It's just going to help I'm not going to say it kills you but it's going to help that gut function okay. So if I use that in my little feedlot where I think, you know, it doesn't steer here, and then that manure is

going to work way better for my work. That's right. That I'm going to use on life.

00:30:09:22 - 00:30:34:25
Unknown
So by feeding this to your animals, it's going to do much better on the land and much better in the feedlot and much better for wounds. Yeah, the wounds will thank you. They do this for them. Okay. So then we're using things that we think of as prebiotics. So he made is actually a prebiotic. Oh. And if you can't get animals to eat it you can mix it up with a 10% solution in molasses just to get them started.

00:30:34:28 - 00:30:54:10
Unknown
All right, let's mix it up. So a prebiotic means it's setting the scene for biology. Okay. There's so much more research coming out now about probiotics not being a good idea. Right. And the reason for that is that you're putting a small number of organisms into a gut and trying to assume that's what that human needs or that animal needs, right.

00:30:54:10 - 00:31:23:26
Unknown
And they find that your guts are actually in worse shape, two months after taking a probiotic or probiotic, after taking antibiotics in the people that took nothing at all. So we've kind of been led astray in taking these, these probiotics. So you're better to take something natural, like what would be a natural probiotic yogurt. Yeah. So. Yes.

00:31:23:29 - 00:31:47:09
Unknown
Anything. Yeah. Anything lacto fermented. Any of those ferments. So kombucha. I know ranchers don't seem to like kombucha. I love it anyway. Any of those kind of fermented products, they got a lot of diversity in there. That's going to be more beneficial than taking a tablet that has 2 to 8 microbes in it, and it's trying to guess what you need.

00:31:47:12 - 00:32:27:03
Unknown
Hey. So in soil as well, there are lots of commercial probiotics, lots of products you can buy. There are ones that we're putting into the trough, and I'm working with guys that are putting compost and high fungal compost and vermin cast into their troughs, or into the water troughs or into their header tanks. So soaking like a compost extract, putting that into the water troughs, the cropping guys that I work with say that it speeds up the soil rehabilitation program by 2 to 3 years, by having animals that are inoculated, that are then pooping, that microbiology out, or secreting it on their tanks.

00:32:27:05 - 00:32:50:10
Unknown
Right. So we can speed up that process using animals. You want to use the iPhone? I would yeah I want diversity, right? I want to see high nematodes and protozoa and all that stuff in my compost. So good diversity would be great if.

00:32:50:13 - 00:33:12:14
Unknown
Okay. So yeah, we can use things like compost. There are commercial, probiotics that are made from, some of these lacto ferments that you can buy for livestock. There's yeasts and yeast that you can use as a probiotic.

00:33:12:16 - 00:33:31:19
Unknown
What it does is it's going to help speed up that breakdown of manure so that you don't have those cow piles sitting around. If you've got cow pies sitting around, you, you're wasting nutrients, right? They should break down in days and weeks. Not. I've seen all some of these transits, like ten year old frisbees. Yeah. So we want that manure to break down as quickly as possible.

00:33:31:19 - 00:33:56:05
Unknown
And a prebiotic or so the the humor it's going to help it or some of these, commercial products. I would rather we just made them us made them ourselves. Okay. Talked about fiber diversity. Stop playing the game of like, how much diversity do you eat? What are you eating? Can you mix it up? Is there more stuff?

00:33:56:05 - 00:34:21:27
Unknown
Maybe you could try, with the glyphosate? This humic phobic binds to glyphosate. Okay, so glyphosate is so effective because it's what are the most effective chelating agents that we know of. And so is folate. Go humic acid. Okay. So it actually will negate the effect of that herbicide on it. So you could take a little bit of folic acid every time you eat or you're drinking water.

00:34:21:27 - 00:34:40:02
Unknown
You can just drop a few drops into your water to bind to those chemicals. All right. We're we're under siege all the time with everything that we're eating. We're drinking this chemical coming in all the time. So if we can just buffer it. This is what the folic acid is good for. And you can just get it off on, say, Amazon.

00:34:40:04 - 00:35:04:28
Unknown
No, you can buy it online, not Amazon anywhere but Amazon. All right. Difficult. Yes. Yes. It can have like a container. Yes. So you can just buy it. And what is it for size a tote is it liquid or pill or folic acid and humic acid. Both. Liquids. You can buy them. You can buy that.

00:35:04:29 - 00:35:21:21
Unknown
You might as a capsule. But the for the gas it is a liquid. And I just put like 2 or 3 drops in my water in the morning when I remember, for my

horse when I'm traveling, I'm going to put that into his feed. So he gets it in his feed so he doesn't have any tummy upset.

00:35:21:23 - 00:35:42:24
Unknown
It doesn't. He likes any other nutrients. So there is concerns that it could Q8 to some medicines. I've had people say so I think that if you I really appreciate you being here. If, if you, if you're on any kind of medicine, you probably want to ask your doctor just to make sure it doesn't kill and negate the effects.

00:35:42:26 - 00:35:49:28
Unknown
But we, we add folic acid to our glyphosate.

00:35:50:00 - 00:36:14:05
Unknown
Not our. I'm saying that very liberally. I have never applied it. But anyway, so you do one pot phobic to four parts. Glyphosate, and you can drop, you can drop your right by 30% and have the same kill. So the research shows it increases cell wall permeability. So how well the chemical moves into the plant. It's like the plants like oh for me that was so kind.

00:36:14:05 - 00:36:37:23
Unknown
And it takes the chemical up and you kill it. Big meanie. But the same will happen with trace elements. So whenever we're using trace elements, we're putting a phobic or a humic acid on with the trace element. It's a carbon that's recognized by the plant and taken up much more rapidly into the plant. Okay.

00:36:37:25 - 00:36:59:11
Unknown
Processed food. Just stop. Just stop it by. Well, just cut it down. I'm not saying it to stop anything. High sugar, a lot. If you guys are addicted to sugar, it's in all of your processed foods. I can't drink and eat a lot of your food. Like, it just is. So sweet. What it does is it stimulates something called candida.

00:36:59:11 - 00:37:21:27
Unknown
So a lot of you actually have candida, all through your body. They've just. They've done this research to show that candida is actually a precursor for cancer. Right. So if your body's loaded with candida, you could be heading down that track. So there's some really good stuff on the Candida diet that I recommend. You're not going to like it because it's going to take you off sugar and your microbes are going to rebel.

00:37:21:29 - 00:37:47:02
Unknown
Okay, so you needing sugar. It's not you, it's your microbes. So just blame the microbes. Like when you want a beer, it's not you, it's you. Microbes. You can tell your wife that for free. Okay. Stress. Who has

some kind of wellness? Well, does anyone have a meditation practice? You guys doing things to kind of reduce stress?

00:37:47:03 - 00:38:07:11
Unknown
Oh, it's so good. See the ladies up? I take it back. Brilliant. All right. Stress is going to be one of the biggest things that's going to undermine this soil gut microbiome. So in the soil we're undermining that gut soil gut microbiome with all sorts of stressors right. There might be heat stress or water. And we do the same thing to ourselves.

00:38:07:11 - 00:38:25:04
Unknown
So there's so much really neat stuff coming up around having a wellness whatever that looks like for you. Like for me is is riding my horse. All right. Just get my mind turned off and get my stress levels down. I'm not very good at meditation. My mom says my mind goes like this. I don't know what she's talking.

00:38:25:07 - 00:38:47:26
Unknown
All strange sounds. I just I had a Western saddle for a year, so I've I've caught. I've realized you guys don't even need to ride those things. Just hold on to you. Anyway, I like it. My couch. So whatever you can do to be able to reduce stress, whatever that looks like for you. There's some such good online, guided meditations.

00:38:47:26 - 00:39:23:11
Unknown
Now to just drop that adrenal function, drop your cortisol. Whatever it takes. But yeah, getting diversity in Simon that my same for both sides is how do we get diversity. Diversity foods. One thing to I want you to look at is check the quality of your water. And that's for both humans and animals. It's some of the biggest stuff I find that's undermining people's successes, their water quality, or like letting animals stand and gross dams and drinking out of it.

00:39:23:12 - 00:39:47:20
Unknown
And you wouldn't drink out of it. Don't like animals? Drink out of it. You're losing production. You're affecting their gut system. So test water. We're seeing a lot of high iron and water. It's going to interfere with all sorts of things. Heavy metals and water. Obviously not chlorinated water, the livestock. So whatever, whatever it is. But test your water, take a look, you know, are you feeding you?

00:39:47:20 - 00:40:14:16
Unknown
Are you making animals drink nitrate water or high sulfur water or something like that? Okay, cool water but not high sulfur water. So it can lead to an polio encephalitis that, well, stuff you can smell in the wild. Yeah. And cattle would walk past one water filter level. Well, they probably need the sulfur, right? So if they've got options, then that's cool.

00:40:14:16 - 00:40:40:16
Unknown
And just watch it. But if you can trout can strain them and they could only have that water. It could be a problem. Yeah. Oh yes. She said something about the breeding and and heirlooms. And we also talk a little bit about meat having been bred out of that mycorrhizal fungi relationship. And can you talk a little about that.

00:40:40:16 - 00:41:04:10
Unknown
And then how we kind of approach that and spoken agriculture and then also as, as folks. Yeah. Yeah. Thanks. Thanks Helen. That's a good point. I mean I was talking to a seed producer, who was growing high production wheat. Right. So they, they had this new mega variety of wheat that just huge yielding. And they were very excited about it.

00:41:04:13 - 00:41:20:22
Unknown
And he walked out one day into the rose was three years into field production. They were ready for public release. They had irrigation on. The neighbor was spraying effluent that was going over the top, and they just fertilized it. And as he walked out, he pulled a weed out. And when he pulled the weed out, he pulled out the wheat as well.

00:41:20:24 - 00:41:45:06
Unknown
So that's weird. When long tugged again, these wheat plots had root systems that deep. He's like, they wouldn't have survived out in the real world. And here they are, just supporting them all with all the chemicals and all the fungicides and all the fertilizer and everything water that it needed high producing, incredibly expensive to maintain. And he had kind of had this epiphany, and his wife was actually a mycologist.

00:41:45:08 - 00:42:11:15
Unknown
So they got his talking and realized. And what we're seeing is seed producers are starting to realize plants need microbes. It's not rocket science. So these new varieties of wheat no longer form mycorrhizal relationships, which is why they have no zinc in them. You taste wheat, it has zero zinc in that plant, right? Very low enzymes. You're seeing people all reacting to gluten.

00:42:11:17 - 00:42:33:02
Unknown
It's part of that breeding process of what we've done. These wheat plants no longer signal the protozoa. So protozoa are very important in controlling and nutrient cycling. They no longer send any signal to protozoa. It's like these guys, these plants are mute. They are no longer communicating with their gut. It's kind of like these plants have got Crohn's disease or something, right?

00:42:33:04 - 00:42:57:22
Unknown

They gut systems not functioning at all. There's no interface. So there's reasons why we do plant breeding. Right. Like we have increased yields or stability in wind. You don't have these huge plants with tiny little seed heads like there's a reason for it. But we need to get back to having plants that are suited for our local environments that don't need all the artificial propping up.

00:42:57:25 - 00:43:25:19
Unknown
So working with companies, I've got friends in called the Kohanga Institute in New Zealand that are really looking at heirloom varieties that don't have all those deficiencies. Right. But asking those questions of your seed producers and also asking your seed producer to make sure there's no neonicotinoids and seeds. Right. I'm not like one for like, we should ban stuff, but we should ban this one.

00:43:25:19 - 00:43:46:26
Unknown
And what were you talking about before, Patrick? The, cut. Cool core, not chlorpyrifos. Chlorpyrifos. So cool. Power lid. Whatever it is. So there's a ban, which is, like I said, and, that one. So to.

00:43:46:28 - 00:43:52:26
Unknown
Us, it's.

00:43:52:28 - 00:44:18:16
Unknown
Red limits rainbow development for children. And then there's a herbicide which goes through the the the can go into the manure and go into the compost and kill whatever else goes on. Do that said herbicide, I think it's pirated. I think pyrophosphate is one of the neonicotinoids, I think. So it's cool part. Anyway, what's its common name?

00:44:18:19 - 00:44:47:02
Unknown
It's ones that people are using for, like dandelions on lawns. There's no removing it out of the ecosystem. This biology that can't break it down. And it's incredibly residual. And some farmers are using it. Don't use it. Right. Milestones on its own milestone yet this is a couple of very residual, very destructive chemicals. They calculated for every one benefit of neonicotinoids there's 100 costs.

00:44:47:05 - 00:45:16:00
Unknown
And that was a USDA internal paper was saying that about neonicotinoids. The right one seed has enough on it to kill like 70,000 bees. Okay. So, if you're getting seed, I know it's really hard. Most of these seed companies, have these have neonics on it. You need to ask for clean seed. There's a company in Montana called Union Forage, and they, all this seed is inoculated with microbiology, right?

00:45:16:00 - 00:45:37:03
Unknown

They put a pseudomonas and a bacillus, and I think a mycorrhizae on these seed automatically. Right. They're just they're doing that as a benefit to their producers. Right. And we're seeing more and more that anything about the cost of that. So I think it's comparative. Yeah. Yeah I don't think it's anything crazy. Most of my cover crop guys are using them.

00:45:37:05 - 00:46:01:17
Unknown
But I don't know I didn't ask what was the name of that company. Oh, Union forage. Yeah. They're doing some pretty cool stuff. But the I mean, they're not the only ones. So seed companies are starting to do this and ask that question of is this plant fit to live in nature? Instead of I've got this plant and it needs this fungicide.

00:46:01:20 - 00:46:36:29
Unknown
Oh, and then you're going to need this pesticide. Like it's a great sales model, but it doesn't support any of you lot. Cool. Right. How are we going to for time? 330. Oh, sweet. All right. What would you like to dig into? Where would you like to go? There's. Because there's a lot of directions, and we've got half an hour now.

00:46:37:02 - 00:47:10:11
Unknown
I think there's plates and that 430. So, the energy consumption is not the same as what you're going to do in particular. Right? Right. Does anyone have anything that, a particular direction we would like to go? More. Your tree is like, more nutrient, like, trees, minerals, the my macros and micros and what they to me,

00:47:10:13 - 00:47:30:08
Unknown
I'd like to know a little bit more about how we can make, announcements on, like, on the small scale and, you know, but how to make your own inoculum stress elements. Yep.

00:47:30:11 - 00:47:48:01
Unknown
And you missed your boat. You should sit by the book. By the book. They have to go to Amazon. Oh, my God. Now you can't get it off my website.

00:47:48:03 - 00:48:11:08
Unknown
I do interested if you could walk through the compost process. I mean, we can get a ton of worms, but how do you get the. How do you get the castings? From the ground to the field without killing all the worms. Okay. So who's got worm farms already. Not yet. A couple of you little ones.

00:48:11:14 - 00:48:46:29
Unknown
You, you're doing. I was talking to. Okay. So even if we were thinking of a Johnson. So, like, it might look like this, or you might have windrows of worms on the ground, which is my preferred way. If you've got a lot of

organic material you're going to want to do on the ground stuff, right? If you just want, if you've just got a smaller amount of material or you want to just make a high fungal extract, like how many pounds are in this by the time you finish each name?

00:48:47:01 - 00:49:08:04
Unknown
Sorry, about 800, 800 pounds. I mean, I would be much more excited because, I mean, we've got tractors. I need time to maneuver and and crops available. So I would be interested in purchasing larger scale. Yeah.

00:49:08:07 - 00:49:29:15
Unknown
So if you had 800 pounds. So one of these could do two acres, just if you're spreading it as a solid or it could do 1600 acres as an extract. Yeah. So you're doing about 2 pounds. That's, that's about what we're working off on these. On the, on the ground ones. So when it come, when this is finished, the worm should probably have gone.

00:49:29:17 - 00:49:47:10
Unknown
They'll move out. They don't they don't it. Okay. And if they're not if you keep it you have to keep it moist so you can let it dry out. Yeah. Well if you want to dry it out, that'll move in the way. But, one thing you can do is just get, like an apple, an apple bin or.

00:49:47:17 - 00:50:12:23
Unknown
But are these plastic bins that are full of holes? Yeah. Like just a little crate. So just get a crate and I want you to fill it with something delicious. Like they love avocados. Like rotten avocados. Not that you'd have that. Hopefully. They like dough. I mean, like, flour and water go nuts for. They like soaked oats.

00:50:12:25 - 00:50:44:08
Unknown
So you could just put some oats and barley or something like that into that, into that crate. And you could do that here on a small scale if you're selling worms or something. And that. Tequila. That's a half a gallon, Miss Abigail. We could obviously wait, and the worms will move into that. And so what? What you'll find is, if there's worm eggs in here, it takes three weeks for those William eggs to hatch.

00:50:44:10 - 00:51:10:24
Unknown
So what you can do is just empty this tray every week and go and set up a new worm farm or whatever you're doing. And then after three weeks, you should have extracted all the hatched and the new babies. Okay, so you could do it even for four weeks just to pull them all out. When we're doing it on a large scale, I'm actually just going to build a worm bed right next to it, and the worms will migrate to the new food so I don't have to worry about it.

00:51:10:27 - 00:51:35:23
Unknown
And then when you come in and you come to harvest, you just scrape that top layer off and you can put that top layer onto the new layer, onto the new worm farm, and then come in and harvest the whole lot. Okay. It's really, really simple. So looking at turn that no turning every time you turn it is when you're going to lose your fungal biomass and your fungal diversity.

00:51:35:23 - 00:51:49:16
Unknown
So you want it to be pretty quiet watering it. It's got to be water just like your Johnson Sue okay. So water is your limiting factor.

00:51:49:18 - 00:52:07:26
Unknown
How do you turn on one that's already there ready to when you can no longer tell what the source material was? So it's ready to finish when you no longer. No, that was straw and that was manure. It's just so crumbly and dark and brown. If you have woodchips in there, I would. Yeah, I wouldn't worry about the woodchips.

00:52:07:27 - 00:52:28:09
Unknown
So I'm happy to still see visible woodchips. So when we're building them, and I've learned a lot from doing worm farming in Montana, is we're putting down about two feet of straw or okay, when I talk about, hey, I want, I want it more like straw. Okay, so you're doing two feet of straw and you can make this as long as you want.

00:52:28:11 - 00:52:49:29
Unknown
Then you all have these piles of manure that hasn't that's been sitting and piling up. So do another two feet of rot in old manure that you've all your scrapings out of you. Yeah, it's right. And then I'm going to do about six inches.

00:52:50:01 - 00:53:20:08
Unknown
Of food, six inches of fresh manure. Oh that's inches in the feet. Sorry. Manure. Okay. And water it. So it's going to take a lot of water. That's it. Right. When we come to winter, the more you can feed these guys, the better. But I know some very, very lazy ranchers who don't keep feeding their worms, and, are probably only feeding, like, three times a year, and they're building a really nice mimic house, so they're getting it really fungal.

00:53:20:11 - 00:53:38:09
Unknown
Come winter, we're going to put that next layer. We're going to put another two feet of straw on, going to wrap it up and straw. And I'm going to put a cover on it. And we're going to leave it till spring. So if you started a worm farm now you, you're not going to be harvesting next spring. You're going to have us the following spring.

00:53:38:15 - 00:54:05:13
Unknown
And you could have, we say like each, each yard, let's average it out is worth $1,000. And you have 50 yards. You have $50,000 with the product from something that's very low maintenance. And you're building it all with buckets. And then when you come in to harvest, you're going to start a new worm bed and come in here with your tractor or your bobcat or what have you got.

00:54:05:16 - 00:54:31:09
Unknown
And harvest it. So simple. And any worms that end up being taken away, called acceptable losses, just like World War One. What do you what's your harvested material? You spray it like this is what I do for you. Okay. So then you're going to take that material and you might just know for you. So are we talking, are we talking rangeland?

00:54:31:12 - 00:54:40:21
Unknown
Yes. Yeah. Okay. So on rangeland, could you actually.

00:54:40:23 - 00:55:08:23
Unknown
Have a look. So this is us beginning these piles. So there's just some of that straw and hay, putting raw material down. They, this is, Steve Chadha just north of Billings. He's scraping that material up, and then he's selling some of that, just because there's it's such good value right now. But that's kind of what his worms look like when they first start working on it.

00:55:08:26 - 00:55:35:10
Unknown
And he's putting it all into this slurry machine on the back of an army truck. All right, so that's got that single nozzle again half a centimeter in size. He you can you can put sacks into this like a burlap sack, or you could have, stainless steel mesh with half a a fifth of an inch size mesh drop that Vermeer cast into there in the water.

00:55:35:12 - 00:55:57:03
Unknown
Then the cast is very soluble. Like it. It's all going to dissolve. But if you've got rocks, which everyone seems to have rocks, you don't want rocks going through your sprayer, right? So a burlap sack or, I think burlap six are fine in these. This Vermeer cast is not going to go through your normal fine spray.

00:55:57:03 - 00:56:21:23
Unknown
Spray. Is you just going to block stuff like you have to adapt your sprayer or you're going to I'll show you extractors. Yeah. It's like, like what type of gallon tank in there. Yeah. And it was that recipe that you put into like, to get into that $500. So the 2 pounds an acre is going into that 2000 acre of Vermeer cast.

00:56:21:26 - 00:56:48:13
Unknown
So it goes in as a solid stream. And you didn't build that thing for us. Like that just to get that done. Like, that's pretty good. And that's what I think you said the Rock. So now you have to put it in something. Sprayer firm. Yeah. Yeah it a well on the engine. So I've got a lot of formulas.

00:56:48:15 - 00:57:16:04
Unknown
So I'm a producer. I cleaned my farm. Yes. Sawdust because you know if you're lambing shed lands you you saw this. You don't any of your money. So now I've got a pile of manure. Yes. And so. Yes. Perfect. So. But that's going to get hot today. So that's going to get hot. It's going to get hot. So you don't want it getting hot.

00:57:16:06 - 00:57:43:26
Unknown
Water. So this is a trash pump that's reticulated through. So all this agitation is just coming from that open trash pump like a diaphragm pump. And what he's holding there is a sack of the cast, that water change color in 10s. So he made an extract in 10s. This guy's running 4500 acres cropping. And this is the basis of his program.

00:57:44:00 - 00:58:12:05
Unknown
Okay. And he's using about 2 pounds an acre. Right. So he's running, he put that outlet. So the water is coming at the bottom through your pump, down the bottom through the sack and washing through. It makes sense. That's the kind of like system almost, that I can control the time center. And then I let it settle. So if you've got a normal spray unit, you're going to want to let it settle and then maybe run it through paint bags.

00:58:12:05 - 00:58:47:09
Unknown
So you get paint bags really cheap online and just run this through that pump, through your paint bag, into your spray tank. If you have a normal conventional spray tank. Yeah. Administrator, we just we just made sure that we got the larger. That's right. This is the the one.

00:58:47:11 - 00:59:18:21
Unknown
This is the Midwest Biosystems Extractor. You can make these yourselves. So if you look, that's the, the feed you go, this is the side of it. But those of these cost about $30,000. You can make it yourself. Okay. So again, what it's doing is it's blowing air and water up through this basket okay. So you've got your pump.

00:59:18:21 - 00:59:38:12
Unknown
It blows water and air up the middle of this. And this is full of Vermeer cast. So you just fill that with Vermeer cast. The water comes flowing

through, you'd have to calculate how much volume. I just look for a change in color. Right. I want it to stay that lovely dark chocolate color the minute it starts to pale off, I'm going to pull it out.

00:59:38:14 - 01:00:01:05
Unknown
I'm going to make a garden with that, and I'm going to refill it and do it again. Okay. So one operation I work with, they do this on 45,000 acres. That's their program. So cool. The one with the sirup, the Saratoga grass grasses. What they're doing. Okay. Building extracts to the hagerty's. That's. This isn't their extractor, but it's it's similar.

01:00:01:07 - 01:00:25:20
Unknown
So how long does that last? So it can sit there for six months so you can store it. It's not there's no active food in there. So it's not going to cook. It's not going to get hot. The microbes aren't going to keep working. So these guys have 30,000l storage tanks. What's that. 8000 liter, 8000 liter, 8000 8000 gallon storage tanks with this.

01:00:25:27 - 01:00:48:13
Unknown
Right. And they store it. Oh, so they make it over summer so that they can spray it in full. And so it will store a long time if that Vermeer cast is finished. What kind of rain? Well, when you when you put it out, it's dry on the pasture. What kind of moisture you need to maintain and make it grow.

01:00:48:13 - 01:01:10:07
Unknown
And so yeah. So these guys were putting they put salt 400 pounds per acre last spring and that just stuff just dried up and blow away. All right. That was unfortunate. You need you need moisture. Right. We're going to do this when the plants are actively growing. So I wouldn't go out and just do it when things are super dry.

01:01:10:07 - 01:01:27:05
Unknown
You're wasting your time. The plants going to be actively growing if you're not sure. Like we never saw what the season's going to look like. But you know, we've got a bit of moisture coming in, put it out. Yeah. Some of the trials have shown that using solids, so anywhere between 400 to 700 pounds has at least a seven year effect.

01:01:27:08 - 01:01:53:16
Unknown
Right. So there's a benefit from putting solid out. It's just it's a it's a because for seven years you changed biology. So much of it doesn't matter. That's right. And if you're a good manager you're not going to have to do it again. You know what? At least. So as a general rule, we're doing 2 pounds an acre as a slurry.

01:01:53:18 - 01:02:17:19
Unknown

We're doing 30 pounds. And I, down the drill. So putting it down the seed, if we're doing stir it up and put it in what you're seeing, we're getting it really dry, which is not ideal in my mind, but it still has the metabolites. It doesn't have the living biology. You lost the living biology when we super dried it, but we're putting it dry enough so it would just go in the food box.

01:02:17:22 - 01:02:43:03
Unknown
Those of you that have got air drills, you're probably going to have to put in the liquid delivery system. All right. So we're doing 400 to 700 pounds. And there's been some good research on this as a solid per acre for seven years. Response. Some of these two acre responses I don't know if I show you this example with, with what we're doing, it's Steve.

01:02:43:03 - 01:02:57:26
Unknown
Chad is we, are seeing. Where is it? We have seen,

01:02:57:28 - 01:03:24:01
Unknown
So this guy has been doing holistic adaptive grazing for 35 years. His wife, they actually made the first savory hab in the US. It's done amazing things on his high country. So he's got some beautiful, he, he leases some land up on that. Well, he owned some land on the Bull Mountains just north of Billings. And his grazing there's been phenomenal, like loads more forage, loads more carrying capacity.

01:03:24:01 - 01:03:51:16
Unknown
All the stuff that you hear about for the HMO down here. His grazing hasn't done much at all. Right? Still lots and lots of big round, very crested weight. Dominant, right. Just it's just crested pretty much like 99% crested. Okay. And so this is, spring 2016. And what you're seeing is like all of the empty patches in between the crested weight.

01:03:51:19 - 01:04:18:14
Unknown
This is spring 2018. Now there was a lot more moisture right. But what we saw coming up through is the huge diversity in and in plant species. And that's maintained. So Western weed and you know you know your perennial species that's from that same recipe. That's the same recipe. The 2 pounds per acre, 2 pounds per acre. But if you're going to go out with 2 pounds an acre, I'm going to do some other stuff, okay?

01:04:18:14 - 01:04:40:25
Unknown
I'm not just going to do that, but take. So I'm going to take a soil taste and see what else is needed. So if I've got his recipe, is that on the Chaos Springs nozzles. This is on the Co Springs nozzles. Yeah. So not to mention sow chaos Springs in New Zealand is where he'll send you a nozzle.

01:04:40:25 - 01:05:04:06

Unknown
You can buy plans off him to build a slurry sprayer. So 35 years have gone into developing slurry sprayers that don't block. I highly recommend you do this instead of trying to experiment and make something like you could buy, you could buy plans. One person could and share in the community, you know, hear me say that. But I might do that.

01:05:04:08 - 01:05:29:15
Unknown
He's a good friend. I shouldn't say that. But you should do that. So, yeah, this is after the application. So what was interesting is he did 400 acre trials and we did, like one pint of molasses. Did 5 pounds of Redmond's. And it doesn't have to be Redmond's. I want salt that's pink, like salt that's got minerals in it.

01:05:29:18 - 01:05:56:10
Unknown
So you've probably got some other salt on the, we did 1 to 2 gallons of fish. But his primary is just this is his primary thing is the Vermeer cast. Okay. So we did different trials, so we did a molasses trial. Did a trial with this, did, two pints of humic acid for people with milk in their.

01:05:56:13 - 01:06:20:05
Unknown
Yeah. I don't think he did. Oh, he might have. He did a lot of cool experiments and we actually we gg it and then looked at what was happening nutritionally and could see where was he getting the biggest response nutritionally. And this is when we started to see the dung beetles come in. But what was really interesting was the horses at the first they started, they they actually broke a fence to get into the trial areas.

01:06:20:05 - 01:06:42:25
Unknown
So he fixed the fence. They started jumping the fences to get into these trial areas. So, we could really see that the horses were after it. But this guy knows his grasses. So to go out and in the paddocks with him, you can see he's constantly jumping off his horse to point out native grass species. And he's very excited about it and stuff that he hasn't seen before.

01:06:42:27 - 01:07:08:18
Unknown
One other thing I think would be with you guys trying out here is, forage kosher. Have you seen it grow corn for forage kosher. Okay. So forage kosher will strike from the surface. So there's some of these plants. It's only one growing. It. Do you like it? It's just where we're growing it. It's a solid monoculture of just forage kosher.

01:07:08:20 - 01:07:32:29
Unknown
What was it before it was like 5 to 8 inch piece of zone in the powder wasteland. Yeah. It stabilizes the soil. Yeah. Okay. And did they have

held it in there that the reason they use it. We used it because it's the most stabilizing thing. Yeah. See did not. And it's good forage and reclaimed it years ago and it never came up okay.

01:07:32:29 - 01:08:03:07
Unknown
Not even after years. Like it's interesting. Not is it look different than other kosher. Yeah. It's structure. It's more like, like a tiny, like a almost a half life. Seems like a 1 to 5 sage. Like a plain sage. So, yeah, almost. It was. Well, maybe I have it now. After 20 years. I don't it doesn't look like other things out there.

01:08:03:09 - 01:08:28:06
Unknown
So the. Yeah, it gets big. Yeah. The area like in the part I work with, it's very commonly used in the monastery. Great insight. But it'll be like this fall and my inspiration workstation, one of the ones. So it'll get me high so I can put on a lot of stuff, and then we'll get more diversity in there.

01:08:28:06 - 01:09:00:10
Unknown
But like our slate, that's like 18, as we said to the source. And then, I mean, it was a it was a kind of a monster to get involved right there. So I think it's a great question and you know it. Yeah. Yeah. It has more nutrition, more protein than alfalfa. And where we see it strike is on your worst ground, like I call him Johnny Appleseed, because he will have a saddlebags full of kosher seed puts holes in his saddle bag.

01:09:00:11 - 01:09:25:09
Unknown
So it just kind of drifts around and falls while he's riding across. And where it strikes is on the prairie dog with the prairie dogs of throwing a where it strikes is on really bony, dusty ridges. We see it strike like it likes bad soil. Yeah, and the prairie dogs don't like it because it grows really fast. You talk more about what the prairie dogs don't like.

01:09:25:11 - 01:09:52:02
Unknown
Don't look at me with that loving look in your eye like 23 bullets and foxes. Well, kill them if bad. Yeah, yeah. Granny, forage culture is a perennial. It's a it's like a little shrub. It's not related to the other kosher at all. Invading better quality forages or anything. Or if you if you're seeing it out there, it seems to just be really on the bad stuff.

01:09:52:02 - 01:10:13:25
Unknown
So it seems. So the first time I came across it was in Salt Lake City. I was working with a a mormon client up there whose his place is actually sticks out into the salt Lake and nothing else was growing. And he had planted, foraged, kosher and rose. And it just looked amazing, like these little. Yeah, they've got really artisanal.

01:10:13:28 - 01:10:29:09

Unknown
I actually do see he with them in areas like that on the northwest. Across. So just.

01:10:29:12 - 01:11:01:10
Unknown
Beautiful. You do you miss certain activities or like the. There's a connection. This feels like it. Very dogs and and which. Sorry. Oh, yeah. And wherever in Boulder County, wherever there are prairie dogs like these, it's always like straight up this monoculture, which is, nothing else. Yeah, it's it's like, if it's some kind of, like, neural network or.

01:11:01:13 - 01:11:23:22
Unknown
We kind of see interesting dynamics with prairie dog towns. Wherever we go, it'll be a different type of weed. And they're generally plants that are low organic matter or surface crusting or compaction. So if you go out in between a prairie dog town and have a pain of trauma to the major compaction, we find generally those soils are the most compacted because it it's going to make it easier for them to burrow.

01:11:23:22 - 01:11:46:15
Unknown
The bar isn't going to fall apart like they're not going to enjoy making burrows on some of these soils, are they eating any competition or is it just happened to be? That's the only thing that can survive because there's a lot of things that will survive. Yeah, it it seems like it's just a lot. So that's the question to ask about all your weeds is to do the leaf tissue testing and have a look at what is it haying.

01:11:46:18 - 01:12:04:00
Unknown
All right. So it'll be very bacterial soils because that's what the prairie dogs are creating around their little zone. It's bacterial dominated because they've disturbed it and fluffed it up. And you lose your structure. And then what is it that that particular plant is indicating? Yeah. Because I see that. Like that, gum cup. What do you call it?

01:12:04:00 - 01:12:32:21
Unknown
Gum. Weed, gum, curly gum. Wait, I can see that sometimes around prairie dog towns. Or we can see thistles or what we, Yeah, it's got a sticky pineapple weed. I've heard as well. Yeah. Anyway, here we go. I when you're talking about the fish, what is that? What is that? Sorry. So it's a fish hydrology, which means it's got the oil in it.

01:12:32:23 - 01:13:01:23
Unknown
So when we talk about fungi, like complex foods and bacteria like simple foods, the fish hydrogen is it has oil in it. So it's a different process when they make it. It's a waste product. So I can sleep at night knowing that we're using a lot of fish. I have a lot of ranching guys that I work

with in Montana now using it because it really increases the palatability, the protein, the quality, the phosphorus in your forage, and it stimulates fungi.

01:13:01:23 - 01:13:24:24
Unknown
So we even the most like, resistant grumpy old dudes, got them to do some, like, trials on pivots and they're sold. I said to one of them recently, he drove up in his pickup with this on the back, and I'm like, dude, it's a slippery slope to sandals from here. Just like he was good with it. Right?

01:13:24:28 - 01:13:46:25
Unknown
So, putting that on, we just see huge benefits for forage. So typically people are growing more forage when they're using this. So it is I don't ever promise more yield increases. But it is when we see a yield increase with the best fish. For fish, hydrology is the deep sea oily fish the most rarest ones like the orange roughy.

01:13:46:25 - 01:14:17:07
Unknown
Oh, it's a beautiful oil. Anyway, it's a waste product. So it's not fish that's made from, freshwater fish. Okay. This is ocean oceanic cold, deep water fish. Okay. Really high in oil. If you have a microscope. We haven't been. We couldn't figure out how to do this so that you could all take a look. But if you do a brew up a compost extract and you add in a little bit of fish hydrolyzed, or you add in a bit of humic acid, you will see fungi growing in front of your eyes.

01:14:17:13 - 01:14:40:06
Unknown
Okay, fungi really, really respond to those two products. So they're kind of like the foundation for some of these biological brews to just get things kickstarted. Might be one of those or both of those products, but this is where you want to do the trial for yourself and work out what's giving you a response, what's what's lifting quality.

01:14:40:09 - 01:15:00:09
Unknown
Did you put that, fish oil in your warm bed? You could, so someone ask me about trace elements. I actually put trace elements. So when I put that worm bid down for winter, whatever my soil is low in, I'm going to put that onto the top of the worm bed. Right. So a little bit of boron or chicken manure, a little bit of zinc phosphorus.

01:15:00:09 - 01:15:27:09
Unknown
So some guano I'm going to put that into the worm beds. Because what will then breed is the microbiology that soluble lies and release those nutrients from the soil. Okay. So we breeding up phosphate soluble in bacteria. We're breeding up organisms that respond to those nutrients in the worm beds specific to what you need. So when I used to do commercial permaculture I would make blends for strawberries, blends for avocados.

01:15:27:13 - 01:15:51:07
Unknown
Avocados need a huge amount of boron and phosphorus, blends for pasture, the different types of biology and different types of nutrients in it. So if you know you're low in a trace element, the best way to go out is probably through worms, right? Concentrate like not concentrate very very, very dilute. Okay. Very small amounts of those trace elements are going into your worms.

01:15:51:07 - 01:16:12:20
Unknown
And I might even do that, when I'm building a worm bed or building compost or even the Johnson soup is that first bottom layer I'm going to put in something that I know my soil is low in. So it might be it might be calcium, it might be boron. I'm going to put that then and then build my compost on top.

01:16:12:20 - 01:16:41:11
Unknown
I should talk to Johnson David about that. But that's what I do for worm beds on the ground. Right. And then the microbiology will get down and bring it up and incorporate it and feed it. It's lovely. Okay. Yeah. Cool. I have some, about the, the storage cushion. Yeah. Is if you ever put it in your pasture in a horse down there is a stuck.

01:16:41:13 - 01:17:01:26
Unknown
You got some protein or cattle in the fruit grapes on that or is absolutely important question mark. So it's a good, really good question. What what horses are foundering on is not protein. What horses are foundering on is nonstructural carbohydrates.

01:17:01:28 - 01:17:30:02
Unknown
Okay. So nonstructural carbohydrates are the sugars inside the cell. So what we want cows to be feeding on is high nonstructural carbohydrates is the stuff that makes them fat and makes them make milk. Horses are not cows, right? Horses do not have a rumen. They don't have the gut. Microbiology that breaks all the sugars down. Okay. So we want to be feeding them on a low nonstructural carbohydrate feed.

01:17:30:04 - 01:17:55:28
Unknown
Right. So how we do that is by, strangely enough, lifting bricks. So we used to run, my ex-husband was a horse breaker. So we would have maybe 13 horses on 20 acres. We had horses that were skinny, that would put on white and fat horses that would lose weight. Right. Never had any animal health issues, never had any founder.

01:17:56:01 - 01:18:21:00
Unknown
We were very careful about what we were doing around managing stress. So nonstructural carbohydrates are about stress. Okay. So we actually lift

the bricks to improve the the health of it and the sugars for horses to be able to eat and digest. Okay. But I have a horse course that's online, so if you want it, there's a soil horse course.

01:18:21:01 - 01:18:39:12
Unknown
We're talking about horses specifically. And then how to maintain for that. I haven't done the testing on for it's kosher. You're not going to end up with 100% forage kosher. All right. You're going to end up with and hopefully some diversity in the system. So if horses are on diversity you're not going to have the same issues as well.

01:18:39:15 - 01:19:10:05
Unknown
You know it's like let's get some diversity into the system. And then. They are through flow machines low down horses like there's no off button. Right. Let's keep keep going. But anyway so again it's around lifting quality and avoiding stress. So this idea that people graze super short grass for horses, that stress grass that's really high in nonstructural carbohydrates, that's how you're going to found, well, Cushing's disease or insulin problems is the short grass, right.

01:19:10:05 - 01:19:48:01
Unknown
When horses on tall grass I'm going to rotate horses. I know a strange idea. Move them. Okay. Recall if anybody's interested in the Chaos Sprays sprayer. There's three of us in Colorado. We're working on building slurries currently. The sprayers. Yeah. Yeah. So if you, if you wanted to get in on kind of our email chain because there's to say there's plans you can buy online is a very loose description of Steve's super helpful advice.

01:19:48:03 - 01:20:06:07
Unknown
He's a great guy and a lot of support, but there's also just a lot of trial and error, so I'd be happy to share my email. What's your email? E Kennedy at Hay camp.com, but we're hoping to have ours finished this winter, so.

01:20:06:09 - 01:20:30:08
Unknown
Lakewood y everybody all right? And then there's another guy in the mountain. I think the other two guys are in the mountains. But you can connect. Yeah, that would be good. You know, I think collaborating and sharing resources because in New Zealand ten years ago there were 180 different biological supply companies. There was ten years ago we did a survey of how many companies were around.

01:20:30:09 - 01:20:49:21
Unknown
That's New Zealand, right? And we're not that small people, right? We're the length of California is very narrow. So coming here was a real shock in terms of how hard it is to find some of this stuff. Like it's a big

country. Surely it's easy to get things, but actually it's quite hard to go to you guys for a fixed charger.

01:20:49:24 - 01:21:12:20
Unknown
Yeah, we'll electrocute you quite merrily. Yes. Yeah. And I don't I don't know what that's about because when you look at typical New Zealanders, we're yeah, we're pretty conservative in odd. But you know, we're doing the same as people do on 10,000 acres. We can do on a thousand acres. So there's more things that New Zealand does are experimenting with.

01:21:12:23 - 01:21:37:10
Unknown
They're not having to manage all the fencing that you guys do. All right okay. Any last questions. Kind of about some of the stuff. Yes. You mentioned there. Well in expensing for a couple. Yeah. So the boron recipe I'm going to send it to you I'm going to give you a recipe. Oh I'm going to I'm going to give that to an and she's going to give it to you.

01:21:37:10 - 01:21:59:26
Unknown
So this recipe came to me I tell you a secret. All right. I'll go and visit supply companies. And they generally don't know who I am. And because I'm a girl, they think I'm stupid. Never make that mistake with any woman just to say it anyway. So they'll be like, oh, come and have. We'll show you around the plant in there.

01:21:59:27 - 01:22:20:11
Unknown
Don't record this. So we run the plant, we'll take a look. And when I'm walking through, I see people's secrets because they'll be written up in big, big words. It'll be this and this, and I'll be like, oh, so that's what's in your product and that's what's in your product. Yeah. Your secret's safe with me. So anyway, so I came across this brew and it's fantastic.

01:22:20:11 - 01:22:43:22
Unknown
And it's a trace element, key lighted circulation with the folic acid. You're going to bubble it very gently when you make it. But the first time I saw it being used, they were spraying it on some mesquite and it was killing mesquite like the mesquite campaign was just breaking open. Those trees were dying really, really fast. So the recipe originally came off, leaf testing for, mesquite.

01:22:43:24 - 01:23:11:23
Unknown
Right. So it's a really effective control for mesquite, but you could try it for other things. But what it's also doing is it's lifting trace elements in the soil. So all the grasses came away really beautifully and the mesquite was dying. So, I'm going to give you this recipe. You might find that you already high and some of these elements take that out of the recipe, and you're going to use it for things that, you know, you're

low and in your soil, so you're going to have to do a soil test and a leaf test.

01:23:11:26 - 01:23:29:12
Unknown
Okay. You might get some. What are you writing right now? Like some of you, you might get another flush of full rain that might be worth if the plants are about this big, to send them off and do a leaf tissue test and just have a look. What am I plants high and what are the weeds high and and my grasses in that optimal range.

01:23:29:15 - 01:23:52:09
Unknown
Right. And ask the labs to give you decide ranges. They can't give it to you for the weeds and they'll probably laugh at you. But they can do that for fescue or o toe barley or whatever. And they should have desired ranges. So ask them to do that. So yeah, if you get another flush. But looking out here right now you could send off samples.

01:23:52:11 - 01:24:15:25
Unknown
Okay. If so, if your place looks like this, which is pretty amazing. Just saying. Then, send off for a test for soil sampling. Are you consistently, when actively growing or so. So the best time to take a soil test if you've never taken a soil test is right now. The other best time is to get into a routine and take it.

01:24:15:25 - 01:24:38:29
Unknown
I take them in the growing season so early spring, and I take it at the same time of the year every year, but many of you don't have any testing done. So that's where we have the region platform so that, you can track where are you taking your samples from record that you sent your samples away and come back.

01:24:39:01 - 01:25:00:21
Unknown
And I set up transects like, 160ft long transects. I know when I get to come back and repeat those transects every time, even if I'm only just doing forage testing, I'm doing it on a transect. So if you've ever been out with a conventional agronomist and they do a soil test and they walk around your field, they take some cores, very excited.

01:25:00:21 - 01:25:21:13
Unknown
Then they tell you, the answer's 200 pounds because you didn't know 200 pounds. They will never repeat that test ever again. You don't have a benchmark. You just have some random whatever you need to be benchmarking your place. So you can tell am I moving forwards or backwards? And most people have no idea because it's the thousand cats by a thousand.

01:25:21:13 - 01:25:44:19
Unknown

Whatever. Death by a thousand cats, whatever it is. Okay, so start taking some of these foundational monitoring so that you know for yourself, am I improving or degrading my resource? So and yeah, do you leave testing when you can. So I commonly get asked how long is it going to take.

01:25:44:21 - 01:26:06:14
Unknown
And we talk about examples where we can see some results really fast, but it's not always the case. So as the question of how long has your soil resource been degraded, how long after 5050 years. All right. And yet people come in and they expect to see growth like urea and be really excited and like the system's just working right.

01:26:06:14 - 01:26:28:00
Unknown
It doesn't always happen. It generally doesn't happen like that. Okay. What you want to be testing is forage quality. And am I improving the experience for my cows? Not just do I have more forage? Because you gotta have a hollow to forage and you basically grind McDonald's. Right? And those cows have a hidden hunger as well, right? They're looking for food that bellowing at the gate.

01:26:28:02 - 01:26:46:09
Unknown
Right. They're looking for salt. They're looking for mineral, whatever. As we start to improve soil health, you're going to see it come through the cows like that. Probably some of your best indicators, you know. Are they shiny? They got a little wet nose. Do you know what do you know what a dry nose. Me.

01:26:46:12 - 01:27:02:14
Unknown
Yeah. You could be very sick. So I was, I was, in a place in Alberta, and we were driving through the field and I said to the rancher, I think your cows are deficient in sodium. And they said, no, we put sodium out every day. And I was like, oh, okay, my bad. We got back to the shed.

01:27:02:16 - 01:27:26:11
Unknown
The 15 year old boy who's responsible for the salt, he said, when did you last put salt out? Oh, like six weeks ago. Right. You'll see it. Their noses go super dry. All right. So that's part of having adequate sodium. The coat won't shed. You guys won't have that problem because you put sodium out. In New Zealand, farmers don't always put out sodium because we have sodium in our pasture salt.

01:27:26:13 - 01:27:51:20
Unknown
So sorry salt mineral salt that low in salt. Sodium salt that's salt. Yes. Sorry okay. So use those cows as your barometer for how well is this working. You want to see when you watch them they spend more time lying down than moving around. Okay. Every time they're moving around this expanding energy, we just hanging out, putting our white nice.

01:27:51:23 - 01:28:22:02
Unknown
Right. Sit in front of the TV. Lovely. Okay. And then how much time and money do you have. So we can move systems really, really quickly. If you're going to invest a lot of time and money in this. Right. Most ranches I find are poor in both. All right. Not rolling in both anyway. Okay. So just being realistic and being kind to yourself around as we start to transition, this is not just that sorghum is pretty cool.

01:28:22:02 - 01:28:50:06
Unknown
I was pretty happy with that. But you're not necessarily going to see a response like that okay. So identify your limiting factors. Seriously. Getting a refractometer is really, really helpful. How efficient am I capturing sunlight energy? Do I have air moving through that soil? Okay, I was talking this morning. Floyd was talking about opening that soil up. And in a lot of intensive operations, if you're doing,

01:28:50:09 - 01:29:07:23
Unknown
Oh, have you noticed how alfalfa can get this? Soils can get really tight. Oh, I've seen that. You can't even get a shovel in some alfalfa fields. Those soils are becoming really tight because that that plant is pumping a whole lot of nitrogen into the soil, and there's nothing there to mop it up. So it takes carbon out of the soil to do it.

01:29:07:25 - 01:29:29:09
Unknown
Okay. So it's stealing carbon basically to balance it's carbon to nitrogen ratio. So soils get tight because we lose carbon. Those soils tighten up. So dig holes. Take a look if you got compaction layers. And if you do that's your first place to start. So if it's high value country. So if it was high fields I might run an iterator over that.

01:29:29:09 - 01:29:54:28
Unknown
Like for just once I'm going to drip some stuff down, a little bit of molasses, a little bit of humic something down those drips. So guys are just rigging up 50 gallon drums to drip stuff down onto those tines and just aerate it, get it, get it moving fast. And in the alfalfa. Yeah, yeah, yeah. So you do it in full because you can't do crown damage.

01:29:54:28 - 01:30:13:16
Unknown
So you don't want to do it in spring because you're going to lose production. So it's only something we do in fall. Okay. Would there be an advantage to just a little less this on some background? Would it be an advantage to drip molasses on a big round if it gets real hot? And I would drip molasses and humic acid.

01:30:13:22 - 01:30:36:22
Unknown
Right. So molasses is feeding bacteria. It's already bacterial dominated. So add a humic acid and with it both okay. And you could order acid when

you get home and get it in the next few days. So take a look. Is is it so I really it because it is a major mineral imbalance or is it me? And quite often it's me.

01:30:36:24 - 01:30:58:16
Unknown
All right. What have I been doing management wise that's creating that compaction. Right. Is it a mineral imbalance. Are you very bacterial okay. That's all going to suck the life in the air out of that soil, right? Then look at water. We didn't do the water infiltration today, but do water infiltration tests just so easy. You just need, like, a six inch pipe banging in the ground.

01:30:58:16 - 01:31:16:16
Unknown
Count how long it takes for an inch of water to go in. Okay, take a look. Many of you have water repellent soils and you're not even aware of it. Okay, so when you get in, when you get a heavy rainfall event like we just got, and someone says to you, how much rainfall did you get? What do you want to say?

01:31:16:19 - 01:31:36:20
Unknown
All of it. All of it. No. Not filled the pond. All of it. You want it all being sucked up into your soil. Okay, that's the goal. So infiltration test will tell you where you're at right now. Then look at decomposition. Is your manure breaking down super fast? What can we do if you manure is not breaking down?

01:31:36:23 - 01:32:00:25
Unknown
Yep. So we can feed them a free choice. You might get them on a probiotic. It's nutrition right. So there are elements that we need for decomposition. One of them is sugar. So when you are low in Brix decomposition slows down. So there's these important elements. One is sugar. So if you aren't if you're not seeing stuff break down this is where sugar might be valuable.

01:32:00:25 - 01:32:26:05
Unknown
And I talked to Steve that this morning. We're going to put sugar make molasses or something like that to help break up organic material that's not converting. Some of you have thatch like and decomposed organic matter. Get a little bit of sugar. So like in a smooth rum as that happens. Yes. Yes. Yeah. So you could put a little bit so that it could be white caster sugar.

01:32:26:07 - 01:33:03:20
Unknown
I'm going to tell you something. You thought I was crazy before. There's another thing that's really cool. It's it's a Coke coca Cola. What's in coca Cola? It's lots of sugar. What else is in it? Caffeine and phosphoric acid. Very, very bioavailable phosphorous. Coke is the most used fertilizer in the world. Do you know that? They buy it as a

concentrated sirup, and they're applying it in third world countries down the irrigation ditches and stuff, stimulates a lot of bacteria, but it gives you a bioavailable phosphorus.

01:33:03:27 - 01:33:27:27
Unknown
You could try it. You only need like a teaspoon every ten yards. And you can you could spray it on your plants. Right. What it does is it stimulates flowering. So if you want more tomatoes, if you want more capsicum, you don't call them capsicum red peppers, cucumbers, spray a little bit of Coca-Cola rose bushes. You got a wedding coming up.

01:33:28:03 - 01:33:53:05
Unknown
You can spray those plants with a little bit of Coca-Cola and they'll all flower. It's. It's like magic fairy dust. It's really cool. That Coke supplies bioavailable phosphorus and sugar. Right? You can leave. This works up and say she's talking about milk and Coca Cola, and everyone's going to be like, you're mad anyway. Sugar, we need some phosphorus to break stuff down.

01:33:53:05 - 01:34:22:13
Unknown
We need calcium, and we need a tiny bit of nitrogen, just a little bit of nitrogen. So for operations like cropping places where we're not getting decomposition, we're making billions out of this. Right. And that force could be a little bit of fish. So it could be fish. But this is what I'm seeing. And a lot of rangeland is we don't have adequate sugars, we don't have the microbiology need that sugar and they need that force.

01:34:22:13 - 01:34:52:18
Unknown
And both of those things have very low in the range okay. We're not getting decomposition. You're just getting oxidized litter. Yeah. Because you've got a bacterial bacterial. Yeah. The bacterial that's like you know it's like that's right. You're probably going to increase that bacteria, but they're going to start breaking stuff down. Because right now, even though you're bacterial dominated, you don't have a lot of we've only got the one Angus steer under the ground instead of five Angus bulls.

01:34:52:20 - 01:35:16:12
Unknown
All right. So you might be feeding these measly little in the steers, but that's where adding the fish is helpful because we're going to balance it. But why we're doing this is to break down litter. So. And that letter is cellulose and lignin and everything else. So we're kind of feeding everything all at once. Yeah. So we don't see this driving it really bacterial.

01:35:16:14 - 01:35:37:21
Unknown
Yeah. Cool. Like, some of those variants that are just oxidizing, you know, the old plant grass stands, sprayed on, molasses on the leaves and

everything. Yeah. That's right. That's a really good idea. You can spray molasses and people do that to to get your cattle to eat weeds and trample it down. Just don't do it on poisonous weeds.

01:35:37:21 - 01:36:04:08
Unknown
Some of you guys are so mean to your cows. Not the poisonous weeds, but yes, do that. Absolutely. Yeah. And you're going to see that whole system start to break down a lot faster than artificially bringing out your brakes on the whole pasture with the right combination. Well, it's actually not artificially bringing up your whole brakes, because the plant's actually responding because you're not going to be putting on the site.

01:36:04:08 - 01:36:25:04
Unknown
Do you think that that plant or that biomass is pumping 20% sugar at its roots, that that's more sugar than you could ever put onto your property? The other thing, if you ever notice, if you have like a plate of sugar, caster sugar sits outside or on your table. Notice how it gets that like crust, sugar brings in water.

01:36:25:09 - 01:36:49:03
Unknown
So as we start to lift sugar sugars in the soil, we're also drawing more water down. And and also talked about fungi yesterday. As fungi are building their chitin their bodies they take that carbon hydrogen oxygen take the carbon, build the bodies and they release H2 of their release. 20% of that material is water. So we want to hydrate those landscapes with sugar and with fungi.

01:36:49:06 - 01:37:15:02
Unknown
Okay. Right. One thing I want you to do is like manage these expectations. Many changes happen underground. First, the number of times I've had cropping guys ring me quite. I rightly because their crop has not come out of the ground and their neighbors has. So their neighbors will look like this. And I say to them, go and dig a hole and see what's happening on the ground, and they will have root systems like this.

01:37:15:02 - 01:37:38:10
Unknown
And the neighbors have these little piddly root systems. Okay. So you're putting in seed. Take a look. Are we developing this lovely straight down root system first. And it's already got a riser sheath. And these plants won't. And that plant is just getting up and trying to capture as much sunlight energy as it can and just survive. All right.

01:37:38:16 - 01:38:07:21
Unknown
As opposed to these little plants that are barely poking their heads up. Okay, so dig holes, dig holes, dig holes. Hands up. If you're not going to dig a hole after this class, that's what you could find out. Hahahahaha! Is it possible or relevant to test, failed grasping? No. Now,

now. And the other thing with, once you've cut for hay, those plants keep photosynthesizing, right?

01:38:07:21 - 01:38:29:05
Unknown
And they'll keep storing sugar until they reach about 20% moisture. So that plant still photosynthesizing. So you're not going to get a true reading necessarily of nutrition or health. And it's had it's that it had to do. So you want to do it when the plant's growing. A Brix test isn't going to help you. And it's only got three bottles now anyway.

01:38:29:11 - 01:38:37:20
Unknown
And it's only a snapshot of what's happening. And it's only a snapshot of time, of what's happening at the moment. Okay. So.

01:38:37:22 - 01:38:55:29
Unknown
Benchmark commit. Oh okay. Commit to a program at least. So these guys have started with their compost. Keep doing it and keep doing it in the same place. Don't go oh I'm going to go and try it over here now and then over there and then go well that didn't work. That was stupid. All right. Soil health is a process of of building.

01:38:55:29 - 01:39:15:01
Unknown
Right. It's not just a one off. Didn't work. Looks the same. Whatever. All right. Good. A lot of ranchers that were like that didn't look any different. And then they stop. Hey, look, to try and do something, at least for three years in the same field, even if it's your grazing management or whatever. No, let's talk about that.

01:39:15:01 - 01:39:41:26
Unknown
Okay. So key thing is that we avoid big ground and overgrazing at any cost. This photo here is from the Cabin Farmers of Australia. Louisa, Kylie, they're such great people. What's one thing you can notice in the difference between the left and the right? What's happening at the neighbor's big run? Massive erosion. What are they missing?

01:39:41:26 - 01:40:08:29
Unknown
What's holding that soil together? A bunch of cattle going down the drain. Now it's erosion. Yeah. Wow. So what causes that? What's is the lack of replenish? Well, fungus. You never saw this yellow fungus. You'll be fine. Right? So it's a lack of active fungi, right? Those soils just start to fall apart. The slaking. Actually, these all didn't do too badly,

01:40:09:01 - 01:40:27:00
Unknown
That's. Liking this one is definitely nice and clear, though. Whoo! So pretty. These soils are flaking. They're falling apart. The sheep and they're these big around. What they find is if they leave a gate open,

the sheep won't leave. But all the neighbors come in. The in 2002, I think it was a pretty major drought in Australia.

01:40:27:00 - 01:40:49:15
Unknown
And what they did was they started a campaign to adopt a lamb, and then they took certificates into Sydney, and you could buy like a $10 certificate to adopt the lamb and, you know, help out a farmer that's in the middle of a drought. These guys made more money that year than they've ever made doing anything else. And the only downside was people kept turning up to see the adopted lamb for.

01:40:49:20 - 01:41:10:20
Unknown
So they had like 20 lambs with bows around their necks. So they go, oh, here's B.C., we've got two here for you. Right. So just thinking outside the square because I feel like the urban audience is very concerned about what's happening to you guys and very concerned about drought and climate change and food security. So let's bring them on board and take their money.

01:41:10:27 - 01:41:21:01
Unknown
So, Nicole, have it. Just on a side note with that with the adopt a lamb. Yeah. Did that encourage.

01:41:21:03 - 01:41:42:14
Unknown
A better encouraging a better reputation in the ad community with the public. I think they felt it did. They felt it did because I mean that was that was a pretty major drought. You know, it wasn't poor farming that was creating that. And it built a relationship with people that then ended up buying their lamb as processed lamb as well.

01:41:42:14 - 01:42:10:10
Unknown
So they are building a relationship. On, in Australia and New Zealand, where people have set out on the southern part and continued producing meat or grains in order to make it all work, but they have to go into specialty markets or not necessarily. This has been some of the problems is that the specialty markets aren't necessarily there.

01:42:10:13 - 01:42:33:15
Unknown
So, you know, some of these producers like on 30,000 acres, they're all selling it back into the commodity market. But, the hedges were kind of interesting. And one year there was a massive frost event in Western Australia. And in their region they lost 80% of their crops. So the entire district was wiped out with frost across five disparate blocks.

01:42:33:15 - 01:43:03:28
Unknown
They lost 5% of their crop. And, so I kind of think you get the rewards because we've got more nutrition, but we do need the missing right now is

the marketplace. So where I'm seeing the biggest shifts right now is in clothing brands. So the regenerative clothing brands, the, Timberlands leather, the New Zealand Merino are all driving change and are paying those producers for quality products that they now have a market for.

01:43:03:28 - 01:43:26:11
Unknown
But I'm seeing it more happening in the clothing brands than we're seeing maybe in grain. But there are grain suppliers that, asking for like no residue, which the Hagerty's used glyphosate, and their crop is cleaner than organic. There's no glyphosate, even though they use glyphosate. All right. So it's all about biology. So we are seeing more markets come through.

01:43:26:11 - 01:43:50:14
Unknown
And I think that's going to help bring more people on board, especially if they're being paid a premium. But I feel like you don't necessarily need to be a paid a premium. You're getting a premium because we have more resilience. You're going to be farming when others can't. Thank you. All right. Any final questions? Anything human. It's it's all just so brilliant.

01:43:50:14 - 01:44:16:19
Unknown
I could I could be here forever. Oh, and I think you wanted to for me to tell you to please take some food home. She doesn't want to take anything. Anything home. I wanted to thank Cory and Chloe for the for. Them. I think there's so many awesome people in this workshop and I. Yeah, so many great people and I'm so appreciative.

01:44:16:19 - 01:44:43:23
Unknown
Karen, thanks for being here. Helen. Thank you for being here. Patrick, my intern, I mean, and Nancy and John. Yeah, it's just been absolutely incredible. So I have a present for you with my little blue bag at the back, the blue bag for. Oh, here it is. Yeah. So, Annie, I want to thank you for everything that you've done the last two days.

01:44:43:23 - 01:45:08:11
Unknown
It's been amazing. So this look upon it with envy. This is a water bear or water piglet. All right. They have eight legs. There is no DNA like this. They suspect they actually came from outer space. They can survive below zero, above boiling 10,000 times your radiation. They can desiccate their bodies to 3% of their water. And then you add a drop of water hundreds of years later, and they spring back to life.

01:45:08:13 - 01:45:20:05
Unknown
The only place you won't find them is in highly disturbed chemical, agricultural environments. So there you go. So thank you, thank you, thank you. You're amazing. We're good.

END TRANSCRIPTION