Animal Impact and Regenerative Agriculture: 
A Special Interview with Will Harris

By Dr. Joseph Mercola

JM: Dr. Joseph Mercola

WH: Will Harris

JM: Hi, this is Dr. Mercola with Will Harris in Bluffton, Georgia at White Oak Pastures. He's a pioneer of grass-fed products and pastured farms. We're here to take a look around.

WH: Thank you for being here today, Dr. Mercola. I'm looking forward to showing you my farm. We are very, very proud, fiercely proud of what we do. We've come a long way with what I call a kinder and gentler agriculture. We need the support of you and your viewers and supporters. We'll show you what we got and try to earn that.

JM: Great. I'm glad to be here. We've got a wonderful day to explore your farm.

WH: A beautiful day.

JM: We're now at a section of land that is a really great demonstration of the process of converting the traditionally grown land, which is typically growing corn, cotton, and peanuts and literally decimates the soil, because not only do they monocrop this but they use chemicals. None of this process allows organic matter to accumulate in the soil. This land specifically is about a half a percent.

Will just bought this land a few weeks ago. This is brand-new fencing just put up. He's in the process of using regenerative agriculture principles to convert it and increase the organic matter to five, six, seven percent or even higher. Will, why don't you discuss the process and let our viewers know how you're achieving this transition.

WH: Thank you, Dr. Mercola. We really feel blessed to have gained control of this piece of property. This continues to the farm that my family has farmed for 150 years. This land has been farmed in what I call the trifecta – cotton, corn, peanuts; cotton, corn, peanuts over and over again. All three crops on really hard on land for different reasons. This soil is, in my mind, completely dead. The biological life just doesn't exist here anymore, because of intense tillage, tremendous amount of chemical fertilizers being used on it as well as pesticides. This was cotton last year.

What we've done is fenced the property. We put about a thousand cows on the land. There's nothing for them to eat out here. We feed them hay and haylage during the period that we're asking them to transition this land for us. They will be out here for about a month.

JM: How many acres are out here?

WH: There's 220 acres. They will be eating hay, which is imported from another farm, about five miles from here. They will urinate and defecate on the land. Basically just giving the microbes something to eat.
Nourishing the microbes. Nourishing the land. I'll let them do that for about three weeks. This past Monday, I put on 15 pounds of perennial grass seed and I leave the cows out here for another week to let them walk it in.

In addition to feeding the land through urine and feces, their hoof activity helps break down the hard cap on the land. We call this using animals or animal impact to bring about the desired result which is ultimately to turn this into a pasture and then later to turn it into a savannah, which we feel best utilizes the rain ration, the energy cycle, the water cycle, and the mineral cycle.

**JM:** It will create land that will actually grow nutrient-dense foods that will sustain human populations, because forests won't do that.

**WH:** That's right.

**JM:** You've got 220 acres here. You've got the general principles. You've got the cows, essentially trampling over and depositing their waste throughout the field. But how do you get them to actually go over the entire 220 acres? What's the strategy? How do you manipulate them to do that?

**WH:** That's a good question. It's very important that the animals transverse the property. These cattle are like us; they're really not going to do much more walking than they need to do. We put the haylage on this end of the property and the water is on the other end of the property, so that there are two things for us: one is it maximizes the impact of their hooves on the land (which we want) and it causes them to not concentrate the waste (the urine and the feces) in one place but distribute it as evenly as they can across the land.

**JM:** Do you change the water location, so that they – ?

**WH:** We change the feed location. The water location is very difficult to change. We move the feed around causing them to take different paths. I'll also mention, see how you can see through that little forest out there?

**JM:** Sure.

**WH:** That land was so thick that you couldn't get through it without a machete. In fact, when we built the fence, we had to chop our way through. Now I have opened it up. That too becomes a source of feed for the cattle. Cattle like us, they don't want – their bodies don't want a monoculture of eating only the same grass or forage over and over. You won't get a smorgasbord that nature intended. Nature abhors a monoculture. Nature won't allow it.

**JM:** That's almost the entire composition of industrial agriculture.

**WH:** That's factory farming. Industrial factory farming is monoculture. In nature, you will never have some woods that are nothing but wired trees and some woods that are nothing but long-leafed plants. There's nothing but squirrels in those woods.

**JM:** Or pecans.

**WH:** Or pecans. There's nothing but deer in those woods. Nature wants a smorgasbord of many different microbes and plants and animals living in symbiotic relationships with each other. The only way we can maintain a monoculture is through the use of the “tools” the reductionist science has given us – chemical fertilizers, pesticides, antibiotics, hormones. The monoculture falls apart if you don't use those things and they have unintended consequences.
**JM:** Basically violating time-honored natural principles that will decimate the topsoil and the microbes and will lower the organic content which is really crucial to sustain this ability to produce nutrient-dense foods. This is the process of converting back from all the damage of industrial agriculture and factory farming has done for literally hundreds of years. Your case alone, your family has farmed this farm for 150 years. They've done a lot of damage to it but they're helping to repair it.

**WH:** Industrial farming has horrible unintended consequences and it is absolutely in conflict with nature. What we do here is an effort to emulate nature. Our best emulation is not good and our worst emulation is horrible. But we get better and better at it.

**JM:** With time, I'm sure. It's interesting because your family has been here for many generations, 150 years, yet still there are members of your family that don't get it. They don't understand or adopt this for whatever reason. We look at the land on the other side and basically that's going to continue in the degenerative cycle whereas this is going to progress in the regenerative cycle.

**WH:** I know every farmer in this part of the country. I'm 61. I was raised here. My family has lived here for 150 years. I know everybody. There's not a single one of them that believes they're degrading their land. And there's not a single one of them that believes their animal welfare is not fine.

**JM:** The average person watching this won't understand what animal welfare is. They know what the words mean but can you broaden that description so they have a deeper appreciation of what that means.

**WH:** Absolutely. For me and my father and for my neighbors still, good animal welfare meant that you don't intentionally inflict pain and discomfort on the animal. You keep them fed. You keep them safe. You don't hurt them. All of us believed that was good animal welfare, and most people still believe that. To us now, that is no longer sufficient.

For me and my family and my employees, good animal welfare means it is incumbent upon us as herdsmen to create an environment in which the animals can express instinctive behavior. Cows were born to roam and graze. Chickens were born to scratch and peck. Hogs were born to root and wallow. Those are instinctive behaviors. If they're deprived of that aptitude, that is poor animal welfare.

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If you have a cow on a feedlot, a hog in a gestation crate, a chicken in a battery cage, they're safe, they're reasonably comfortable, but they can't express instinctive behavior. It's like raising your child –

**JM:** In a prison.

**WH:** Putting him in a closet and saying, “This is great. I keep it 72 degrees. I leave the light on. He'll never break his leg playing football. He'll never be abducted. He'll never be run over by a bus. Great.”

**JM:** And you give him food to eat that he was never designed to eat.

**WH:** Potato chips and all the Cheetos and soft drinks he wants. That seems like great child rearing – except it's not. You need to let him get out there on the football field, eat meat and vegetables, and be exposed to microbes where they won't become allergic and they will build natural immunity. That might be a good idea.

**JM:** It likely is. Thank you for expanding on that. Now we're into the next phase of transition into regenerative agriculture. The first part of land we showed you was just a few weeks old. This is a few months old. You can already begin to see the dramatic and remarkable transition. Why don't you describe
what's going on here, how this got to this stage, and how some of the annuals are going to be managed by your wise introduction of the cows?

**WH:** This land also has been farmed with cotton, peanuts, corn rotated over and over until the soy is literally dead. We just got this land the same time we -- it's part of the 220 acres actually. We've used animal impact. I put cattle out here, fed them haylage. They walked and broke the hard panel top of the soil. They got rid of that. They put a lot of feces and urine down to feed the land. I let them do that for about three weeks.

Then we put our own perennial grass seed, 15 pounds per acre of a mix, and I put the cattle. I let them walk it in and then we pull the cattle off. This is -- I don't know if you can see it. It's so fine. We have a wonderful stand of perennial grasses coming. It looks like tiny green hair. That's what's going to make this into a productive pasture and later savannah.

**JM:** Because they lay down really long taproots going down eight feet.

**WH:** Eight feet.

**JM:** As opposed to the annual. That's going to really nourish the microbiome, and the bacteria and other organisms that thrive in the soil. They need that plant interaction.

**WH:** That's exactly right. The annuals that you see here -- and there are a lot of them coming.

**JM:** Bigger ones.

**WH:** The bigger ones. That's right. The quick kick. They jump up. They're shallow-rooted. They're fine but they're not the long-term solution for regenerative agriculture. In fact they will outcompete this very delicate, fragile perennial grass we got coming. We use animal impact to handle that.

When we get a little bit better stand of perennial grass, the annuals will be more pervasive. We'll put the cattle in here. I call it flash grazing. We let them bite everything off. They'll concentrate on the annuals because they're big and succulent. Before they get to the little tender perennials, we'll pull them off.

**JM:** That's just not very long. Maybe an hour or two hours.

**WH:** Maybe an hour. We'll put a thousand head on here. It's only 26 acres I think in this pasture. But we have to do that a number of times, because the annuals again will come up. We'll keep doing that this year and maybe next year until it begin --

**JM:** Until the perennials get root and get hold.

**WH:** That's right.

**JM:** Until they can get a nice stand, so they can outcompete with the annuals.

**WH:** When they get their root down to eight feet, they'll outcompete the them.

**JM:** Great. It's magnificent to see this whole process in transition. Because this is slow. You have to understand how the cycle works, so that you can manage it properly, and you can recapture and regain the soil to do regenerative agricultural principles, but if you don't -- it's not going to happen spontaneously.

You can wisely manipulate and facilitate and catalyze the quickening of the conversion period. Typically to regain topsoil, I think it's 100 to a thousand years to regain a quarter inch of topsoil. It's a very slow
natural process, but when you use these principles, you can accelerate it by thousands of times. How much topsoil can you grow?

**WH:** I don't know about depth. As far as the percentage of organic matter, which would be a good indicator, we've grown from less than half a percent – which is what this would be; I've done it on other farms – to as much as five percent about a 20-year period.

You mentioned the cycle. That's right. But it's really so complex. It is cycles. You've got the energy cycle with the sun. There goes much photosynthesizing as much material as possible. When that sunshine sends that radiation and hits that bare earth, it's lost. If it's photosynthesizing tissue like a good stand of grass and trees, it's turned into a usable product. Grass for the cows.

**JM:** Because this is the last thing you want: this bare soil. As Gabe Brown teaches, the plants are the armor of the soil. You always want to cover it. You don't want to keep it bare, because you decimate the microbes.

**WH:** It's like your skin. The mineral cycle. This photosynthesizing tissue is breathing in carbon dioxide, sequestering it in the ground, and breathing out oxygen, which we need. It's a cure for greenhouse gases.

**JM:** You'll sequester the carbon. But the reason this soil is not covered now is it's in transition. It's beginning to be covered. You get this fine green growth of the perennials that will becoming in and eventually cover the entire soil.

**WH:** I'll walk you over and I'll show you some other stands that are doing exactly what they're supposed to do with the water cycle, the solar cycle, and the mineral cycle.

**JM:** That are benefitting from adopting these principles.

**WH:** I mentioned the water cycle but I didn't -- the water cycle is, we get about 52 or 53 inches of rain every year. If that rain falls on this land, it's like falling on a table top. After, this'll get a good growing sod. It's like a sponge.

**JM:** Because the more organic matter, the more water the soil will retain.

**WH:** Exactly. Every drop of water gets here is dying to get to get to the ocean. It's my job as a land steward to slow it down.

**JM:** Absolutely. Here we are in mature pasture. This is what the ultimate progress the pasture goes to. This specific pasture has not had any chemical fertilizer around it or herbicides for 10 years. Why don't you explain what we're looking at and the process to get here? Because it's quite a bit of a stark contrast from the raw land that we saw on the earlier clips.

**WH:** It's a stark contrast. We talk about the carrying capacity of the land as an indication of productivity. This land could easily carry one mama cow per acre, which is very, very productive. When I look down I see many, many, many different species of grass and forbs. I see red clover, white clover, hairgrass, bermudagrass, rye grass, Dallas grass. It's a smorgasbord of many, many things for the cattle to eat. This pasture was grazed off pretty short, about two and a half weeks.

**JM:** Wow. It grew back this quick at two and a half weeks.

**WH:** Actually the grass is getting ahead of the cattle. These cattle aren't through with this pasture. They actually need to be moved over there and then over here. This is a very productive time of the year. I'm probably going to bring some other animals – sheep or goats – over here to help them with it, to catch up a little bit.
JM: Perfect. It proceeds throughout the entire year, of course. Obviously in the winter, it's not going to grow this lush. Do you ever need to resort for the need for hay in the winter when you don't have the lush pasture that you have in the summer?

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WH: I suggest. We do use hay or haylage when the grass is not growing as quickly as we need it too. It's growing too quickly now, but at times it's not quick enough. It's usually not in the winter. We're about 70 miles from the Gulf of Mexico, so we get warm weather, good rain, no snow.

Our winter grass is very good. Our main reason for feeding supplemental hay or haylage is between the warm season grass and the cool season grass, it's a little bit of a low; and between the cool season and the warm season, it's a little bit low. We feed haylage then. There's at least still something green growing, but it's not growing quick enough. Then if we have what we call a drought (what we call a drought in most of this country), we feed haylage.

JM: As long as we're here in this pasture, I think it might be wise to address some of the economic challenges that prevent other farmers from taking the course that you did, which is really courageous. I'm still not clearly understanding of your entire motivation of doing it, but clearly is – it's a long-term strategy.

Because to transition to engage in this type of rational, sustainable, regenerative agriculture approach, can take an economic impact. The investment of time, effort, energy, and resources to create this environment – there's a long time where you're not going to be able to sustain an economic benefit from that, because it takes a while for it to mature. Maybe you can discuss some of those reasons. I think it will help our viewers understand some of the challenges that a conventional farmer might have or maybe even what motivates a conventional farmer.

WH: Having good animals that fit the land – healthy, immune to what pathogens might be here, productive, efficient animals – grazing on a land like this is profitable.

JM: At this stage. At this level.

WH: At this stage.

JM: It takes a while to get here. You don't get here in a year or two.

WH: No. Correct. But at this point right here, if it definitely look like this, it would be very lucrative and profitable and productive, and all is a good. Unfortunately, here in my part of the world, and I think it's probably true throughout the world, industrial agricultural practices have degraded the land dramatically.

This land beneath this grass is an organic medium that's teeming with life. It's just full of living things, millions of living things; some of which you can see; some of which you cannot see. But it's teeming with life. If you go right across that forest to another field (we lost another land on there) and got a handful of that soil, it is a dead mineral medium. It's like a handful of tiny, tiny glass bead and nothing is living there.

JM: It's almost like growing in hydroponics.

WH: Almost. It holds the roots in place. I've said that before. Hydroponic farming, you put everything there you want it to have because there's nothing there.

JM: Right.
WH: The transition from this to that is very expensive, very slow. It requires a little bit of knowing what you're doing. Same steps. If you would just drop over there until we make a living, grazing livestock, you couldn't do it. What we do is we get a lot of this land that is working for us, so we're able to get small bits every year to start transitioning in.

JM: Subsidize that. If you take a look at these animals, these are really healthy animals. We had a conversation earlier – I like you to comment on this and expand on it. Most people watching this aren't farmers. They don't know how long a cow lives for the most part. But a cow raised in this type of environment, outside, eating this natural pasture, will leave to over 20 years old. Healthy. Without disease. Without seeing the vet. Without taking antibiotics. Without taking vitamin supplements.

WH: Exactly. Because they're eating a natural diet.

JM: Right.

WH: These are the male calves that I raised last year. I think there are 360-something of them. They are now about a year and a half old. Maybe not quite. Maybe something close to 18 months old. Most of them, all of them will be slaughtered on our farm – we have our own farm slaughter plant – over the next 18 months. We slaughter all of them, except the few that we select for breeding. The ones we really like, we keep for breeding.

But if we gave a presidential pardon and say, “We're not going to slaughter you. We're just going to let you stay right here, eating what you're eating, doing what you're doing,” they would live the life expectancy of a cow which is 20-something years. I think 24 years. That's what we're told. Their average life expectancy.


WH: If you took a feedlot animal, a feedlot animal, instead of being slaughtered at 22 years of age, they'd be slaughtered at 17 months of age. Instead of weighing a thousand pounds, they would weigh 1275 pounds. They still have two-tenths of an inch of back fat at the 12th rib. They would have almost three quarters of an inch of back fat at the 12th rib. What's that saying is that animal is an unnaturally obese creature. Obscenely obese that will never, ever survive in nature. They never occur in nature.

If they were left beyond their 17 months in that feedlot environment where they're gaining four to five pounds a day, they wouldn't live very long. I've never done that experiment, but I'm sure they wouldn't live to be four years old. That's the difference.

When you eat one of these animals, you're eating a healthy animal in the prime of their life.

JM: They're like athletes.

WH: Like athletes. When you eat that feedlot animal, you're eating an obese creature that is dying of all the diseases of sedentary lifestyle and obesity that kill people.

JM: That's right. The analogy is quite extraordinary to what is happening to the traditional American diet. We're eating foods that are so much to the feedlot cows, which die literally 75 percent more quickly than the cows fed in their natural environment.

WH: The example I gave of those two cows will be even more with two hogs – industrial versus pasture. It will be even more with two chickens – industrial versus –

JM: That's larger because those animals don't live quite as long as the cows. Is that correct?
WH: It's because the smaller the animal, the more handedly it lives itself to industrialization, factory farming, so the more intense. A cow in a factory farm does not have a great life. A hog in a factory farm has a worse life. I don't think there's a factory farm animal that has as bad a life as a chicken in a factory farm.

JM: That's extraordinary. I think most people watching this probably aren't aware of that, because we're isolated from that whole growing experience. We have no idea of what the natural life expectancy of these animals are in the wild. We just don't know. They're sacrificed so much more quickly than they would have normally.

WH: And every multinational food company calls itself something really pleasant. [Inaudible 28:10] farm. On the side of the trucks, they've all got a real bird and happy animals around it falling through the green pastures. There's a lot of “greenwashing” that occurs.

JM: It's really helpful that people like you are really major pioneer and is one of the primary leaders in the whole United States of actually implementing this strategy, teaching others to do this, and a lot of sort of leading the way so they can follow your foot steps and really raise healthy foods and have animal welfare as a primary side benefit, and still maintain a profit and bring economic prosperity to the local community that you're engaging in this effort.

WH: Thank you. It's almost in the reverse order. I'm a land steward and livestock man. I focus on the health and well-being of the land and animals. The good food that comes from that is almost like a byproduct, but it's the byproduct that we need because consumers buy it and provide the money that allows us to continue to operate and expand in this way.

JM: That's one of the reasons. Your practice really address the primary objections that many people have to eating meat: that animals are raised inhumanely and that they are loaded with chemicals, hormones, antibiotics, pesticides, and residues that wind up in there, and they ingest that when they eat the meat. Animals are raised in this way. It actually is going to contribute to your health in a profoundly important way.

I believe we were designed to eat some form of animal protein. Probably you just want to stay away from the industrially raised factory farmed animals and really take your selection from animals like this. It's going to be a little more costly, but if you understand that you don't need to eat a lot of meat – the average person eats 40 to 60 grams a day. That's not a lot. You don't need to eat an eight-ounce piece of steak. You need like a two- or three-ounce piece of steak for most of us. Maybe four ounces at the most. If you're eating less, the cost differences disappears.

WH: Those are two good points. There's another one. You said that, for instance, people don't eat meat or refrain from eating meat, because of animal welfare. You're exactly right.

JM: I think it's a valid objection.

WH: It is a very valid objection. But our animal welfare is beyond reproach. We can talk about that. We don't just think animal welfare is not inflicting pain and discomfort. We think animal welfare is creating an environment in which they can express instinctive behavior. It's a good life. Whether it's a chicken, pig, cow, whatever.

The second thing you said is the nutritional and health aspects, which is your field. I'll certainly believe what you said. It's not mine to talk about that. It's not my expertise.
But the third thing that I think cause people to refrain from eating meat is the concern over animal impact to the environment. I agree if you're talking about confinement animal factory farm model. But I would suggest to you that animal impact is essential for turning this dead land back into productive farming.

**JM:** To address that, there's a recent documentary that's gotten a lot of press. I believe it's “Cowspiracy: The Sustainability Secret” is the name of the documentary. I don't know if you've seen or heard of that. What they claim is that – they were well-intentioned researchers, but they just didn't do their homework – contrary to what you said, that this pasture will support one cow per acre, you will need 40 acres, 40 acres for one cow. They're off by an enormous percentage, almost two orders of magnitude.

**WH:** In Arizona, it might take 40 acres. I don't know that. But the world that we live in, this environment evolved through interaction between microbes, plants, animals to create what we have here today. I'm not talking about a hundred years; I'm talking about millennia. To say that suddenly we have a healthier environment by removing animal impact that was here from the creation, evolution making an impact on who we are and what we are is –

**JM:** Seems a bit irrational.

**WH:** People that don't understand nature. Those of us who live close to the land and animals understand that it's ludicrous to say. We have a world of our own. We did the same thing with microbes. There was a time that – I guess maybe it's still true – people want to kill all the microbes in the world. We live in a hermetically sealed –

**JM:** Antibacterial soap.

**WH:** Squirting on everybody's hands. Life as we know it cannot go on without microbes. It's the same thing to say let's just get rid of these animals. Let's just keep a few and keep them in a zoo somewhere. Life can't go on like that.

**JM:** It really saddens me that most people watching this has never had and will most likely never have the experience to witness this firsthand. Because it really is truly extraordinary. It's an eye-opening experience. If you ever do have an opportunity to go on a farm, a pastured farm like this, I would strongly encourage you to do it. It will open your eyes. It'll help you understand a deeper reality than you've been exposed to previously.

We are here with the goats. You may not realize but one of the primary purposes of goats is to – even more so than cows, they will really take the vegetation down to an extremely low level. They can be used strategically to manicure piece of property as an alternative to toxic herbicides. Will is going to enlighten you how that process occurs.

**WH:** That's exactly right. The plant species that goats and sheep prefer are different from the ones cattle prefer. We have virtually no weeds in our part of the world – maybe one – that even goats, sheep, or cows won't eat. Using the three in combination causes us to avoid using herbicides and pesticides on the pastures. In the same way that you wouldn't have in this country before your parents got here, deer. You wouldn't have just deer and buffalo and other herbivores. The saying is true that you didn't do an efficient job of vegetation if you just have cattle or if you just have sheep.

**JM:** That's terrific. There are even companies that have very large herds of goats and sheep that they rent out to large lots of land that they can use as an alternative to keeping the vegetation under control.

**WH:** You're right. In my part of the world, land will go back to forest unless you do one of the five things – spray it with pesticide (which has many, many problems), till it (which leaves it open for erosion and requires fossil fuel), burn it (which puts organic matter open to the atmosphere), mow it (which requires
fossil fuel and has other problems with organic matter), or grazing. Of all those five possibilities, one that makes the most sense is grazing.

JM: It certainly is the most biologically efficient and recycles the whole process back so that you complete the cycle and actually every phases that's optimized. That's the primary way that you contribute to the regenerative cycle and actually build up the soil rather than break it down.

WH: That's exactly the most environmentally regenerative of the five as well.

JM: It's a magnificent strategy. It's really challenging that more people aren't aware of this. There's not more people like yourself. You're not the only one doing this. Clearly there are many others. But it's clearly a minority. Most commercial ranchers have chosen the conventional approaches, which are really these toxic herbicides, to the point that they're really decimating the environment, decreasing the amount of carbon stored in the soil, and lowering the topsoil and the organic content of the soil.

WH: I'm 61 years old. My generation never learned how to use animal impact to shape land. My father's generation was exposed to it, but they fell so deeply in love with internal combustion engines and the tools reductionist science gave us like chemical fertilizers, pesticides, that they forgot about animal impact. Now that we, my generation, the fifth generation my guess, are learning of the unintended consequences of industrial farming, we have to relearn how to use animal impact.

JM: I think that's really a profoundly important principle that's not just for regenerative agriculture but for so many others in life: the law of unintended consequences. It appears a superficial, simple, and cheap initial approach is the best way to go. But that fails to acknowledge or have a deeper appreciation of the law of unintended consequences, which in the long-term could be devastating.

That's one of the reasons why we're so concerned about the widespread use of GMOs, not because of the genetic component but because of what it allows conventional farmers to do is to use these very toxic herbicides, which we have no idea of the safety. The safety studies, the realistic true safety studies, have never been done. We're exposing the entire population to being a guinea pig in a giant experiment, which is just the most irrational approach possible yet that's what we've done.

WH: I'm a disciple of Allan Savory of the Savory Institute. He teaches us how we use this land and these animals to maximize the energy cycle, the water cycle, between carbon cycle, the mineral cycle. I'm essentially for that.

JM: I'm glad you're leading the way in helping sort of pioneer some innovations in this area, but also teaching these principles to other farmers and showing them that it's possible. Not only possible but it's really the most efficient and practical way to produce regenerative practices, improve the soil, provide high-quality food for people, but also actually earn a decent income from it because you're able to generate more income than a conventional farmer would using these toxic approaches.

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WH: More important than it's possible I think is it's scalable. The response to farming in a manner that is more environmental and regenerative and compassionate for the animals, the response from multinational agricultural Ag is, “You can't feed the world like that.”

JM: That's the classic response. You're right.

WH: I would argue. I think that we have shown here that it's scalable.
JM: In large areas. You don't have to have these monocrop systems that conventional agriculture produces, which just is absolutely pushing the topsoil and the organic content of the soil in the wrong direction. It's scalable and it produces food that people want and are willing to pay for. Food doesn't have to be dirt cheap. You can produce high-quality food, especially using it in the right quantities. More as a condiment rather than the source of the meal. You've got a win-win-win for the environment, for the farmer who grows it, and also for the consumer who wants to consume it.

WH: In Allan Savory's book, I remember one page in which there are pictures of six different palatial ancient buildings that are [inaudible 41:47] sitting out in the desert by the pyramids and all those. The question I asked him is why did these ancient people build these palaces out in the desert? What Alan said is it wasn't a desert. It was the best most productive land they had. But because of abuse, it became a desert.

JM: That's a point that many people don't appreciate. Because we have a limited historical perspective, we tend to think of it that our generation and the previous generation that conventional agriculture certainly in a large scale has happened. But this has gone on from time immortal.

Historically, when there was loads of land, the farmers would just abuse the soil until the fertility was essentially depleted and then move on to the next piece of soil and repeat that practice. Eventually the soil fertility was evaporated and they couldn't grow anything. It turned into a desert.

WH: The Green Revolution after World War II is when the reductionist science gave us so many tools. They repurposed ammunition factories for chemical fertilizer. They repurposed nerve gas research for herbicides. GIs that have been working with horses and mules with the European Theatre came back knowing about internal combustion engines and tanks and trucks. Like a perfect storm, Post-World War II, having all these tools to work with caused the degradation, the ability to degrade or decrease exponentially.

JM: Based on historical presence, this damage has already occurred over centuries. It catalyzed this exponential increase of the ability to destroy it. Thankfully, people like you are providing alternative that can actually repair and restore the soil and actually bring it back to a healthy recycled environment that builds up the soil.