



## **Transcript of “Cows Can Save the Planet with Judith Schwartz”**

Bulletproof Radio podcast #125



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Dave: Today's cool fact of the day is that one day on Venus is actually longer than one year on Venus. That's because us humans calculate one day as our planet's rotation on its axis and we calculate one year as how long it takes to go around the sun. Venus is backwards because it has a very long day since it takes 243 of our days for it to rotate on its axis and it goes around the sun really, really fast. Its sunset's in the east so if you ever go to Venus this is really good to know. Otherwise it's just kind of cool.

In the past few months I've been working to make this podcast come out on YouTube so there's video. Check out the channel on YouTube. It's called "Bulletproof Executive" and you can actually see our guests. You can see what we're talking about and it's a lot of fun.

Today is going to be what I'm hoping will be one of my favorite podcasts because we're going to be talking about something remarkable. Soil microbes. Very exciting. You might say "Why is that exciting?" It's because soil microbes effect our gut biome. They affect the quality of what we eat. They basically effect everything on the planet and it's something that we've sort of messed up in our treatment of the world. As I looked for an expert here I found someone who is very well-educated, lives on the side of a mountain, and basically has written an entire book about this. Of course I am talking about Judy Schwartz. Judy, welcome to the show.

Judy: Thanks so much, Dave.

Dave: You just wrote a book about how cows are going to save the planet. Tell me about it.

Judy: OK. Got to take a couple of steps to get from the cows to saving the planet, but basically, and I'm learning more and more about this all the time and it's really quite incredible, that restoring our ecosystems can save the planet. Cows or really any livestock can be used as tools for large scale land restoration and a particular type of landscape that livestock are really, really important for restoring is grassland ecosystems. These landscapes actually hold a lot of carbon and can hold yet more carbon. Wow, I think I've thrown a lot ... As I'm talking I'm seeing all these multiple tangents of everything that I've already said so we can



try to unpack that a little bit, but basically cows can be used to restore landscapes and restored landscapes can help get our CO<sub>2</sub> balance. They can help balance the carbon cycle. In other words that these lands can store carbon and in doing so make a land more resilient, make the land more fertile, better able to grow healthier food and healthier animals, and there you go.

Dave: Your book is titled ... It's actually kind of cool. It's titled "Cows Save the Planet and Other Improbably Ways of Restoring Soil to Heal the Earth". Let's talk about this unpacking it. I think that you and I have probably spent more time thinking about this than the average person sitting in their car listening to this. If you're sitting in your car thinking about "Why should I care about this?" It's because in the context of this discussion today you'll figure out why eating grass fed meat might actually be way better for the planet than eating something made out of corn or soy or wheat. It has to do with these soil microbes.

First question then, Judy, let's talk about desertification. What do cows have to do with making or unmaking deserts?

Judy: OK, so the term desertification doesn't really come up all that much but is really, really important, OK? We hear a lot about drought and we're certainly hearing an awful lot about drought right now. When we hear about drought we think that it's only about how much rain falls from the sky, but when we start talking about desertification it's the drying out of land and that brings us to focus on the land and therefore the land's role in keeping the system, the climate, etc. in balance. Desertification basically means land losing function, OK?

Let's say that we have some desertified land, like land that's basically lost the capacity ... When I say losing function, losing the capacity to sustain life. Going back to what apparently is going to be the theme of our discussion, those soil microbes. When land ... We've got lots of different things happening. We talked about carbon. When we hear about carbon we think that we're talking about fossil fuels. We're talking about CO<sub>2</sub> levels going up in the atmosphere, but actually there is more carbon in soil than there is in the atmosphere and all plant life combined. Carbon wants to be in soil. Carbon is the main ingredient in soil organic matter which is the good stuff. For anyone who gardens, that's like the nice soil, the dark stuff that you know is going to allow you to grow flowers, crops, whatever it is that you're growing.

The other thing about carbon in the soil is that it allows for the land to hold water. Basically, let's say we've got some land. Let's have a pretend square acre of land and we grow some stuff on it then we just rip it off. We say "OK, we've got what we want. We're just going to take it away." We leave it. OK, so the ground is uncovered. When the ground is uncovered the carbon in the soil oxidizes. That means it combines with oxygen in the atmosphere and it becomes CO<sub>2</sub>.

When we hear about rising ... that Keeling curve when you see concentrations of CO<sub>2</sub> rise? A lot of that of course does have to do with fossil fuels but over time more of that has come from the soil than burning coal or using oil, etc. It's a land phenomenon too.

We've got this acre of land so if we just leave that bare, uncovered soil carbon is oxidizing. When the carbon is oxidizing and leaving the soil then the land can no longer hold water. It loses its capacity to hold water. Then rain comes. What happens to the rain? Does it nourish the soil? No, because the land has dried out and so it just pummels, the rain pummels that soil and there's erosion. Then after it dries out it's dried out again.

Dave: OK. The water doesn't stick in the soil because there's no reason for it to stick there because the soil is basically damaged. What's causing that to happen?

Judy: It's kind of a vicious circle as these things tend to be. Without the carbon it loses capacity to store water. Without the water the plants can't grow. Without the plants growing and the cooling of the water. Actually the cooling of the water as mediated by the plants through a process called evapotranspiration then it heats up. When it heats up beyond a certain point ... If you walk on a hot sidewalk you know that the sidewalk in the summertime in bare feet ... or walk on sand that it becomes hotter than the air. Let's say you've got a hot day. That bare soil heats up and when it gets to a certain temperature its microbes start to die so the soil is essentially dead. The good thing is that we can reverse that process and that's where the cows come in.

We've got some desertifying land. Some land that isn't what it once was and you don't have to go very far to find land like that because we're losing a lot of the function of our land all over the place. When you look at a place and you see a lot of bare ... grassy areas where there's a lot of bare soil. That's desertified land. You've got this land. Now let us bring in cows, cattle. All right? This is through a

process called holistic planned grazing which was developed by this fellow named Alan Savory who's a Zimbabwean wildlife biologist and who spent many decades really trying to figure out what makes land tick.

I can get more into his background and how all this came about but basically with holistic plan grazing what you're trying to do is in dry areas nature had a strategy for a very important challenge which is in areas where there are only seasonal rainfall ... I live in Vermont so we have rainfall throughout the year unless it's winter in which time we get snowfall, OK? We have moisture throughout the year. We don't have the same challenge, but in areas where you have let's say a rainy season and huge parts of the world are like this including most of California then how do you keep those soil microbes alive through the rainy season because without them the soil will die. You need to retain moisture in the soil. The way that nature has figured out how to do this is via grass eating animals.

Those microbes are basically kind of hitching a ride in the ruminant's gut and through the animal then returning the nutrients to the soil through waste it keeps moisture. That's not the only dynamic but that's one of them.

Dave: If we think about how people are supposed to eat fermented foods, at least some fermented foods, in order to replenish and keep our gut bacteria healthy, soil needs cows to keep soil bacteria healthy or goats or sheep or something.

Judy: Yes, in areas where they don't have continual moisture.

Dave: Wow, which would be most areas because there's usually a few dry months. That would explain why we have massive deserts. Why we have the Dust Bowl even because we sort of killed all the buffalo that previously filled that niche by wandering around and stepping on soil and reintroducing healthy, beneficial microbes. Interesting.

Judy: Right, we accelerated that process greatly by mining the soil, by farming it until there was nothing left. Farming without replenishing the nutrients. Basically what the livestock in holistic plan grazing do is they act as biological accelerators.

Dave: That's a shockingly complex system. It's amazing that Alan figured this out and it makes so much sense and it so explains why we have the Dust Bowl in the U.S. When you understand that how does that compare to what we're doing today where we have not the much grass fed meat compared to what we should have,

but the way we manage our animals and the way we provide them now? How does that work and how far does it need to change to work in something that's more holistic?

Judy: Wow. Well, aside from the animal cruelty which is of course another huge, huge matter. There's a fellow, a soil health expert who talks about giving ... about when you bring cattle back on the land instead of being in the feed lots and being crammed together like that, he talks about giving them back their legs. I think giving back cattle their legs would be good for many reasons but it becomes really, really ... I mean a huge, huge problem is the antibiotics in meat. We're keeping animals in such artificial conditions and in such close quarters that the animals are given antibiotics often not to treat them but just to make sure that nothing goes awry.

Dave: The really nasty thing about antibiotics is that they make you fat. They give them antibiotics because antibiotics make the animals fatter in less time. Of course when you eat that meat you'll be fatter in less time too. It's one of the many reasons that I don't recommend eating industrial meat, but it's kind of scary.

If the function of a cow in our ecosystem is to fertilize the soil and to trample the soil which makes sense. That's what buffalos and all the ruminants do at one level or another. Then we start giving them antibiotics. All this stuff in their gut that should be there that's a part of our soil ecosystem, it goes away. The scary part here is that the stuff that's in our gut is also part of the soil ecosystem. It doesn't change like that. This is one of the reasons I believe that we've seen such a rise in autoimmunity. We're seeing less bacteria and more fungus in the soil, more aggressive forms of fungus because of the chemicals we sprayed. Then we're destroying or basically locking up the parts of the ecosystem that are responsible for repopulating that and keeping it healthy. What's going on in our guts is going on in the soil. It's almost no difference.

Judy: Absolutely. When you think about the parallels between our guts and the soil it can be kind of mind blowing. There's one fellow that I talked to who talks about how the ... the soil as the digestive system of the plant. That's kind of an interesting ... kind of ... too. I spoke with a doctor who said that she was completely blown away to realize that when she did a soil test for land that it looked like the labs tests for her patients because it's all the same stuff. When you buy a vitamin or supplement that might be magnesium. It might be calcium. These are all elements that are needed in healthy soils too.

- Dave: We're all made from the same stuff and we share the same thing that's happening on a big scale in the planet is happening on a small scale in the gut which is amazing. What does this mean for someone who has said "I'm not going to eat even grass fed cows anymore."? What does that mean for the planet and what does that mean for their other food choices that might sustain soil as well?
- Judy: I think the thing to think about is just what you mentioned just now which is, we are a part of that system. Once you start to think of yourself as part of that system then it all shifts and that can help guide your decisions. If you know that food has been grown on healthy soil or according to healthy practices that food is going to be more healthy for you and healthier for the planet. It's really hard right now and depending on where you are you have access to different food. Just organic doesn't necessarily mean it's good for the planet. I wish that were the case. It would make life so much more simple.
- Dave: It's funny. Last week I was at the David Wolfe "Longevity Now Conference" and David's got a lot of vegetarian and vegan followers and he's also a longevity guy. It was kind of funny. I'm presenting to 1600 people and I'm like "Well here's what butter can do." One of the reasons I think butter is kind of an amazing food, in addition to what it does for the body and brain, is that when you're eating grass fed butter you needed the cow to go out there and eat the grass. When the cow goes and eats the grass it's making the soil healthier. You didn't even kill the cow you just ate the butter.
- A lot of people thought about that and said "Wow." There's a really good case as an ethical, even if you come from a vegan background, as someone who cares about the soil and cares about the planet and certainly all vegans that I've ever known do and certainly people on the Bulletproof Diet or people on any sort of health aware diet they are aware that there's an impact of what they're doing. It's kind of an interesting idea to say that even if you're not going to eat the cow you might want to eat the stuff the cow makes when it eats the grass because I kind of believe we have to have cows or goats or sheep or things like that. You're of the same opinion after writing your book?
- Judy: Oh absolutely. Absolutely.
- Dave: What, aside from eating grass fed butter, grass fed cows, are there any other recommendations that you came across in your research? Things that people



should be doing in order to support their soil or these kinds of things that you've learned?

- Judy: The main thing is if anyone has their own land is to not have soil bare and exposed. That's the main thing. Another thing is what everybody can do is keep water on the land and again when you have more ... When you have plants that helps hold the carbon in and keep water on the land. That stops erosion, etc. What else? Also in terms of what you buy. Is that what I can get at now too?
- Dave: Absolutely. I live on Vancouver Island so I have the opportunity to work with the soil and have an organic garden, but a lot of our listeners are in L.A. I was down there last week and you might have a little backyard but basically there's a lot of cement in L.A. What can they do with the way they choose to eat or the way they choose to spend their money to encourage healthier soil somewhere else so that they can take advantage of air and stuff like that?
- Judy: Definitely whenever you can buy local that's really important because you're supporting the local community, the local economy, and also you're minimizing the trucking around which has this whole fossil fuel element. Also, foods lose nutrients the longer that they're out of the ground. The fresher, the more direct ... Also I think that food ... I think all of this also there's an element of relationship too. When you have a relationship to the farmer somehow just something happens. We're social creatures and food is such a part of culture and community. Also I don't know how much you've gotten into GMO's and agriculture with lots of chemical inputs.
- Dave: We've have Joel Salatin from Polyface Farms on the show as a guest and in fact tonight I have a conversation with Jeffrey Smith who just wrote or just did the movie "Genetic Roulette". He's a friend. Definitely people on the Bulletproof Diet or people listening to the show should be familiar with the fact that genetically modified organizations ... organizations ... genetically modified organisms from genetically modified organizations like Monsanto are actively messing with our gut biome and the soil biome and that's scary.
- Judy: Yeah, so let me see if I could add a little bit of respect only talking about the soil, OK? All right. Most GMO's are ... They are plants that are designed ... bread into them the capacity to withstand pesticides or herbicides. I'll just take for an example Roundup which I know most about. Roundup is often put on plants

without crops that aren't GMO's but just put on anyway to get rid of what are considered weeds.

What's important to know about this is a couple of things. Roundup is a chelater. That might be a new word. What it means is it binds ... That's like the whole purpose of Roundup is that it binds minerals. Basically what it's doing to plants that it's trying to kill is that it kills them by binding minerals so that the plant can't get the proper nutrition. The plants that are surviving this chemical onslaught, well I've had farmers tell me that they're not sure that or they have serious doubts that those plants are really able to take up the nutrients that we need in our food. That's one thing.

All right, so you've got this kind of chelating thing happening. The other thing that these chemicals do in the soil is that they throw off, they effect the microbial and fungal balance in the soil so that ... OK, there's all this stuff happening in the soil all the time. In one teaspoon of soil there are as many organisms, as many little creatures as there are people on the planet. It's kind of remarkable. What's even more remarkable or as remarkable is that we only know maybe a couple of percentage points of these creatures and we know so little about this but we're really on the verge of learning more because of new methods of studying them.

These chemicals throw off the balance and that sets up ... Whenever you throw off the balance of the system it sets up space for pathogens and it's pretty dicey. Just put it that way. These chemicals are a very big concern for me and chemical fertilizers, by adding nitrogen. Most of that is wasted. Most of that goes into our waterways and causes dead zones and all these other problems, but that also when you put a lot of nitrogen in it ... I don't want to say paralyzes the rest of the system, but it means that the system isn't working the way it normally would be working. It almost gets a little lazy. The fungi might not be doing the reach to bring nutrients to the plants. Those kinds of things. I don't know if that makes sense.

Dave: It makes good sense to me. I've seen research talking about how when you spray Roundup or glyphosate on soil that it also changes the behavior of the fungus and of the bacteria that are in the soil. It not only can kill some of the plants but the biome in the soil becomes very stressed. The way we increase yields of agricultural or of I'll say biochemistry products that come from either a fungus like aspergillus or from bacterial cultures is you stress them. If an aspergillus makes a useful thing like say citric acid which is a common manufacturing

process, they take the aspergillus, they put it in a big vat, and they shake it up and they heat it and they expose it to EMF's and they stress. Sometimes they might even add some vinegar, like some pH balancing stuff. Sorry, pH disbalancing stuff or unbalancing stuff. What this does is this makes for angry, upset fungus which says "I'm being threatened and when I'm threatened I'm going to put out more toxins to protect my turf."

When we spray this stuff on the soil meaning to kill a plant that we thought was a weed what we're actually doing is we're telling the soil biome that it's an emergency and something's attacking it. It becomes hyper aggressive and we get these relatively benign soil fungi. They become less benign and they become more aggressive because they think their survival is at stake. Some of those are moving into our homes. It's one of the reasons that the incidents of toxic mold in homes in going up is because we were mean to the biome. It has far reaching effects on us, right?

Judy: It's amazing. It's amazing. It's amazing how central soil is. What I found is because all of our ecological cycles move through the soil we ignore it at our peril.

Dave: We absolutely do ignore the soil at our peril. You mentioned earlier something about carbon emissions and how the soil itself is such a big carbon sink. There are some people who say "Oh, there's no such thing as problems with carbon. It's all from volcanos." I'm of the opinion that there are carbon cycles in the environment. I'm also of the opinion that we have reached the ability as a species just in terms of mere poundage, like there's more tons of humans than most other animals or even smaller forms of life on earth, and in terms of industrial capabilities where we can move the planetary gas balance by at least a point or two. Given that we have that level of control and power, what are the things that you've learned about soil in the course of writing this book that we might consider in order to bring the carbon back down? In order to take active control of our carbon cycle?

Judy: Wow. Since we've lost a huge amount of carbon. I'm trying to remember the numbers. Numbers don't stick in my head terribly well. We've lost a huge, huge amount, but that could be restored and brought back. The way we do that is through more life, more photosynthesis. When you think about how much land, how much of the surface of our planet has been paved over, or has been over used, or not managed well so it becomes actual desert or losing that land function, just that the capacity to restore all those ecosystems is just huge.

Also I like the way this one farmer talks about farming. He says “Some people talk about how many square acres their farm is. I like to talk about it in 3D. I like to talk about how deep am I farming.” There is just an unbelievable capacity for richness in our soil, for productivity of our soil.

This is something I was just writing about so it’s on the top of my mind right now, but that in terms of measuring soil carbon, and we can talk about soil carbon equals living soil. That the more you build soil carbon the more you are building soil, building soil capacity. It’d usually been measured only down to maybe 15 to 30 cm, but they’re finding places where the soil goes down 40 feet. We’ve been low balling it. We just haven’t been engaging with what the potential is.

In terms of productivity, there are a couple of ... For my book I did a visit out to North Dakota and met with a number of farmers out there. A couple of them told me that the better they farm the less land they need. Someone who said that he is farming ... He produces more, since he’s been focusing on soil health, he produces more on 1,000 square acres than he did when he had 5,000 square acres. He said “If I do any better ... The better I do I have to keep selling land.” There is just so much capacity and I think that we can all start to think bigger and think more in terms of working ... When we start with working with nature ...

It makes me very uncomfortable knowing what I know about geoengineering to reduce CO<sub>2</sub> levels because there are just so many unintended ... the possibility of unintended consequences. Our record on things isn’t always so good.

Dave: I think when they straightened out the Everglades the U.S. Army Corps of Engineers was really doing us all a favor. Oh wait, we have a terrible track record because honestly we usually don’t know how complex systems work and the work on soil biology that you’ve worked to uncover with your writing, Judy is a big part of understanding that complex system. I’m sure there’s five layers to this we haven’t figured out yet.

Judy: In a way that’s OK because if you know how to work and how to work with it we can allow ourselves to be humble and not understand everything, but to encourage the system to work that’s what we can do.

Dave: And to work sustainably. The old ... It’s by now cliché, but the “Do what you’re doing so it’ll effect the next seven generations from now.” It’s not a bad way to think about things. When you have healthier soil it means you have healthier

food. It means you'll feel better. You'll perform better. Your kids will be healthier. You'll spend less time at the doctor's office. In my view of the world it's very fortunate that the things that help us perform and feel best are also the things that are best for the planet. Since they go together and it's in your short term best interest and it's in your long term best interests you should make decisions to eat things that ate grassland versus things that replace grassland which is what eating grains, even so called gluten free grains ... Sorry, we took away really good, functioning soil ecosystems and replaced them with a monocrop that was then cut down with a tractor so you could eat it and you didn't go back and poop on the soil the way you should have if you were going to fill that role in the ecosystem.

Judy: Yeah. Yeah.

Dave: From that perspective, quinoa, well it's better for you than wheat but neither one of them is a sustainable human food source. At least not in my view of the world.

Judy: There's a lot of work being done on plant synergies. Like cover crops, that you have lots of different cover crops that bring different qualities into the soil through those plants and intercropping and farmings that you have lots ... One very important thing is integrating animal raising with farming. I think another thing to think about just in terms of looking to nature for models is the synergies of diversity.

Dave: I have one question that every guest on the show has answered and I'd like to ask it of you. The question is given all the things that you've learned not just in this book but in your career, you've had a pretty impressive writing career and you've written about the mother puzzle and therapy and all sorts of diverse topics, what are the three most important pieces of wisdom that you've gained. If you wanted to give someone advice, someone who wanted to feel better or perform better or just be a better person, what are the top three most important things?

Judy: Wow. I guess that what this recent work has really done for me and usually those things are very obvious but I'll just say it. Just to try to narrow the gap between us humans and the natural world. Just because I've seen just all these connections between these different systems that may be obvious to people who work the land but weren't obvious to me. So often we tend to think about here we are in our human society, in our human economy, and that there's nature over there. Isn't that nice? We have to protect nature. It's all integrated. I came

to this work through writing about economics. Actually kind of improbably. I think that we also have to recognize that our economy is also embedded in the natural world and when we forget that we're really in trouble. We can start to reconnect the two and I think that would be better. I think for people making their own decisions in thinking about their own careers or what next or how to invest or that kind of thing to really keep that in mind. I do think that's valuable and useful.

Dave: Thank you, Judy.

Judy: Thank you.

Dave: Can you tell our readers where they can learn more about your work or about your book?

Judy: Sure. I have a website. It's [judithschwartz.com](http://judithschwartz.com). I say that sort of thinking "Oh my goodness, have I updated it recently?" I will be sure that I do because I do travel and give talks. Then my publisher is Chelsea Green Publishing and they're easily found on the web too. One really cool thing about Chelsea Green, aside from them being wonderful to work with which is not a given as an author, is that they have fabulous books and also those books often go on sale. They do that frequently but all their books are about politics and practice of sustainability, and just how to make sense of it all.

Dave: Awesome. If people want to find your book they can Google "Cows Save the Planet" and they'll definitely get in touch with you that way. People who read this who want to really dig in on [crosstalk 00:37:55]. That's how to find it?

Judy: Oh yeah. It's on all the book websites and all that. Yeah, it's findable.

Dave: Judy, thanks again for coming on the show and talking about your most recent book and about how cows and the soil work together. Really appreciate your time and energy.

Judy: OK. Well thanks so much, Dave.

Dave: If you've enjoyed today's show please do me the favor of going on to iTunes and letting people know that you like this. This is how people find out about good shows and about good work. As far as I know this is the only show where we're



going to talk about human performance and tie it back to the performance of our environment and things like that.

If you like feeling good and doing good things all at the same time check it out and share with your friends. Thank you.

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