

Dr. Ron Ehrlich: Hello and welcome to “Unstress”. I’m Dr. Ron Ehrlich. We hear the expression food is medicine. We also hear about the importance of the gut the second brain where 70% of our immune system resides how important our relationship is with our microbiome. We also hear about climate change. It’s a huge question, political question, economic, environmental. And of course, in the eastern half of Australia, we are going through what some are calling the worst droughts in living memory.

There’s, of course, a connection between all of this and it’s very basic. We need healthy foods to be healthy and we need healthy soil to grow that healthy food in, not just for today but for the future as well. When it comes to soil it turns out that how we manage it how well we understand it, is critically important. Farmers are in charge of all of that. Often being advised by industry and regulatory bodies and academic institutions which in turn are all influenced by industry or a lot are. Sound familiar? Well, our health care could be said to be suffering from the same problems.

My guest today is organic farmer Glenn Morris whose organic beef farm is in the northern New South Wales area around Inverell. Like many farmers, Glenn studied agricultural science and observed what the various practices were doing and noted that there was a vulnerability inherent in our land and in how it was being managed. He decided to go back and study more by doing a master’s in sustainable agriculture, in particular, the importance of the soil in building resilience, improving the land’s ability to absorb and store water and improve the nutrient value of the land. I hope you enjoy this conversation I had with Glenn Morris.

Welcome to the show Glenn.

Glenn Morris: Thank You.

Dr. Ron Ehrlich: Glenn you are a farmer in northern New South Wales and I was wondering if you could just share with our listener many of whom may not be out on the farm, living in the city and give us a bit of a backstory about where you are now and how you got there?

Glenn Morris: Basically, I’m living on a farm in the Northern Tablelands of New South Wales. We’re just off the top of the range sort of heading west so we’re about 40 kilometres just coming down the slopes basically it’s a nice little in-between climate if you like from the real cold of the mountains and not quite as hot as the plains so quite a nice spot to live normally.

Dr. Ron Ehrlich: Is that where you grew up?

Glenn Morris: No, actually, Ron Osborn on a property down near Goulbourn but did at different circumstances as far as what have you, I ended up growing up in the city and then basically decided when I got to about 20 that I wanted to get back to farming and I’ve made a career out of farming ever since. I have just been working my way up.

Dr. Ron Ehrlich: But your farm is not an ordinary farm. Well, I wish it was but tell us a little bit about what distinguishes your farm now?

Glenn Morris: It’s sort of interesting, basically as I say I just sort of made a career out of farming. I was trained conventionally. I went to conventional Agriculture College and then the all the time that I was sort of learning new techniques and that I had this sort of I suppose intuitive feeling that the landscape was starting to get unhealthy, that the amount of chemicals is seeing being used couldn’t be good for anything to do with growing food or looking after biology. Over the years I’ve sort of been leaning towards I guess a biological and organic type of farming.

The thing that really set us apart was probably when I got the full reins of a management job about 20 years ago. I got the opportunity to start studying sustainable agriculture. That made me aware of just how serious a lot of a lot of the ecological issues were in farming. But the other thing that really changed the way we do things as I was watching our landscape sort of go from a devastating drought, what exactly like we’ve got now and then

we'd get like torrential rain and that rain instead of being absorbed by the soil and helping heal the land and grow beautiful food would in a lot of cases it would actually do a lot of damage. We could see it again now, but it would tear off the landscape. We go from drought to flood to drought and with that as well as doing the study on climate change and sustainable farming I was seeing reports on how serious issue of climate was. This was in 2000 so the reports I were reading were already 10 years old and that just hit home for me. I just thought wow and I was seeing the climate extremes on the farm. I was watching the water get away from the landscape, so we had a busted water cycle, we had extreme temperatures and climate change knocking on our door and I got quite a sort of alarmed about. I thought jeez, one of the things that people have to know about climate change CO2 take centuries to break down. We've already got a lot of carbon dioxide in the atmosphere that's going to take centuries to break down.

I just thought what on earth can we do to sort of deal with these big issues of water cycling, of climate change and the third one that I was starting to touch on back then was we were looking at organic farming. I was starting to learn just how depleted our food was in nutrition. Three big issues that I thought as a farmer that deeply affect me, what on earth can I do about it? Luckily, I had a really good friend that understood about soils and I said: "Mate, this climate change thing it's bloody serious and what are we going to do?" I was talking to him about the water cycling and he was actually a conventionally trying to grow on us to go towards organics and he said "Glenn, if we can build hummus levels up in the soil we can pull that carbon out of the atmosphere and also hummus can hold an amazing amount of water". I sort of looked at him and I'd seen a few little bits of literature on the subject and I thought, "If you're right this is the biggest solution we have to actually get the climate back in order and for actually getting the water cycle going again".

I went back to University and I started to study a master's in sustainable agriculture that stage doing a special dissertation on hummus basically called 'Securing Australia's water supplies by getting a better understanding of hummus'. That set us apart as a farmer right then and there was I realised we weren't just farming for food, we were actually farming for a stable climate, farming for a water cycle and we have to connect. It's the thing that the message we need to get out of this drought. We have to connect that every hectare of land is absolutely critical for restoring the climate, for restoring the water cycle and for providing beautiful nutritious food. That's a little bit about.

Dr. Ron Ehrlich: Well, there's a lot to discuss. I mean that is huge, isn't it? Because of course, people think there's a drought on and all we need is rain and problem solved but you made the point that actually that could be the beginning of another problem and that is what we lose the soil as it gets washed away.

Glenn Morris: That is the problem in a nutshell because the thing that after doing my master's and researching hummus is the vital element that we need in our landscape we need perennial vegetation and we need to build those levels of hummus. The first thing that we lose in a big flood rain event where there's a lot of erosion is actually that beautiful topsoil that contains the hummus. We've got to get out of this cycle of degrading the landscape and we've got to get into a cycle of actually starting to build it. It's really, really hard on people at the moment because they just cannot see the light at the end of the tunnel, but you cannot start building hummus when you've already got a degraded landscape. You have to actually get yourself set and we've done it twice, I've taken over two degraded properties, now I'm on my second ten-year project and you've got to sort of say what can I do when we start to get some moisture that's actually going to start to build up the landscape and get us through the next dry time.

Dr. Ron Ehrlich: Well, I definitely want to discuss and could discuss how you are going about that but let's just go back to the very beginning here because conventional AG College is where a lot of farmers go. I mean a lot of people who are out on the land want to learn as much as they can about being as efficient as they can. The logical place for that is to go I guess to an AG College, agricultural college. What's the kind of basic message that gets taught in an agricultural College? How does it differ from what you're talking about?

Glenn Morris: I think the problem is what we're getting, what we were taught at AG college is the same thing that is being taught at universities, that's being promoted by state governments that have been promoted by our AG lobby groups. It's high input chemical farming. If you want to grow a lot of food and a lot of plants or a lot of animals, we're taught that you can actually do that synthetically and in a way, the landscape is no more is

being treated at the moment no more than like a hydroponic system. This was science that was seen as very successful, so no one's fault but they just when the nitrogen phosphorus potassium sort of mentality came out that you could grow plants by pouring on synthetic fertiliser, the world embraced it. Unfortunately, we're still embracing it at our colleges. What was missed there was actually looking after your soil biology understanding the nutrient building really sort of high integrity nutrients in your food for people to eat. There were a lot of health issues as a result of that form of Agriculture. Unfortunately, when I started to do my research into humans a lot of soil scientists apologised to me because they said we've dropped the ball on organic matter and soil hummus for 50 years because the funding streams if you like for government and colleges and universities weren't coming from something that is created in a beautiful natural way.

We've sort of got a look at that form of funding and try and get more independence in our organisation. I learned that way as well and you can pour it on and it looks like you're doing an amazing job and as I say unfortunately the resulting products and the unseen costs that have happened to our environment are basically starting to surface now.

Dr. Ron Ehrlich: You've mentioned this word humus. To the city person they may think you're talking about a Lebanese spread that goes on to pita bread but let's talk about that because it's so important, isn't it? I mean tell us what humus is and why it's so important.

Glenn Morris: It is so much more than something you put on. But we could use that analogy if you like. Say we had a beautiful planet covered in beautiful freshwater and forest and we wanted to actually make it really, really healthy. Something we could do is get our actual soil humus and spread that over the earth and as I've already sort of alluded too we will actually correct some of the biggest challenges the planets facing but I'll get back to explaining what it is. The scientists really struggled with humus because they took a scientific approach and they tried to break it into the humic acids and the fulvic acids and the different compounds, but no one ever got a handle on what it was as a complete agent in the soil and a lot of people are trying now to catch up. But what happens is the microbes in the soil they get the organic matter that just comes from everyday leaf litter and cuttings and you name it at any type of organic matter. They break it down and then they start feeding on the sugars that the plants. A lot of people don't realise but when a plant's growing it's not all going into the top of the plant, it's the roots. It's actually the plants are clever enough to realise if they want good health they'll pump 30% of the sugars they make from photosynthesis into the soil root zone. The microbes are taking those sugars that can break them down changing them into beautiful healthy compounds for our health and that they're building combining them with the broken-down organic matter. It's this process of totally breaking everything down and changing the compounds and then what this miraculous process, and I call it the holy grail because what happens is then the microbes reform it. They'll take something quite lignin which is the woody material in a plant, they'll break its components apart and then they start rebuilding it and it's this supermolecular structure that is reformed, and it can last thousands of years and it's got about 56% carbon.

That's the real opportunity with solving climate change because if it can last thousands of years and we can actually encourage microbes to make it in the soil where we have our carbon locked safely away again. A beautiful process.

But the official explanation is that it's really like a floppy or a polyglot collection of very large molecules from that broken-down organic matter that I mentioned and then it's just become this super honeycomb structure in the soil that coats the entire soil matrix. You've basically got this plasma like gel and it's actually called amethyst. Ron, there's no distinct shape of humus in a different shape every time so one someone sort of referred to it like a packet card pick two cards or whatever. Like you'll get a different sort of hand every time. The humus is even more complex, so it's called amethyst which means no structure and that I think is what real scientists do. You can't describe it.

It's this humus, this plasma light gel that's got tiny little colloidal particles in it and organic complexes of plasma that coats the entire soil matrix that holds water, that stores carbon, that provides our nutrition, prevents us from getting sick and we forgot about it.

Dr. Ron Ehrlich: Yeah, isn't it interesting? I mean you and I met recently at the MINDD forum back in May and I think we were both reflecting on this amazing relationship we have with microbes and I think to our listener they will be aware that we've become very focused on gut microbiome but the soil microbiome has an equally if not greater story to tell and humus is part of that story, isn't it?

Glenn Morris: Absolutely. I'm really glad to mention that because one of the presentations at the MINDD forum that really caught my attention was presented by a Dr Christabelle Yeoh and she was talking about the gene interactome in our body so in our 1.8 kilogram gut microbiome if you like our human genes were actually interacting with the microbial genes for all these important bodily processes and she was talking a figure of 10 million unique genes in that interactome between the human genes and the microbe genes. I did some quick figures because I thought what is going on in a hectare of soil? I guess that's why I was at the conference making that link with people like yourself but also with the information back to farming. If a hectare of soil at 30 centimetres deep weighs about 4 million kilograms I worked out there'd be 10,000 quadrillion microbes and their genes interacting with 500,000 different organic compounds in that humus. What on earth have we pushed aside for a handful of chemical fertilisers? It's just blowing my mind how important this is.

Dr. Ron Ehrlich: I guess going back to this chemical model it's so easy as it is in healthcare to forget that there's a microbiome there because if you put in the potassium the nitrogen the phosphate you will get above the soil a plant that looks pretty good.

Glenn Morris: Yeah, absolutely.

Dr. Ron Ehrlich: It's a bit like medication really isn't it? You could manage a disease with medication and on the surface make things look reasonable, but do you want it to be healthy or not? I love this. This is what I love about this farming story Glenn, is that the comparisons between what's going on out on the farm and what's going on and our body is so connected.

Glenn Morris: Absolutely, and it's just this food quality thing as I say it was a sort of third thing as a budding organic farmer that we've been farming organically now for 18 years but just sort of starting to understand just how vitally important it is to make sure the soil is fertile naturally and getting the precursors if you like for all that beautiful complex amino acid formation. Like as I said, I went to conventional AG college. I never learned we're only just starting to understand a lot of these things but amino acids they're in the soil they can be absorbed directly by the plants and form a really truly beautiful form of protein. The same with the fats and that's what we need for health. It's really interesting Ron because I came across an old paper years ago, actually they were cassettes and I listened intently there are really bad recordings but by a beautiful soil scientist that was around in the 40s and he talked about if the nutrition, the protein, the sugars and the fats weren't in their absolute true form coming out of a beautiful healthy soil. He said that the cells in our body would actually multiply but in rogue form. He was actually alluding to the fact of how cancer was formed, and it's actually now being confirmed as you know in modern science that it's actually the impact on the mitochondria and that of course cell health that's leading to a lot of these problems. Yeah, it all goes back to the soil and that's why I was at the conference, drag it back to the soil.

Dr. Ron Ehrlich: Now there are two things as I would imagine are vital for a farmer and that is water and soil. It would appear that they were intimately connected. Why isn't this... I mean I know perhaps the answer is a bit naive, but I would imagine farmers should just embrace this with open arms. I mean it gives them such independence or do they look at you and say... What do they say to you Glenn?

Glenn Morris: I think we've got a whole cultural background of just as you said everyone's in a crippling drought at the moment and they're looking to the sky and they're thinking it's going to rain again and that'll save us. The problem is we haven't made that sort of cultural connection. We're part of that sort of water cycle process but I think it is empowerment. Like if we can get everyone and I think that's what we need to get back too. We've got to stop the division between chemical farmers and organic farmers or the city and the country but we've got to start to see that the farming sector and the production of healthy food and the restoration of water cycling, the stabilisation of the climate we're all in it together and so the farmers around me that they're still in that culture of just not getting that link and it's partly due to our training. We've got organisations and

government bodies that don't have that culture of respect either and that's really what we all need. It's really interesting looking at some other cultures like the Hawaiians that were deeply connected to the land and the air and the water and the Spanish and the Dehesa they had this culture that's lasted thousands of years where they're deeply culturally connected.

It's not about the science, it's actually about having a culture where you actually respect that there's something greater than the soil health is so amazing. This humus is so amazing and brings the science along with it. But we've actually got to start to say we've got to start respecting the environment. Even our politics as you're aware Ron, we've probably had a quarter of a century where let's focus on the economy push the climate and natural resource-based aside for a while and it'll be right. Unfortunately, it's up to us and we've got to get that culture. I think farmers will embrace this, but we've got to stop the division and really look at the whole picture.

Dr. Ron Ehrlich: Do you as you move around the country or you talk to different farmers feel that farmers are climate sceptics? Climate change sceptics or what's your sense of how the how farmers view climate change?

Glenn Morris: Yes, they are and the problem we've got there is as I say we've had about a quarter of a century now of politics sort of telling us that it's not a worry and unfortunately a lot of rural people they've got a background in conservative politics that they believe what they're told and I've been fighting hard against climate change now for over 20 years. But it's changing a little bit and more and more people actually because of what's going on actually starting to see that there is something in climate and I'm actually proud to sort of be associated with farmers for climate action and they're getting a lot of members a lot of action. But generally, the farmers are believing what they've been told and we're in another electorate with a solid climate sceptic that's being one of those people that have held things back, but he keeps getting voted in.

I think we've really got to start to question our leadership and on issues which are actually starting to impact us very badly. At the moment we're in the worst. I think they're referring to it as the worst drought on record. What really hit me the other day was driving through Tamworth the sides of the mountains the Eucalypts are dying everywhere so we're starting to see a water shortage and an extreme heat consequence of climate change occurring and once we lose those forests the water cycling will get even worse.

I put the responsibility squarely back on the federal government because in 1988 Australia was leading the world in climate change awareness and action and we had politicians all over the country actually taking steps and then the focus swung back around to this might be damaging to the economy so we'll just put it aside it, we'll ignore it but we can't ignore it for any longer.

Dr. Ron Ehrlich: Now listen, your farm is organic cattle farm?

Glenn Morris: Yeah, that's correct. We've got two farms. When I said we're on our second ten project I spent ten years on the Grafton property as I mentioned when I got there it was very degraded resource base and built it up and then moved over here for 10. But what we do on the Grafton property is that's where we run our breeders so it's a subtropical environment, so we run a Brahman Bereford cross cow. Absolutely beautiful females, they are highly productive, they convert that subtropical grass a lot better than British cattle. A beautiful female and then we bring the progeny over to in burrow and the reason we bought out west was we've got a really highly mineralised soil out here. It's got a massive cation exchange capacity with nutrient holding capacity and you get this flavour in the beef that's just absolutely amazing and that's nutrition. We bring the progeny out here to finish them.

Dr. Ron Ehrlich: Now let's just talk about this Grafton property because you mentioned as a sort of an aside that it was a degraded property. What does that actually mean and how did you change it?

Glenn Morris: Yeah thanks, Ron. When I got there 20 years ago it had been sort of neglected a little bit. I think the ownership was sort of in a process of changing and or succession changing, and the management had sort of been slipping I guess because they hadn't sort of gone out and employed someone that knew a lot about what they were doing. But anyway, I got there, and it was basically the gates were opened, it was set to stock the cattle were roaming everywhere chewing everything in sight and the seasons had been a bit unfavourable, but it

was also over Stockton. It's a very, very short grass. I think the mineral it was a poor soil to start with because it's a yellow pod, it's naturally poor also but then the management just over grazing depleting all the organic matter of the soil so that was a big thing but also the minerals. No mineralisation, no organic matter, no fertility and then as I say you'd sort of get this hard surface you'd have no deep root systems to hold water or build hummus and the water would literally you get six inches of rain over there and the water would just hit the surface and scream off. If any water did go in, this is another form of erosion I guess of depleting nutrients, but the water would go straight through because it was the sandy soil, so it would go straight through the soil and take all the nutrients with it. You'd get leaching.

Dr. Ron Ehrlich: It was a cattle farm?

Glenn Morris: It was. They sort of running a straight British herd there and the wheener were really sort of performing badly I guess that the cattle were performing badly went up there and...

Dr. Ron Ehrlich: You mentioned two things there that I think would be worth explaining a bit and that was the set stocking and the overgrazing because that's a big part of regenerating the land too, isn't it?

Glenn Morris: Yeah, absolutely. The management as I say was just a bit relaxed and instead of sort of shutting gates and moving cattle around in a rotation they had basically just let the cattle roam everywhere. The first thing I did was basically start shutting gates and making sure that paddocks got a decent rest and we reduced numbers of stock. But as you mentioned planned grazing or grazing management I mean if you grazed badly cattle are really bad for the environment and bad for water cycling climate everything else and that's why they get a bad name but if you think carefully about how you're moving your stock, the stock become one of the greatest tools for actually rebuilding the organic matter in the soil or actually restoring the humus for restoring the water cycle for sequestering carbon.

We have this amazing tool I guess of planned grazing and livestock for actually doing something real about climate change and that's what unfortunately a lot of people that hear negative stories about livestock don't actually get that if they're condemning livestock per say overall then they're actually condemning one of the greatest tools we have of dealing with climate change. It's not the stock that's doing the damage it's actually the people behind the stock and I often say a good grazing manager is like a great artist because when you do it really well you can actually turn the whole situation around. We've got massive amounts of the organic matter now we're sequestering carbon we're restoring water cycles and we've got amazing amounts of biodiversity coming back as well. We're planting trees, we're doing whatever we can do to enhance a really restored landscape which is a beautiful way to farm.

Dr. Ron Ehrlich: Because that is something that I think stereotypically we hear look and it's why a lot of people go to vegetarian or even vegan it's because of the ethics and the climate, the implication of animal grazing and this difference between overgrazing and plant grazing is huge because I think a lot of us have driven along the countryside and seen huge paddocks and seen cows or sheep scattered across that. That's kind of what you would describe as overgrazing, wouldn't you?

Glenn Morris: Yeah, absolutely. One of the things about building your soil health and your carbon is you need to sort of have those plants really healthy as well and probably about five days after a plant has been grazed off it'll try and regrow again. A grass will try and shoot again and if the stock is in that same paddock when the plants trying to regrow you're actually starting to weaken the root system. The roots are actually shedding and getting smaller and then you end up with a sort of very shallow root system which doesn't build the deep levels of humus and sequester the carbon. You're actually burnt to start to burn your carbon out of your landscape and that's when you're actually contributing to a degrading landscape. It's quite hard for extensive farms in Australia to get into a really fine-tuned plan grazing method but there are massive areas being done at the moment in Australia and it's the way to go.

Dr. Ron Ehrlich: You have restored this Grafton property, you've worked on it for 10 years and now you're in Burrell. As you, as you go through that countryside and we're in the worst drought that there ever has been, is it visibly different your property to your neighbour's property?

Glenn Morris: Yeah, look, it's continuing to surprise me through this drought, Ron. We took measures early in the drought, we looked at our numbers back in late autumn when our wieners normally come from the Grafton property to the Inverell property and we said there's no point running the full numbers because we'll end up at the end of winter having to sell them when the markets are back. We reduced our numbers by a third to start with but even with the number of cattle that we did carry through and a lot of people have had to totally destock and some areas are a lot harder than we are as well but the work that we've done over the last ten years and people sort of asked me during this drought, "What are you doing about the drought?"

But it's not actually what we've done so much in the drought it's actually ten years of really painstaking management to try and get the soil health up and splitting the paddocks up, putting the water points in, doing some mineralisation and getting that hummus up. The hardest thing about focusing on soil humus and organic matter and people are saying it's a throwaway term but building humus they say organic matter soils or dirt or whatever you want to call it it's not sexy and the thing is I can't run into town and buy a truckload of humus and feel really proud and come home and drive my tractor around spreading humus because that's not how it works. What you've actually got to do is actually just use the methods of planned grazing and put your cattle in and give it a good rest, but keep the machinery and the chemicals away from it because we've got to start looking after that microbial workforce and it's back to your human microbiome, it's respecting the microbes. It's leaving them alone, stopping the compaction, stopping the chemical input and the property is really going well.

The Grafton property just went through two years of really tough time before this drought even set in and we're running at full numbers down there at a cow per hectare basically and the cows are shiny and fat.

Dr. Ron Ehrlich: Do your neighbours who have gone through AG school and who keep telling you, you don't know what you're talking about, how could that escape them that something different is going on and that something different is positive? I guess am I being naive here? Is this just me being silly?

Glenn Morris: No, I don't think so. The other thing about it is we've got a lot of people that are cropping around us, sort of around the area, so they're not looking at what we're doing because we're a grazer and there are cropper but they should be sort of starting to think about organic matter in cropping as well and the nutritional quality of the food they're producing and water cycling. All those factors apply but down at Grafton, we've got a lot of grazers around us. What I'm finding Ron, it has been during this drought particularly but there are little networks popping up everywhere. They might not be right on your doorstep because sometimes it takes a bit more for a native sort of change looking very proud people on the land and you'll get someone doing it a little way away and creating harp and then a different area or sort of getting going but there's the grazing management is certainly getting looked at favourably nowadays I think for building landscapes.

Dr. Ron Ehrlich: I mean what are some of the challenges that farmers are facing? I mean obviously, climate is one of them. It's a tough life out there on the farm but people obviously like yourself are very passionate about it. What are some of the challenges that you see that we may not be aware of in the city for a farmer?

Glenn Morris: Yeah, look I think that by far the greatest challenge at the moment is weather-related or climate related. I think this podcast is probably a good opportunity to say to people in the city, the climate is changing rapidly, and the cities are very isolated and from it and that's quite often the hardest thing that I have to deal with is going to the coast and finding out no one's even aware that you're dry. No one's even aware that the climate is rapidly changing, and they might hear bits about it. They might even say they believe in it but sometimes the lifestyle in the city and Australia has led a really luxurious lifestyle because our governments have sort of said we didn't need to worry about climate change and I think we need to sort of see that everyone's taking steps and our actions the type of food we're buying, the type of cars we're driving, the type of houses we're living and we're all sort of contributing to this warming climate which is really starting to affect food supplies. I think this year is one of the first years on record that a lot of really good farming areas haven't been able to grow a crop. By consumers in the cities sort of watching where their food is coming from knowing that they're not just buying food, it's a bit like my journey. It's like I'm not just a farmer growing food I'm actually a farmer that's actually connected to trying to restore a water cycle in the healthy climate. I think consumers in the city can really help farmers by doing that.

One of the things that sort of came up yesterday Ron, was looking at Malcolm Turnbull's electorate and this is a blue-ribbon liberal seat but if we've got climate sceptics in the National Party or the Liberal Party is it okay to keep putting those politicians in control of what's going on with our country and I think we've had enough of ignoring climate change. That was the third time when Malcolm Turnbull lost his position the other day that was the third time that I've seen a leader role with some form of weakened policy on climate change. Are we going to keep voting for this type of politics and watching our country dry up and blow away?

Dr. Ron Ehrlich: No, no. Look, I know it's just something that some of my listeners have a little bit of trouble coming to terms with a connection between politics and health and politics and food and politics and farming. It's just interconnected, that's what holistic is actually all about. What do you think? I mean yes being more aware of it, what else can we in the city do to help make the farmer's life a better one?

Glenn Morris: I'm seeing that sort of farmers going along really struggling through this drought and as I said if a lot of the times they've done no more than to follow the conventional wisdom if you like the conventional training and the advice that we're getting from governments and from agricultural organisations and I think it really needs to be a culture of change right through. We need people in the city that can help influence that state governments for instance actually have strong policies in climate and water. Actually, back natural resource management health and connect the food to it. It's such a beautiful vision for the future that we've got if we start restoring the landscape and start supporting farmers to actually enhance their landscapes by price signals, by what you buy. The future is bright in that direction but if we keep ignoring it if we keep sort of allowing our state governments or whatever to make bad policy decisions we're going to continue to see the downward slide.

Dr. Ron Ehrlich: Now, listen Glenn just finally, just taking a step back from your role as an organic farmer, what do you think the greatest challenges for people on their health journey in our modern world through their life's, we're all on this journey together, what do you think the biggest challenges are for people?

Glenn Morris: I think the greatest challenge for people is actually to identify that their food is their health. They've got to identify that nutrition coming from a really healthy soil is paramount. Identifying where they find that food and making sure that they stick to that because there's so much I suppose inferior or chemically contaminated food or just even the wrong types of diet out there. I think it's just really important that people find healthy, clean, nutritious food and by doing that, they're making sure that they're their landscape is healthy as climate and water cycle and all that's functioning as well.

But making sure they know the farm behind that food and empowering that farmer to keep doing what he's doing and that'll just send signals through the whole AG sector that the customers are really aware of their body health and they're going to support us to actually grow that food. We want to produce that food. We want the signal to say we don't want to just produce quantity, we want to produce quality and I think that really needs to come in a hurry.

Dr. Ron Ehrlich: Glenn, what a great message to finish with. Thank you so much for joining me today.

Glenn Morris: Thanks, Ron.

Dr. Ron Ehrlich: There are some recurring themes in this podcast which apply to our own individual health and clearly the health of our soils and ultimately our planet. Now if you go back and listen to our podcast with Allan Savory he said it's not a particular resource which is the problem say fossil fuel or animal agriculture, it's the way that resource is managed. Allan introduced the term holistic context which he described as the overriding principle which guides all subsequent decisions. He also mentioned that soil erosion is a huge problem and according to the UN's Food and Agricultural organisation 75 billion tons of soil. Now that's the equivalent of nearly 10 million hectares of arable land is lost to erosion, waterlogging and salination every year. And another 20 million hectares is abandoned because its soil quality has been degraded.

On another podcast, we did with Charles Massey a fifth-generation farmer who did his PhD on sustainable agriculture and wrote that beautiful book "The call of the Reed Warbler". He outlined five key cycles for agriculture to be sustainable the solar cycle. Now Glen also referred to perennial vegetation delivering organic

material and nutrients to the soil via vegetation and photosynthesis. Remember that from high school? The water cycle having organic matter in the soil helps retain water rather than erode it. The soil mineral cycle this is when microbes take the plant sugars and enrich the soil with minerals and it's those minerals we all need to be healthy. The fourth was a dynamic ecosystem, the importance of biodiversity in building resilience. Interestingly the more diverse the gut microbiome is the healthier you are and so it would seem with our soils as well. The last cycle, the final one was the human social cycle which includes you and me and is precisely while I include this in my podcast this topic of farming and sustainability. And Why I believe we in the city need to engage with these issues, Glenn described his beautiful vision of the future. Actually, in my book I wrote that in the last half of the twentieth century it was an era of the revered financier or tech guru and I hope the coming century will be the era of the revered farmer. They grow the nutrient-dense food we need to be healthy, they nurture the soils for now and for future generations.

Just as in health care and so it would seem in agriculture and farming you can follow the messages of corporations whose main goal is to sell product and make a profit which is fine. Nothing wrong with that except when it affects our health and the health of our planet, they are inseparable. That is the holistic context.

Look we get to vote every three or four years and one might argue about the difference that makes but we do get to vote each and every day with the things we choose to spend our money on and the decisions we make. And if money talks and it clearly does then give your money a voice that shares that beautiful vision Glenn spoke of. So, until next week this is Dr. Ron Ehrlich. Be well.

*This podcast provides general information and discussion about medicine, health and related subjects. The content is not intended and should not be construed as medical advice or as a substitute for care by a qualified medical practitioner. If you or any other person has a medical concern, he or she should consult with an appropriately qualified medical practitioner. Guests who speak in this podcast express their own opinions, experiences and conclusions.*