Transcript: Healthy Soils, Healthy Seas

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Seth Watkins
A few years ago, I learned to sail and I love it and I've been able to go sailing the Caribbean, the Gulf, Atlantic Pacific, Chesapeake Bay, Great Lakes. And you probably know this too. When you're on the water. You see, you see what these are, you see everything, the good and the bad. This

Dane Whicker
is the voice of Seth Watkins, a man who takes raising our food very seriously.

Seth Watkins
I'm Seth Watkins, I raise beef cattle, hair sheep, a few chickens, some bees on what we call paddock farm, which right now is nearly 3000 acres in southwest Iowa.

Dane Whicker
Food is something that matters to every person on this planet. a no brainer of a statement perhaps what with our very biology telling us that without it, we would you know, die. But beyond just sustenance. humanity's relationship with food is absolutely fascinating. Because it can be so many things. It can be a way to connect to other people. It can be a way to explore and share one's culture and heritage. It can be a beautiful art form, scientific calculation of calories and expression of emotion. And yes, sometimes on a lazy Friday night after work is grounded down. Food can even be a chore. I'm the first to admit that growing up, I definitely took food for granted. The hardest thing I ever had to do for a meal was go to the grocery store, shop around a bit to find the nicest looking veggies or freshest looking chicken and be on my merry way. This isn't an uncommon experience in the modern day. And don't get me wrong. These modern conveniences are amazing for many, many people. But behind the price labelled plastic wrap, and bombardment of marketing are real people doing amazing work to keep our world fed. That's what makes people like Seth so incredible, and the work that they do worth talking about his farm. pinhook farm is one of over 2 million farms in the United States that produce our food in a staggeringly large multibillion dollar industry. Talking to him, it's clear that he has a lot on his plate in order for us to be able to fill hours. But Seth goes above and beyond. And there is so much more to his story.

Seth Watkins
No part of it is just I mean, it does go back to my parents or my family I think my grandmother was has oftentimes been credited with starting for H. Her work tied to how, you know over 100 years ago, she saw how precious our land was. But that sometimes we develop practices that might not be the best. But agriculture was such a low return business wouldn't be afraid to try something new.

Dane Whicker

Seth is among a growing number of farmers that are beginning to examine and challenge the way that food has been produced in the United States. Realizing that some of our well intentioned agriculture practices of the past are maybe not so great, with some practices being an eventual recipe for environmental and human harm.

Seth Watkins
You know, her motto was always to make our best better. So that definitely weighs on me. In

Dane Whicker
his own journey of making his best better. Seth has adopted a new mission to steward the land rather than to master it to promote the well being of natural ecosystems and the well being of people over the seemingly more profitable large scale commodity crop farming of the past. To achieve the stewardship, he implements a slew of new regenerative practices. On his farm, you'll find removed ditches and restored wetlands, you'll find a no till cropping and multi species grazing system that promotes soil health and animal freedom, rather than depleting the soil to a barren nothingness. But a lot of this goes against the grain of what agriculturists have been taught for years. Which means that a lot of this work comes from his own personal passions and beliefs.

Seth Watkins
We don't always get a chance to think about it, you know, a lot of people say, Oh, you guys worked so hard, and your feed never won. And we're grateful for this. And, and I appreciate that sentiment. But then when you think it through and look at some of the things we're doing, it's like, well, we can, you know, we can we can all do better, we can always do better. It's just I don't think we're reminded on a daily basis of that, you know, not everything I do is perfect. And and as hard as I'm working on it, I still have a long way to go to get to what I think it will take to make sure we've got a sustainable future. Well, and I feel like as farmers we have a responsibility for that, you know, this is a the taxpayer plays a big role in agriculture in stabilizing our income and agriculture. I do think it needs to be a partnership, but for that investment were received I just think it's really not just because it's the right thing, but I just think it's really the right thing to do for the people that fund a big part of agriculture through subsidies you know, you guys deserve clean water, you deserve healthy soil. You have a right to enhance biodiversity. Those are all the things we need for a peaceful future.

Dane Whicker
But wait, hold on just a second. I'm all for sustainability in our food systems. But what does any of this have to do with? Well, the ocean. Last I checked, the nearest one lies over 700 miles away from pinhook.

Seth Watkins
I remember, like a lot of people learn to sail, you know, my, probably my first goal was to go down to the British Virgin Islands, and I successfully charted my boat, I had my family on, I come across the Sir Francis Drake channel to Norman Island, and I'm moored up, and I'm so excited, I'm gonna go swim over and see all the legends about the willie T. And I get there. And I pull myself up. And there was a carpenter working on the boat. And he just took a whole jar of varnish and throw it in the ocean. You know, it was Yeah, I had the same reaction you did. But then I thought about it. I thought, you know, if

people in Iowa don't care about the ocean, and that thinking follows us all the way downstream. Why would someone down their care? You know, I think we should care which we should. But if our thinking isn't right here, how can we ever, you know, we can't go the other direction.

Dane Whicker
In his own journey, Seth has begun to realize the effects that his farm has on the ocean, and it's out there doing a lot of hard work, to help mitigate them. And even to turn the tide.

Seth Watkins
It makes sense to me if we're going to save our oceans, we have to start at the very tributaries. And, and also, I think that not just our practices, but our thinking has to start there. I mean, who doesn't love the ocean i, whether it's standing on or me physically having to be on you know, I don't know. But it's, it's mesmerizing. All I all you need in life is sand and water.

Dane Whicker
It's this exact relationship between sand, soil, food and water. That's the focus of today's peak and plunge the podcast about connecting the heart of the land to the depths of the sea. Join us as we explore the relationship between the agriculture of America's literal Heartland to the great salty blue. Let's plunge right in. Though it may not seem super obvious at first, there are a lot of ways in which the agriculture industry and the oceans are intertwined. That is the entire idea behind the inland ocean coalition's ocean friendly farming program. To understand a little bit more about the importance of these links. Hello, we brought in another guest,

Mel Jung
Melissa young, the director of programs and outreach with the inland ocean coalition.

Dane Whicker
Mel helped explain what the ocean friendly farming program was and why it was so needed. Yeah,

so the ocean friendly farming program was developed out of the idea that what we do inland affects our oceans. So you know about the dead zones, and all the fertilizers and pollutants that run into our waterways and get into the ocean and cause a bunch of different issues. So we wanted to really start highlighting this idea of these problems, but also the solutions. And so we created this program, really, for a couple of different reasons. One was just education. I think a lot of people don't realize how much farming and what we do inland can affect our oceans and our watersheds. And so it was just to give people that basic under

Dane Whicker
just how much is that exactly? Where are these links? And just how much should we be worried about them? Well, as an ocean friendly farmer himself, Seth knows a thing or two about this complicated two way street. And it starts with the effects that his farm has on the ocean. Yes,

Seth Watkins

so first of all, the biggest one would be our use of of fertilizer, and our use of chemicals, specifically, nitrogen, phosphorus, potassium, and chemicals, including Atrazine and glyphosate. Let's remember, everything goes somewhere. So when we put in Iowa, you know, I can't remember exact number, but I think it's 13 14 million pounds of Atrazine on our crops that comes off of our crops that either goes into the kernel that goes into the plant or it goes into the water, and it stays there.

Dane Whicker
This may seem like a relatively simple statement, like of course fertilizers, and especially chemicals can prove to be dangerous, but there's actually a lot to unpack here. While both fertilizers and chemicals can generally both pollute the environment surrounding farms as runoff, each has their own unique set of consequences. So let's look at fertilizers first. Through the eons of advancement in agriculture, fertilizers have been one of our most common and powerful tools to aid in growing food. When you think of fertilizer, I'm willing to bet that one of two common images comes to mind that have a bag of industrial fertilizer packaged all nice, or well. The stuff that comes from the rear end of animals, both will help plants grow, which is why we use them so extensively to grow our food. This being because fertilizers both synthetic and natural, contain essential nutrients, the nitrogen, phosphorus, potassium, etc, that Seth was talking about. These nutrients are absolutely essential for plants to make proteins and chlorophyll. That is letting the plant actually convert sunlight to energy and grow to a size that we can eat. So in that vein, fertilizer is a good thing. Plants need a lot of nutrients and fertilizer as a way to directly give that to them. The problem, though, comes in what happens to the unused nutrients in the fertilizer, the loose nutrients that end up not getting taken up by the plant. These unused nutrients, as Seth said, have to go somewhere. And oftentimes the rains carry these nutrients into our watersheds are tributaries, groundwater, rivers, lakes, and eventually, most of that funnels to the oceans. And this is where methods of fertilizing are definitely not made equal. Okay, but hold up again. The sentence some extra nutrients got washed into our oceans doesn't sound so bad, does it? Aren't nutrients substantively good things? Well, these nutrients can actually indirectly lead to a lot of dead fish, toxic ocean waves, and really, really smelly beaches. If you've ever experienced or know about the phenomenon called a red tide, you know exactly what I'm talking about. So to fully understand the leap from fertilizer to dead fish, let's follow the story of just one of those nutrients and watch its effects as it travels from soil to see the nutrient question nitrogen. It's a wonderful little element on its own. Though, it'd be number seven on the periodic table. It is number one in terms of the makeup of our atmosphere, and would be number one in the hearts of plants. If you know plants had hearts. See, like us plants can't actually use the nitrogen that's just floating around in the atmosphere, they need a little help in nature, they get this help from microbes, bacteria in the soil that eat the atmospheric nitrogen and break it down into the different more usable forms of ammonium, nitrite, and nitrate. A healthy soil biome, that is a healthy and diverse population of bacteria in the soil is needed for this to happen. But when it does, these forms of nitrogen are available for uptake by the plants helping them grow big and strong. And that's not the only benefit of a healthy soil biome. Considering that the roots themselves can't actually physically reach all of the nutrients. In healthy soil, most of it is actually gathered by little tendrils of fungi that form a symbiotic relationship with the roots. They act like little nutrient gatherers in exchange for sugars and carbs that are produced by the plant root. Nature, you're so neat, but for this story, our nitrogen is going to come from industrial synthetic fertilizer. These nutrients are directly applied to the crops, which is great for this particular batch of crops they gobble up as much nitrogen as they can to grow big and tasty. But unlike in the natural system, where a lot of excess nitrogen is contained within the micro organisms, suddenly

now there's just a lot of free nitrogen floating around in the soil. This is especially exacerbated if the soil has been tilled, and the micro organisms that could contain the nitrogen or last since the plants can't suck it all up. This leaves the free nitrogen with only two places it can go it can either volatize escaping the soil as nitrous oxide gas, which just so happens to be a greenhouse gas and you know contribute to climate change, or it can be washed away as runoff when the rains come. When this happens, the uncontained nitrogen will slip and slide its way away from the farm and right into our watersheds. Now what we have is a large amount of unused nitrogen freely available and floating around in our waterways, our rivers, lakes and oceans. And nitrogen being the cool little element that it is isn't just liked by plants. It's also essential for the growth of two other important organisms, algae and phytoplankton. Like plants, both of them use nitrogen to grow and when there's an abundance of nitrogen in their ecosystem, it gets sucked up and can cause an explosion in their population, which is often referred to as an algal bloom. This can result in rivers lakes choked with algae or contribute to an insane number of phytoplankton hanging out in the ocean. Again, though, this might seem like a good thing on paper, like plants, these organisms also photosynthesize and exist at the bottom of the food web. So initially, you might think that more food for fish and other animals in that body of water is a good thing. And due to all that photosynthesis going on consuming co2 producing oxygen, we actually see that during the initial stages of a bloom, oxygen in the water will actually increase. But because you know, there's always a but tipping the scales of nature off balance can have other harmful consequences. This is where we finally see our poor unfortunate dead fish is fixated, poisoned, or both. See, depending on the species that's blooming, some can produce harmful algal toxins that leach into the water poisoning the wildlife. Also, eventually, the Bloom will end and this huge amount of algae or phytoplankton, well, it dies off. At this point, bacteria want the nitrogen and the other nutrients in the dead bloom. So they'll begin the process of decomposition. They want to gobble up all the dead algae or phytoplankton. But this process of bacteria eating the bloom actually uses oxygen in the water, more so than what was produced initially, leading to a sharp decrease in the dissolved oxygen and oftentimes causing what scientists refer to as a dead zone. So named because well fish and other aquatic organisms, they need oxygen just as much as we do. And if their environment suffers from a harmful algal bloom, suddenly they might suffocate and die. This has been documented in many areas of the world where harmful algal blooms have resulted in 1000s of fish and other marine life mortalities, and all that dead fish and decaying algae. Well, I can tell you from personal experience, it doesn't smell great. There have been news reports of stenches from harmful algal bloom events that are sniffle miles inland. And this isn't the only it comes back on us humans impact either. Anybody that tries to swim in water affected by a harmful algal bloom, or eat contaminated food from one risks some pretty nasty illnesses. Now, I don't know about you, but Paralytic Shellfish Poisoning, and amnesic shellfish poisoning. Those sounds like things I definitely don't need in my life. Beyond the human health risk, these harmful algal blooms have caused economic impacts as well. One prime example being extended closures in fisheries like the Dungeness Crab fishery in the US due to concerns over domoic acid, a toxin produced by a harmful algal bloom. The fishermen in this fishery have lost real income from these effects. It's important to note that not all algal blooms are harmful. But taken together, the punchline is pretty clear. nutrient runoff can have wildly powerful impacts that harm wildlife, natural ecosystems, human health, our economy and our ability to recreate. So you know, examining this issue seems pretty important. But thankfully, there are people like Seth out there utilizing alternative techniques. In order to address this kind of problems,

Seth Watkins
we can greatly reduce our nitrogen fertilizer use with three specie crop rotations of corn, soy, oats and clover. We can greatly reduce our nitrogen fertilizer use by incorporating lagoons back into our pastures. And by doing that, not only have we reduced our fossil fuel footprint, our carbon footprint that way, we greatly reduced the cost associated with buying that product. And in the case of the pastures, at least, we've greatly enhanced biodiversity making a better, more nutritious forage more habitat for different things we need. In

Dane Whicker
order to reduce this problem on his own farm. Seth has come up with a solution that works for him combining crop rotation with a system of what's called cover cropping, a cool regenerative agriculture practice where certain plants called the cover crops are grown primarily for their ability to restore soil health, rather than a direct economic or harvestable benefit. In this case, they're the soy and the clover. These plants are what are called nitrogen fixers. Remember all those helpful little bacteria that convert atmospheric nitrogen for plants to use? Well, nitrogen fixing plants are amazing because they have cool little nodules on their roots that are basically little houses for these bacteria. So planting them and letting them grow supports the population of healthy soil bacteria, releasing them all back into the soil when the plant eventually dies, and it's time to plant the next crop in the rotation. Using a cover crop program is an amazingly powerful tool that can help restore the health of depleted soils and when you do Thus the need for nitrogen and other fertilizers is greatly reduced. In the best case yields improve less fossil fuels are burned, and environmental and human damages avoided. Pretty cool. But that's just tackling excess nutrients from fertilizers, there's still a chemical issue as well. Just like excess nutrients, pesticides, medicines and other chemicals follow the same routes into our watersheds. And if it's not settling into aquatic and marine wildlife, well, it's making its way into us through our drinking water or our food choices. chemical herbicides and pesticides are still used pretty extensively in the United States, including Atrazine, which Seth mentioned earlier,

Seth Watkins
and Atrazine itself. I pick on it because it's a proven endocrine disruptor. It's suspected to do bad things or health. But if you look at like Tyrone Hayes's work at Berkeley, it does really weird stuff to frogs, and it doesn't for generations, and I think frogs are our Canaries, you know, if it's doing it to them is doing it to us. And the other side is that I can look at someone and tell them, you know, if you're using Atrazine, you're probably ruined and your cover crop program, because that presumes the grass herbicide, it's going to kill this cover crops human race, if you will move to a mold, SPC crop rotation, you can have the same yield without, you know, you can have the same production without it. And and on top of that, where are our values that were so desperate to boost yield that we really don't need right now that we're willing to compromise the things that matter? Most, you know, are our wildlife, our health, our family's future, all these things? If it was even remotely suspect, I think we'd be justified in saying get rid of it. But when it's proven, that's a whole nother story. But it's just it's human nature. And that's what we have to overcome. And, and that's what we have to think about. You know, it's, I think it's okay to acknowledge when we do things wrong, as long as then we make that plant plan to move forward.

Dane Whicker

Making that plan to move forward can be really difficult, especially when the problems are both myriad and gigantic. And the next link between agriculture and oceans definitely fits that gigantic bill. I really hope you're not tired of me talking about climate change on this podcast, because that is exactly where this is going.

Seth Watkins
I'm always amazed that people don't talk about the impact that carbon has on our oceans. It's the my understanding largest sink. And what does not the heat, but simply my understand is that it makes a mild form of carbonic acid that starts to mess with marine life as well. It's very serious. And we're talking about bleaching because of the heat itself was like Good God, but we're piling a lot of things on. As

Dane Whicker
of 2021, the agriculture industry in the United States accounted for 10% of its overall greenhouse gas emissions, according to the EPA. That's huge. And this matters for a lot of reasons. From the ocean acidification that Seth was talking about, to fueling deadly warm water events or actually making those harmful algal blooms we talked about earlier. Worse. Fact is that any angle you look at it, anthropogenic climate change affects ocean health greatly, which if you haven't noticed, the pattern comes directly back on us less fish for us to eat less beaches for us to enjoy an even making it harder to grow food on a farm in the first place. a warming planet could mean hotter soils, altered rainfall patterns, more storms, and even the loss of areas suitable for farming as sea levels rise. So if we can get that number that 10% down, it would go a long way towards staving off the worst effects of climate change. And Seth believes that those in his profession can do a lot to make a difference. And he wants to see it happening before things get dire.

Seth Watkins
And when I look at this, the first thing I think about is we can put a lot of carbon back in our soil where it belongs by changing a few practices. And I feel like this is where as farmers, most farmers really are doing their best. I've had experiences in life that have made me try more things. And I don't want other people to have those experiences. I want them to plant trees and add covers and diversify cropping rotations. Because they want to do not because they've seen what can happen. But this is where we've got to get serious about how we care for the land, because we can put a lot back in. So how

Dane Whicker
do we get serious? And where are these emissions coming from in the first place? Well, there are those coming from the soil that we talked about earlier, those from using fossil fuels to power farm equipment or burned to make fertilizers and livestock feed, and even some emissions created from weird things like the flooding of rice paddies. But all of these sources well important are much smaller in comparison to one singular source of methane, a greenhouse gas 25 times more potent than carbon dioxide. We're talking about cows 4% of all US emissions, that's almost half of that 10% number from earlier comes from livestock alone. And of those livestock cattle are the most potent. As a ruminant animal, they break down the food that they eat through bacterial fermentation in a rumen part of their digestive tract. This fermentation is what creates methane, which is released in lovely smelling burps from the animal. So if you've ever heard that choosing less beef is a climate friendly option. This is the basics of why. But before you go and get your torches and pitchforks and take to the streets denouncing I'll be forever.

There are a few nuances here that deserve examining as someone responsible for a whole herd of cattle. I asked Seth his thoughts?

Seth Watkins
Well, I think where I'd start is, do do ruminant animals produce methane? Absolutely. Now let's remember. It's not just cattle that have a rumen. We've got goats, sheep, for domesticated animals. We have white tailed deer, moose, elk, giraffes, camels, all these creatures have ruminant and rumens. And the beauty of them is they're the animals that were actually evolved to make photosynthesis work to be digestible protein, that for our own bodies, although you'll get no argument from me that we can certainly survive on a vegan diet quite well. But what we're not remembering is there's nothing that can restore a degraded land faster than a ruminant animal, when done properly, when the gray is when they're allowed to graze, when they're allowed to trample the grass, you know, literal ecosystem starting to form. And I would hate to try to bring back the degraded soil we have on our entire planet, especially let's just talking about the states where we have lost, they say 70% or more of the organic matter the carbon below the soil. I would hate to try to restore that without without ruminant animals doing their thing. So I'm okay having this conversation. I'm okay talking about methane gas may be 100 years from now if we've got our soil back up to speed, but right now, I feel like we've got to have that as a tool. And we've seen where you know, whether it's in our forests, whether it's other places, you know, grazing is a valuable tool. In making ecosystems work, it

Dane Whicker
is absolutely true that the activity of ruminant animals, and the natural fertilizer that they produce is extremely effective in restoring the health of degraded soils. And beyond that, it is true that healthy soils actually help to sequester carbon, the microbes, worms, plant and animal material in a healthy patch of soil, all work to keep the carbon locked there and out of our atmosphere. So well, the exact math can be pretty hard to pin down. It does make proper soil management a pretty useful tool when it comes to climate mitigation. That said, and examination of our eating habits may also be necessary, both in what we eat and how much of it.

Seth Watkins
But I think we also need to be mindful. This this is just me my opinion, I'm not speaking for my industry. We need to be mindful and what we I'm not sure we need the number of cattle we have. I'm not sure we need that, you know, I'm hoping that I can learn more about grass fed, I'm trying to get there. The marketing side is tough. But I would like to see more grass fed livestock, but more availability for people that buy it and recognizing that we've got to have, we've got to have some consistency in that product you don't want to spend beef isn't cheap. It's, it's it's a very expensive protein. So when you're coming to spend your hard earned money, I want to make sure that experience is really good. So those are things we've got to that's when you know you think about you don't want to just throw the baby out with the bathwater. But but let's be honest on what we need, well, we probably do need more grass fed, we might not need eat as much as we're eating. And we need to make sure that when we're raising Well, I'm working with my neighbors to make sure that the union experience is good for for the personal advisor.

Dane Whicker

Okay, so where does that leave us? On one hand, it could be incredibly unwise to stop eating all beef forever. Not only would that impact the lives of farmers and consumers alike, but as a soil restoration tool. They have incredible potential to help restore degraded soils and even sequester carbon. That's one benefit to the grass fed system that Seth was talking about. But on the other hand, they do emit methane. And we kind of are in a position where we need all hands on deck to reduce overall greenhouse gas emissions. So how do we balance this? Well, like Seth said, reducing the amount of beef consumption and livestock around is one way probably one worth examining, but there's Also some promise in another route, managing the methane, which may sound impossible, but for this monumental task, we might just be able to get a little help from kelp. See, there's this cool little algae and it's got a pretty cool name asparagopsis TxA formless. It's a red algae and in the wild It looks beautiful cluster of long fluffy pink plumes, almost like a blooming flower of oversized pipe cleaners that sway in the surf. This algae found in both tropical and warmer temperate ocean waters has an interesting superpower. See, when cattle and other ruminant animals eat it, the methane production in their rumen is essentially halted. In fact, researchers have found that supplementing just 2% of a ruminant animals diet with this seaweed, their methane burps and overall emissions were reduced by over 90%. That is huge. And with our current understanding, it means that such diet supplementation could effectively help tackle this problem. Plus, some research shows that supplementing diet with seaweed makes the animals healthier and more productive and other ways to Now full disclosure, I love seaweed, I eat it myself, and an ocean based solution to livestock methane emission, well, that just makes my ocean loving heart very happy. But beyond my bias, it's worth noting that there are still significant challenges and unknowns with this solution, namely that we simply don't have enough seaweed. It is true that 2% of a livestock animals diet isn't all that much. But when you consider that the US alone has almost 96 million head of cattle, it starts to get complicated. Worldwide that number crests close to a billion. And that's to say nothing of other ruminant livestock asparagopsis tax reform is is not abundant enough in the wild for us to harvest for this purpose. And we wouldn't necessarily want to go tearing it out of the environment anyways. So the good news is that research and startup companies are starting to invest in and begin production of a farmed product. These efforts have only been going on for a few years, though, and farming this stuff is tricky, and it takes time. So scaling these efforts up to support livestock numbers in the millions while making it cost effective and even lucrative for farmers to want to buy it. Now therein lies the rub. Still, hearing such promise and potential is invariably exciting, that there may actually be a world that exists where we can have our beef and eat it too.

You know, the people who are doing this work, like, this is a lot of work. And they're very busy. And, you know, we're here kind of trying to trying to help and amplify them, but also asking from them as well. And so it's just we're trying to figure out a way to make the program not just like not just beneficial for the general public, but also really beneficial for farmers who join it as well. And it's a work in progress, for sure.

Dane Whicker
Doing all of this cover cropping, rotating, planting trees, restoring wetlands, and finding ways to cut emissions and runoff. It is a lot of hard work. You

Seth Watkins
know, that's a great, that's a great example. Here's what I'm finding out I've actually been unlike this has been a hard year where we're doing some serious transition on even trying to walk all the way up from chemicals. And what I'm finding eventually everyone reassures me that it's great, but right now I'm finding that Ecological restoration is the very hardest thing I've ever done in my life. You know, I'm down to a lot of handwork. I'm down to real diligence and getting things so and it's wonderful once you're done. But man, it'd be a lot easier to come in there and spray that thing and push that out, you know, and I don't I can't sleep at night doing that anymore.

Dane Whicker
We can do a lot of cool things. And when this hard work is done right? It can be downright inspiring. My

Seth Watkins
big deal also, you know, I want the animals to express their natural instincts. I want them to see the sun I want them to graze, I want them to be as close to what nature intended as possible. We

Dane Whicker
can reduce our runoff through no till farming, cover crops rotation, and using more natural fertilizers. It's

Seth Watkins
really sad because you think it's thrown you know that land should never have been tilled, it should have been kept in permanent forage. And we know there are ways we can care for our land that will actually you know, science tells us watch the drill or soil back that will make our water cleaner. We

Dane Whicker
can reduce our chemical use through increasing species diversity, integrating natural predators and grazers to control pests and invasives and even cultivate naturally resistant crops.

Seth Watkins
What can the cattle do? do on their own what? You know, what can nature do for me that right now I'm compensating for with a mower, or a sprayer or some other tools. If I have more time, can I get that goat out there to eat that thorn tree instead of me cutting it down in Springfield, Florida. When

Dane Whicker
chemicals aren't necessary, we can reduce their use by implementing precision technologies.

Seth Watkins
When we do have to use chemicals, I use a geospatial map. So I know exactly where I was. So I can pinpoint I mean, there's a lot of good and we

Dane Whicker
can help support research and initiatives to reduce agricultural emissions. I

Seth Watkins

don't know what the right ratio is going to be a large ruminant animal to small ruminant animal. I mean, I might need more sheep than than cattle, I don't know. Yeah, they all have their place, they all do neat things. And, and that goes back to that need for you know, high quality, high quality information, make those decisions.

There's a lot of different ways that people can be practicing, you know, farming or ranching or whatever it may be, to help them through their waterways in the ocean. And it's not necessarily this very general checklist, like you have riparian buffers, okay, you can be an ocean friendly farmer, because a lot of people are using some of these practices, but not all of them. Just for a lot of different reasons, you know, you can't expect everyone to do every bet, every best practice all the time, it just doesn't work that way. So we came up with this list.

Dane Whicker
So that's the good news, there is a lot of cool practices that can be put into place to help address some of these problems. And farmers can kind of pick and choose what works best for their own farm. But then the question becomes if we know all of these cool things, and not everyone needs to be doing all of them, why aren't we throwing all of our resources towards their implementation?

Seth Watkins
It isn't like, there isn't another option. What's frustrating is there is a better way that is better for all of us. And we know it. So I've been told that what is a terminal hope comes when we know we're doing something wrong, and we know there's a better way forward. So we do have eternal hope on this. And then the next step is, you know, getting our act together. That's the hard thing. You know, I mean, this is a massive scale, you know, how huge the oceans are, I know a huge, how huge our landscape is. And that's what we have to be strategic, and we have to be smart and how we do it. So

Dane Whicker
part one of the issue is scalability to million farms to implement solutions on and lots of hungry people creating a constant pressure to produce part two.

Seth Watkins
And the hardest thing to you know, own and I'm open for people that can help me on better knowledge on tree planting and certain kinds of restoration. As a farmer, I can get all kinds of information on chemicals, pesticides, fossil fuel made fertilizers, farm equipment, part

Dane Whicker
two is finding high quality information and financial support for restoration work, someone

Seth Watkins
to come out and help me figure out the best trees to plant for a permaculture setup. I'm gonna have to pay it out of pocket. First of all, we're all those other things. I'm used to as a farmer of free throw extension, you know, and I'll be fine. I'll get it done. But it's just when we wonder why it doesn't happen faster. I think that's one of the examples of, you know, people have got to go where the money is, and

these really run agronomist and all these folks we need or tell them how to plant corn. Yeah, I got that down. I want to help planting chestnut trees. And part three, again, a big part of, of systems change or strategic planning is taking that uncomfortable step back and looking at what we're really doing. And and if we take that step back, where I begin is that we're bragging over the efficiency of modern agriculture. But the fact is, that before the Industrial Revolution, we used one calorie of energy to produce five calories of food. Today, with all the technology we have, we use 13.3 calories of energy to produce one calorie of food. Our modern system is infinitely less sustainable than what was happening before and I understand the concerns and understand all. I understand that that's a really hard thing for people to hear. There's

Dane Whicker
a little bit of psychology and policy at play here too. Since the 1970s, when US Secretary of Agriculture, Earl Butz started spreading the mantra get big or get out. Policies and attitudes in the United States have shifted towards supporting large scale agriculture over smaller farms in general. Over time, this industry has grown to match and it has been done Hold on decades of research, hard work, and well intentioned people wanting to feed us. But consequently, some of our current policies, subsidies, and even lines of thought still support pushing our absolute maximum yield for a very few commodity crops like corn without any real regard for the ecological consequence. So what can we do? Well, let's start with part one, scalability. As Seth said before, ecological restoration work is hard. So it's daunting and expensive to think about implementing solutions, and we have these huge farms producing bushels and bushels of food. But in talking with Seth, I began to question what if the answer didn't lie in scaling the solution up, but rather scaling our farms down,

Seth Watkins
I'm definitely the odd guy out on saying we've got to make our farm smaller and really make this work, I think we're really looking saying, we're gonna have these large efficient farms, and they can be ecologically sound. And that's, that's not entirely untrue. And, and I know how beautiful an acre of corn or a perfect field of wheat or any of those things can be, but nothing else lives out there. When I start seeing, you know, going back to the trees, if I've got 30 pecan trees, that has a herd of cattle that graze through followed by a flock of sheep, followed by a flock of goats, followed by two or three pigs. And on top of that, were even maybe raising some other things around there, which acre was the most productive. And that's and I'm just measuring the economic productivity, I didn't put any value into the natural capital, or into the value of what we're doing by cleaning or oceans, or any of those other areas that the other I'm not an economist, but the other capitals that are impacted by this, I'm even with my statement, I immediately just went to economic capital to money. And I think if we circle back to that objectivity of single, how many calories did we use to produce this calorie food? Because that's what's really going to matter long term. And then you think also, you know, the, they talk about the Jevons paradox that we brag about efficiency, but the more efficient we become in something, the more resources we use to produce something, you know, we are using the argument still, that we have to have large efficient farms to feed 9 billion people by 2050. You know, the honest number, and I think it would be higher than this, if we didn't have some of the policy. But I think 35% of the world's food is grown on 12% of our land, by farmers farming one hectare less. So the power of a small, diverse farmers is real. And most of those farmers are probably a lot closer to that one calorie of energy to five calories of food than the farms we're bragging about right now. For

Dane Whicker
Seth scaling farms down allows for the time and freedom to really diversify. And if done right, can help in implementing ways to steward nature without much threat to the bottom line. That bottom line still depends on a lot of other factors, though, which is why it's important to understand the inputs and production costs, and shift our policies and consumer behavior to supporting the right things.

Seth Watkins
And that comes back again, was that those farmers I talked about on a hectare or less. And they could probably double their production with some practices that don't involve fossil fuel or chemicals or fertilizer, maybe it's just stability or support or better credit. And there's a lot of things that we don't think about. Remember

Dane Whicker
that right now, a lot of policy in the US, on average, favors the support of larger scale, less diverse operations, growing commodity crops, rather than offering support to small scale farms trying to diversify. But Seth noted that there are good organizations out there, like in harmony farms, or Global Greens out there to help small scale farmers get started the right way. And the inspiration that that brings.

Seth Watkins
And when I visit we know like when I visited eHarmony farms or when I visit Global Greens, these farms that help refugee farmers get started. I just I feel I'm I'm just I feel ashamed sometimes by how much support I get, and how little I know about agriculture when I'm talking to a farmer that this gal was probably raising 26 or 27 Different plants on an acre of land and in a in a systematic rotation. And she knew every single thing there was to know about every single one of those plants from you know, root to tip. And, and on top of that she could manage her water she and she loved it. And her passion was there and sometimes I think that maybe that's one of the saddest things I've seen of our of our more efficient modern farms. Pretty soon some of that passion goes away, you know, that sense of purpose of caring for the land. It's not the same one we're just on and off and and you feeding your family. So it's it's honorable and it's important but it's amazing the passion that's come back in me because when I started planting trees, I mean I'm excited to go see what happened to them each week when they're starting out and, and we all need those things in our life, things to look forward to. And if they're things look forward to that are benefiting our environment on our landscape even better.

Dane Whicker
Not only to Seth believe that smaller scale farms will be powerful forces in bringing the world food. He also thinks they'll help bring back knowledge and passion into his profession. On top of that, he notes that it'll help with the next part to that information problem.

Seth Watkins
You know, to be successful, we need high quality, unbiased information, you know, good, bad and ugly, and that's what it's gonna take to do this.

Dane Whicker
The problem of course, being that oodles and scads of scientific effort and information exists for unsustainable farming methods, the use of fertilizers, pesticides, and more. Well, Lidl exists for designing and managing the land more in harmony with natural ecosystems. Seth highlighted this challenge when he told me about his current problem of controlling cereda less but ESA, and invasive weed on his farm. Yet in trying to walk away from chemicals for its management, Seth found himself in uncharted territory. In

Seth Watkins
our case, probably a plant called salacious, less buddies, that's a southern plant that's just been more adapted. It's the majority of our, our invasives were introduced by a well intended extension agents years ago, you know, it just people thought they had the right idea. And now we know better. But the good news is I found out the sheep can eat up. I don't want to spray it anymore. I want to control it with my sheep. But we've got you know, 60 sheep and 300 acres and I don't know where to end, I really have enough of it, I want to dedicate them full of spots as quick as I can. So not to bore your audience too much as if

Dane Whicker
amazingly cool agriculture techniques could be boring. Come on Seth. But I

Seth Watkins
looked and I have a friend and Northern Iowa that has a device, he calls the stock Cropper, and he's taken precision ag and he's taken a, it's a 30 foot wide piece of equipment, with literal pins pin on the front and a pin on the back and a shelter in the middle. And this with precision ag moves between eight rows of corn, so you have eight rows of corn and 30 feet of a of a cover crop establishes that he grazes with a series of shape, then pigs, then chickens. And it's a circular system. By the time they've gone down that row, the sheep, pigs and chickens are ready for market. And they've done a beautiful job of fertilizing, where the next eight rows of corn will go the following year. And what's exciting this is yields with us are outperforming a conventional system. Now,

Dane Whicker
I'm not super familiar with the literature in this space. But I'm willing to bet that you would have a hard time finding a published paper on the benefits of a moving animal HUD towards better farm yields. You know, you find it listeners you let me know. But with the extra time from a smaller scale to experiment, there are people out there doing that unconventional r&d.

Seth Watkins
There's nothing saying that I couldn't make something for mine that similar where they could still move every day, but be safe from predators. And I thought you know what that system, I could literally, I could probably wipe out this arratia With the sheep because they're the only animal that will graze it down and manage it. So this winter in the shop, I'll get my welder out and try to find some pieces and, and put something together. And, and the thing is, is, you know, this could be a colossal disaster, I don't know. But I'm excited because in making my farm smaller, I'm finally gonna have the time to do that and have some of that innovation that I've almost felt like I've been forced to move away from as you know, I

specialized and got bigger and bigger. And I want to see what happens and my friends know that I'm keeping track of it. And if it's a disaster, I'll tell them and if it works, I'll tell them but you know, we'll we'll see how this all goes. Someone's got to do it.

Dane Whicker
Someone's got to do it indeed. But with the challenge of not having high quality research in this space publicly available. It's down to the community of farmers wanting to steward the land and see to perform their own solution finding and experimentation, at least until some of the policy changes.

Seth Watkins
And that's one of the things I've begged for. I've I've begged our funders, I've begged our universities, you know, at at Iowa State, we have the Leopold Center. That was awesome. Our legislature defunded it. So we really don't have places to go see that we have Practical Farmers of Iowa who does a really good job, I can turn to them. You guys and Boulder, you got mad ag who is a group that I'm really I'm watching closely and learning from

Dane Whicker
still, until then Seth being inspired and trying new things brings up a key point here, the importance of community and knowledge sharing within this space. Which brings us to part three, the last part, the power of local action, Community Action, and our very ways of thinking. Now

Seth Watkins
the beauty of watersheds. In my eyes, if you do have to start at the top, but you can you can show people one tributary running to a river. It might be the like little stream that runs from my farm that's not even three fourths of a mile long. But by getting three neighbors together, that stream is perfect. You know, so we know that one's done. So check. Let's get to the next one check. You know, pretty soon it snowballs. Yeah, I don't want to go all hippy on you. But I, the more I think about it, I mean, it is powerful. And and it's contagious. And I think it's the best way for us to get this done. Whether without political will. Personally,

Dane Whicker
I wouldn't discount going all hippy here. Because this line of thinking when spread and multiplied across many people, many professions, many states influences the actual policies and support that farmers like Seth get. That is why connections between inlanders, agriculturists and oceanic issues is so important. Through that power of thoughts, public opinion changes. And when public opinion changes policies follow, it may start at the tributaries, but it can end up as a massive ocean.

Seth Watkins
I do believe I believe we're in a window where we can really make a difference. Still, I wouldn't even bother talking about this. So I didn't think I was, I think that window is about one generation wide or less. And and I believe that, you know, our legacy is going to come forward. The next generation when they're our age, and they're sitting around talking, how are they going to view us because they're going to know that either we did the right thing. And we found a better path forward, or look back and say,

Man, those those folks had every bit of information they needed. They had proven documentation that proven trials, and they still kept going this way. What were they thinking? So

Dane Whicker
what can we do to avoid having that proverbial egg on our face? Well, to boil the answer down to a single word, it's together.

Seth Watkins
And then but I think if I'm talking to the folks that live in the in the city, I can't do I want them to know I can't do this without them. What they choose to buy, how they choose to eat, the things they choose to support. That's what makes the difference. The

Dane Whicker
first step starts like the small streams on Seth's farm at the tributaries. Well, the metaphorical tributaries anyways, us as individuals, you and me, your neighbor, your work colleague, your friend that loves to cook, all of us who eat delicious things, thanks to hardworking farmers, fishermen and more. We are every bit a part of this as Seth is, and our power is not small,

Seth Watkins
you know, stay connected to the land, whether it's through our parks, our public lands, go to farmers markets, get to know the people raising your food. Think about your choices at the market, when you buy food at the grocery store, and at the market. Those are powerful choices that you have total control over and make a difference. Supporting public lands, supporting easements to protect farmland, that's something everyone can do that really will make a difference in protecting our oceans. buying products that we know what's in the supply chain. I mean, you know, there's, this happens with the seafood and with with with fish, as well as livestock. How we buy makes a difference.

Dane Whicker
I'm gonna say that again, for those in the back how we buy inland or not makes a difference, supporting local farmers doing things to regenerate their soils and help shift away from practices that harm the oceans adds to the collective experience. All of these tributaries have effort from all of us, eventually combined, building into rivers. When our mindsets and practices shift away from our current yields or everything trajectory, we begin to build a community willing to support the farmers who want to do this right. Be that through time, money or knowledge. And when we have the voice of a community, big

Seth Watkins
companies are hearing us while Walmart wants to make this whole supply chain carbon neutral. You no good bad or indifferent. They're doing stuff Unilever is doing good work on this General Mills is doing good work. That means they are listening to the consumer to the people that and that's why I'm like man, we're in this together and I can't do it without you is what I'm saying. Shifting

Dane Whicker
a collective mindset and building a community voice can be hard. But this is why a program like the inland ocean coalition's ocean friendly farming is so important. The

best part the kind of the main thing is if you go to the ocean friendly webpage, we have like the ocean friendly farmer community, and that's where people can, you know, they submit a photo and a little bio and it's about their, about their farm or their business or whatever they may be doing. And it's just a space where people, people with just the general public can come and you know, see if these farmers are close to their community and able to get in touch with them and support them by purchasing their produce or their products or their meat, whatever it may be, like, the plan and the whole was is to actually, as we get more people involved to kind of create this space for all of these different farmers and different groups to come together and actually discuss with each other what they're doing, or even just

Seth Watkins
honestly, I think I was already there, I just had to meet people like me, I think that's the that's what's cool about as you get to meet new people, I mean, you know, one of the farming is a little bit of an isolated vocation. So being able to meet folks that you're making a difference for and feel like you have their support makes some of these things easier. You know, don't believe me, I'm tempted sometimes to go old school and just be done with some of these problems and let chemical but it's like, no, I can't. There's people I care about, I don't want to let them down. It makes the connection stronger.

Dane Whicker
This program's very core is finding, recognizing and bringing together farmers and the public through connections of land, sea and the food we eat. By highlighting the cool stories of officially recognized ocean friendly farmers. This particular program boosts awareness of the farmers leading the charge on this mindset and systems change. It also acts as an important resource connecting farmers with each other with the public. And that helps us get to know who grows our food while helping those who are putting in this work to address those critical knowledge gaps. Alongside the inland ocean coalition, Seth reiterated the importance of supporting other agricultural groups that support small scale regenerative agriculture, like in harmony farms. And

Seth Watkins
at the same time, like the groups I talked about in Iowa, start finding those people because they're there more and more every day that are working to help small scale farmers access land and support them by buying their products support them, but they're contributing their foundations, whatever, you know, give them time, whatever you can do, learn. And again, just really get connected, whether even you just put a little window box garden in your apartment and raise something, start to reconnect to the land.

Dane Whicker
These rivers of support, when amplified across the country will then continue to collide, combining their strength into a mighty metaphorical ocean. A rewritten narrative for state and federal policies that regenerate and steward the land, protect and restore the ocean, equitably treat farmers and still feed us for affordable prices. While we're at it. I asked Seth what this would look like in an ideal world.

Seth Watkins

I think first, we've been on a production focused farm Bell since 1971. When robots said get bigger and get out. I think it's time that we acknowledge that wasn't the right trajectory. So let's start with making sure that our farm bill incentivize incentivizes the regeneration of resources, not production, we can do that we can come back and say, We're gonna provide federal crop insurance. But you're gonna guarantee us that the soil is actually rebuilding on this farm, and you're gonna guarantee us that we see more wild species and the water is clean. So that that would be square one, I would like to see investment but back into education and extinction and extinction, extinction, excuse me. So that we do have the resources and the training we need. As farmers I when I were when I was little, every county haven't had an extension agent. And that was the go to person and that person brought farmers together. And we learned together. And slowly but surely funding would be kept for those programs to where I'm don't know, if we wouldn't have an agent in five or six counties. You know, we have some specialists, but you don't have that person in the county office, you want to see, I think the third is making sure people have access to land. When we're talking about indigenous farmers, when we're talking about the tribes, we're talking about the territories, making sure that those farmers are supported and really have the access to land and credit that they need. And that we have programs that can make them as successful as you know, the programs that made raising corn successful. And I think even to a certain degree, we need to probably put more money, that direction going back to the importance of the knowledge they have and what it means to us going forward. I think we can also enforce the things we have, which are things like conservation compliance, it's not enforced. That's a tool that is right there and will make a big difference on watersheds immediately. You know, thinking that through I think, yeah, so protecting land, providing access to land, and regenerating the land on the natural resources are the three things I want to see on a farm bill. It makes sense to me if we're going to save our oceans, we have to start at the very tributaries. And and also I think that not just our practices, but our thinking has to start there.

Dane Whicker
Our actions, choices and thinking at these very tributaries is so important. Go to farmers markets, get to know your local farmers, grow something yourself or help spread the word and support groups that are looking at agriculture. In a new regenerative light, support legislation and local policy that favors regenerative practices over larger and more destructive ones. If you're a farmer and you want to be a part of the ocean friendly farming program, visit the link in the show notes to get started and be on your way to your own feature on the inland ocean coalition's website. And to be part of this growing movement to you know, that's pretty cool. Thanks for listening to today's episode of Pekin plunge. I don't know about you, but it feels pretty cool to know that even though I'm miles from the sea, I hold incredible power to help carve a healthier future for us and the sparkling blue. So at this point, only one question remains. Will you be among the tributaries that will build into this mighty ocean? Thanks for plunging in with us. We'll see you next episode.