PLANT PEOPLE Season Two Episode Two 'The Periodic Table of Food' Transcript

JENNIFER BERNSTEIN NARRATION: Close your eyes and picture yourself standing in America's breadbasket. All around you is one thing...corn. Tall, leafy stalks as far as the eye can see.

ALEX MCALVAY: A lot of our corn fields in the U.S. look like our lawns in the U.S. where you have…

JENNIFER BERNSTEIN: Just corn.

ALEX: Just corn, yeah.

JENNIFER NARRATION: That's Dr. Alex McAlvay. He's an Assistant Curator and Research Scientist at NYBG's Center for Plants, People and Culture. We sat down together recently, and he explained why this sameness...or monoculture...is bad for all of us.

ALEX: If it's a bad year for corn, you get your corn wiped out.

JENNIFER NARRATION: Corn in most of our cornfields has been narrowed down to one type, dependent on specific chemicals to grow and to repel pests, and equally susceptible to damage if, say, a new pest, disease, or storm rolls through. But this was not always the case. Traditionally corn comes in many varieties and colors: Blue, red, yellow, purple, and white. And historically, this diversity of crops provided some protection in the food supply chain.

ALEX: It's like insurance. If you're investing your money, you want a balanced portfolio. You don't want it all in one stock. The same idea has applied in farms for thousands of years and has been the norm, is that you don't put all your eggs in one basket. But a lot of pressures are on farmers to adopt practices which are more homogenous.

JENNIFER NARRATION: These practices also have an impact on our bodies: what we eat and how we feel.

ALEX: Over thousands of years of observation and experimentation, farmers have developed these indigenous strategies, ensuring that they have diverse crops because that will translate to the diversity of nutrition on their plates.

JENNIFER NARRATION: Welcome to Plant People from NYBG. I'm your host Jennifer Bernstein, CEO & The William C. Steere Sr. President at the New York Botanical Garden. In this episode: What's in our food? No really...what's in it? How do the conditions a plant is grown in impact its nutrition once it's on our plates? And how can our understanding of this help us when it comes to our food security, our nutrition, or even combating climate change?

I'm joined today by NYBG's own Alex McAlvay, and as Dr. John de la Parra, a plant chemist and director of the global food portfolio at the Rockefeller Foundation. Together, they're searching for answers through something called the Periodic Table of Food Initiative…

JENNIFER: Hello. It's so nice to be with you both, Alex and John. I'm really excited about this conversation. I'm a big fan of your work, both of you. So let's get into it. John, I'm going to start with you. Can you tell us about the Periodic Table of Food Initiative for our listeners who maybe haven't heard about it?

JOHN DE LA PARRA: Yeah, absolutely. The Periodic Table of Food Initiative really arose out of the idea that we need to know more information about our food. Many people that maybe are purchasing their food in the store, they see a nutrition label and you see a couple of nutritional facts.

But the truth is that foods have tens of thousands of compounds in them, and those compounds change based on many different things, how the food was grown, where it was grown, how it was process he different species, of course…all those things can change actually what is in our food. And we said well, what could we do to increase and standardize the amount of information that we know about our food?"

JENNIFER NARRATION: Think back to your high school science class. You probably had a poster of the Periodic Table of Elements on the wall…each element arranged by number, each category a different color: blue for metals, red for gases,

and so on. The Periodic Table of Food Initiative aims to do something similar. It asks: What are the actual compounds found in foods, and how can we measure them in a standardized way?

JOHN: Maybe many listeners have heard of the term genomics and the omics part of genomics is really talking about a global view of all the different genes in a plant. That's genes. When we're talking about chemistry we talk about metabolomics sometimes. So that's all the metabolites that are in a plant but we could also be looking at lipidomics. So all the different lipids or fats that are in any particular sample. Or ionomics, all the different metals or ions. And there's many other omics. Things like glycomics, which is a measurement of all the different sugars that are in a plant or any food.

And what is important about that is because often on a nutrition label, you might just see sugar, but there's glucose, there's sucrose, there's actually many types of different sugars. And those different sugars can have different biological functions in our bodies.

And by knowing all the different types of sugars that are in any particular food, it can help us understand how it might impact human health. It can also help us group foods in ways that we might never have thought to group them before.

So we've done work already to start looking at our first 2,500 samples or so, to start looking…Well, now that we know 35,000 different compounds…Actually, the total chemical space that we're able to look at at the moment is around 450,000 different entities, which include 420,000 of those are just the different proteins that we're able to measure in foods.

JENNIFER: Wow.

JOHN: We can see all these and we can start to group similarities amongst foods and understand them more deeply. And then because we have all this information, we can then look at, "Well, how does how we grow our food change that chemistry? How does a different cultivar change that chemistry?" And there's many different ways that having this fundamental empirical data on our food can impact ultimately our planet and our bodies.

JENNIFER: Wow, that's amazing. So, it's so layered and nuanced. There's what's in the food at a much deeper level of sophistication, how those foods are interacting with each other, how they're interacting with our biology, and then how they're affecting the planet.

So you have lots of potential outcomes. What are your main goals with this project?

JOHN: Well, there's a couple of intermediary goals that will lead to an ultimate goal. One is that we don't always use completely standardized methodologies for all these different omics. So what that means is that a laboratory in Africa and a laboratory in South America in a laboratory in the U.S. will have very different results if they analyze even the same sample and we've done this work to show that that's true.

JENNIFER: Yeah, and of course it's a global food supply, so you need a global standard of measurement.

JOHN: That's right. And there's also foods that are very specific to specific regions. There's foods that are used by indigenous peoples around the world, for instance, that may have never been analyzed before. And, we think it's a right that people know what's in their food and how it could benefit people and planet.

So for the past about five years that's what we've been working on. We have a global network of nine centers of excellence all around the world. Seven of which are in the Global South where people are analyzing what's in their foods, uploading it into a database where it can be compared to other foods.

And then we have many other associated projects, we have educational arms of the PTFI as well. PTFI for Periodic Table of Food Initiative. One is called Food EDU, which is an educational platform that teaches people how to do this in different parts of the world and in the U.S. of course. And then we have something called Good Food Fellows where we support about 40 or 50 students of various types to do research in their countries. These are all in the Global South Centers of Excellence that are community oriented.

So things that the community wants to know. So all of that together, the ultimate goal is that we have impact on human and planetary health in a positive way.

JENNIFER: Wow, the impact potential. I mean you can see all of the implications of this in the near-term and then creating this platform longer-term opens up all kinds of possibilities. So, I love the ambition of it. Alex, you're here with us as well. Of course, you're one of our NYBG scientists and you run one of the Periodic Table of Food Initiative projects in Ethiopia. Can you talk about what you're doing on the ground there and how it fits into the broader mission of the periodic table of food initiative?

ALEX: Sure, yes. This work started out of a broader project which we're calling the Traditional Grain Mixtures Project. This particular one in Ethiopia is working with Ethiopian professors and students, looking at how traditional methods of growing staple crops might influence nutrition, but also how it might help farmers in the face of climate change with a dry year and a wet year and a new pest and all of these different challenges that might be thrown at someone who's trying to grow food for their family. And a lot of these traditions have been supplanted by introduced crops or pressures to adopt other ways of growing plants for broader markets or international export.

And so we want to understand, in the context of the PTFI, how these methods enhance or detract from or change nutritional profiles. Specifically, we're looking at these mixtures. So, one strategy that's widespread in Ethiopia is mixing of wheat and barley together, mixing of different varieties of crops like sorghum varieties or teff which is the world's smallest domesticated grain. You might have had it if you've had injera at an Ethiopian restaurant or been to Ethiopia.

And another one is the mixture of different leguminous crops, which are in the bean family. So fava beans and peas. And we are curious not only how growing these together might influence the nutrition of one or the other components by nature of them being in proximity to each other, but also how they might be complementary to each other and have complimentary nutritional profiles.

So, like John mentioned, not every cultivar or variety is the same. You think of different heirloom varieties of tomato, you look at them, they look different, you

taste them, they taste different. That is reflecting different chemistry in them. One tomato might have high levels of lycopene and low levels of anthocyanin.

So different levels of these antioxidant or functional chemical compounds and if you diversify and grow a bunch of different heirloom tomatoes, you're going to kind of even things out ideally and get a good dose of everything you need. And it's a really big black box how these varieties of crops vary, despite having access to them. For many years, it's been hard to study in a large-scale standardized way.

So, we're taking that analysis to this standardized level, working with the Ethiopian Public Health Institute, which is one of the centers of excellence to analyze these in a comprehensive way in a way they've never been studied before to see, for example, if the varieties of wheat grown by farmers and the varieties of barley grown by farmers have different profiles, maybe higher niacin in one, higher fiber in the other. We know that barley has higher levels of soluble fibers than wheat, for example.

And so that will slow digestion, that will slow the blood sugar spike that comes after you eat food. So, a little bit of barley in your wheat can be very complementary to wheat, which has sometimes more protein, for example, and other vitamins or more minerals.

JENNIFER: So you're looking at the nutritional profile of the mixtures themselves.

Are you also looking at the degree to which these grains grown in mixture change the profile of the individual plant species or cultivar?

ALEX: Yes. So, we're looking at a very specific practice of growing these crops together to understand, if you grow wheat and barley together in the same field, scattered, intermixed, does the nutrition of the barley change because of being grown by wheat?

And there's the nutrition of wheat change by virtue of being grown next to the barley? We're also looking at how soil properties might impact the nutrition. We might not think of that as a possibility, but you think of the minerals in plants have

to come from somewhere. You know, those aren't coming from the sunlight or the water or the air.

They're coming from the soil. So if there's low zinc in the soil, or no zinc in the soil, the plant will not have zinc. It can't make it out of nowhere.

So, this is one component. Another one is how the local climate or weather impacts the nutrition. We might also not think about that very much. But if you have a crop growing in a super dry spot, that's really hot versus a really wet, cold area, It's likely that there will be differences in nutrition.

Plants use chemicals to protect themselves from the environment. So, if a plant is really exposed to a lot of sunlight or UV light, high up in the mountains, it's just getting baked, you'll often see it turn purple. It's producing these chemicals called anthocyanins to protect its leaves, which is kind of like a natural sunblock or melanin in humans and these have antioxidant properties and carry on health benefits so that’s another area that’s been a black box and PTFI is really helping illuminate.

JENNIFER: That's fascinating. I mean, I grew up in the Southwest and I remember learning that the chili would be hotter to the taste, more spicy, in years where there was more bad weather.

So, there's this common wisdom that we're seeking to understand better through these experiments in collaboration with the smallholder farmers.

And I'm wondering if you could talk a little bit about your interaction with the local farmers. How do you work with them? And how does your work seek to center their knowledge and their needs?

ALEX: Great question. So, in Ethiopia, over 80 percent of the population is involved in the agricultural sector, mostly growing for their families. And so a lot of these farmers have a lot of pressures to change their practices.

This includes new crops that are being promoted or new varieties of crops that are being promoted. New inputs, inputs being things like fertilizers and pesticides. It might be that the local market and consumer demand has changed. So people want

something homogenous and predictable. They want white bread that's pure. So they don't want flour made from barley and wheat. These changes are happening at the same time farmers are facing unprecedented threats from climate change.

They're having multi-year droughts that are undocumented in the historical record. And these are pressures that are sometimes in conflict with each other. So, what we wanna do with this project is really talk to farmers. We've done about 1,300 interviews with farmers across this area in the Northern Highlands and find out what they want to do, what they know, what they've known for many years, what their grandparents did, what pressures are on them to change what they're doing and whether they want to continue with these practices.

What they want and help communicate that to the world.

And all of the different stakeholders and factors that are driving them…

JENNIFER: Government decision makers, agricultural extension agents, people like that, and the market NGOs. Yeah, you're starting to get into the systems that these local farmers are operating in and the systems that have, of course, influenced our approach to food more generally.

John, I was wondering if you could talk about our current agricultural system and the types of problems that you're looking to address, both the nutritional deficiencies that maybe it presents us with, or the challenges to people and their traditions, or the planetary challenges. How do we arrive at our current system and how do you see the role of PTFI in helping to course correct where needed? I mean, we feed a lot of people so…

JOHN: Yeah, and those people have a right to have food. “How did we get here” is a huge question and there's a couple things that I think are at least worth noting. One of them is the work that came through the Green Revolution, which the Rockefeller Foundation had a big role in. The Green Revolution was an effort that at the time had stated intentions to make sure that everyone in the world had enough calories to eat.

Yes, it was a major worry of the time. There was a lot of predictions that as population grew exponentially, there just wouldn't be food to feed people and there were famines happening. There are people starving today, of course, right? I mean, hunger is a huge problem.

At the time, the thinking was, “Well, with the invention of synthetic nitrogen fertilizer, with the invention of crops that could use those synthetic nitrogen as well as synthetic pesticides and other amendments that were brought into farms. These technologies were disseminated around the world. This came with monoculture of very specifically bred crops that maybe weren't the crops that people ate typically.

And also there's environmental damage that comes with adding these chemicals externally, of course. There's disruption of culture. To this day, we see the disruption of cultures as a result of the Green Revolution, right?

There's a lot there, but that's what helps bring us to this world of monocultured grains for the most part that feed most of the world and contribute to things like diabetes and cardiovascular disease and other health problems and the erosion of the food sovereignty in a way of like the way that maybe people originally ate has been disrupted.

Like in many parts of Africa, maize is spoken about as if it's an endemic crop but of course it's not endemic to Africa, because a couple of generations of people have been growing maize and it has become completely integrated as part of those diets. So, in saying “How do we get here?,” you know, we're also describing what is it that we're actually talking about here and I think we have the results of a system that's been driven by demand for capital, with sometimes imperial intentions, sometimes colonial intentions, and all those things converge to create a system that often didn't contemplate the human being.

And I think often capitalism does that. So, at the Foundation, you know, five years ago we started thinking about what is it that we should do to right a ship that the Green Revolution took us in one direction. And that is by thinking about how we should have a world that has food that is sustainably or regeneratively produced, that's nutritious for people, and that's equitably produced.

And it has to be all three of those things. Because without one, You're not having a true systems approach and it throws things out of balance. You can't have nutritious food produced regeneratively that's produced with slave labor. That wouldn't work. It's also not truly regenerative, right?

So the Periodic Table of Food Initiative we see as providing standardized empirical comprehensive data that can help us make those arguments for why growing food in specific ways is better for people and planet. Why maybe the endemic foods that have been ignored for 50 years might actually have really valuable nutrition, that can and should be used by local populations.

If that's what they choose to eat. You know, I'm a ethnobotanist and a chemist by training, right? So, a lot of what we're talking about and what I've described as a PTFI might sound very science-y and nerdy and technical. But science has a way of pervading through culture and making changes in policy and how we live our lives.

And that is really deeply how we've thought about PTFI from the beginning. One of the first convenings we ever had was about unintended consequences. We wanted to know how is this going to potentially impact people's lives for the better or for the worse. And that's driven everything that we've done including making sure most of the centers of excellence are in the Global South, so they're driving the change. Making sure that there's educational components, so individuals are trained on how to use this and empowered to use those technologies to answer the questions that are important to them. And also to think about these ideas around not just food sovereignty, but the sovereignty of the data that's attached to our food.

JENNIFER: Data is power.

JOHN: Exactly.

So, if we're creating all these data, we have set forth mechanisms to make sure that the data attached to foods, especially foods that are prioritized by Indigenous and frontline peoples, are protected. So, those communities can look at the foods if

they're interested in looking at them, but they can have sequestered portions of the database.

So only they can look at those foods and if they choose to, they can then let the world see the data on those foods. Because we have a history of people taking advantage of, especially places in the Global South and lower income countries, of being taken advantage of data is another place where that could happen.

JENNIFER NARRATION: After the break, we'll learn how human hands have shaped the evolution of some of our most popular food plants. Plus, learn how your choices at the grocery store can improve our food systems. We'll be right back.

[BREAK]

JENNIFER NARRATION: Welcome back to Plant People. I'm speaking with Dr. Alex McAlvay, Assistant Curator and Research Scientist at NYBG's Center for Plants, People and Culture and Dr. John de la Parra, who oversees the Periodic Table of Food Initiative at the Rockefeller Foundation. Both Alex and John work at the intersection of plants and people. I asked John to explain the role of an ethnobotanist.

JOHN: Oh, man. Okay. So, this can be a contentious question. Alex and I were just talking about this. An ethnobotanist can be a lot of things, but it's someone who works at the intersection of people and plants.

That's I think the safest answer to give, because there's so many ways that people and plants can work together.

Humans have evolved alongside of plants since before we were evolved as humans, right? So, plants, they're often treated as kind of the secondary model in science, but there's very much a focus on animal studies as closer to humans and, you know, there's, there are reasons and plants are often given kind of second tier in that.

And we think that it should be brought up to a higher level because everyone eats, everyone breathes, right? Everyone is benefiting from plants.

JENNIFER: Yes, all life on Earth depends on plants.

JOHN: Exactly.

JENNIFER: Something we've talked about here on *Plant People* before. We're pro prioritizing plants in the discussion.

JOHN: Yeah. So ethnobotany is about finding that space where people and plants interact. And there's a lot to learn on both sides. And ethnobotany embodies that, I think.

JENNIFER NARRATION: Food plants can be great indicators of the ways humans and plants interacted with and influenced one another throughout history. In fact, many of the plants we eat today were cultivated from a common ancestor. These plants may look very different from one another, but that's because they were bred differently in different parts of the world to satisfy different culinary and environmental conditions. As an example, Alex has spent a lot of time studying the food family known as Brassicas.

ALEX: A more familiar name might be cruciferous vegetables, so that includes bok choy, broccoli, cauliflower, collard greens…

JENNIFER: Anything where the sentence might start with "Eat your…"

ALEX: Yeah, exactly, yeah, yeah…

The family of plants is called Brassicaceae, and it includes so many of our staple vegetables that we think of as nutritive. There's a lot of research on the anti-cancer properties of these compounds in them called glucosinolates. They're just loaded with vitamins and minerals, but they have a really interesting story to tell from an evolutionary perspective.

We might not think of plants and evolution as much. And we might not think of how humans have shaped the evolution of plants, but very much like people have shaped ecosystems for thousands of years in different ways, some ways destructive and some ways not destructive.

Similarly with evolution, people have shaped plants. In ways that make them really genetically similar and vulnerable to new pests and diseases, but people have also diversified. We don't often think about the diversity that humans have made. We think of the diversity that humans have destroyed. But if we think back long enough, all of our ancestors had a different relationship with the planet than we do now.

A great analogy is dogs and wolves. So most of us probably have some sense in our mind or know that dogs came from wolves.

How did that happen? That happened because humans started having close relationships and bringing wolves into their lives and eventually breeding them in different places for different reasons, resulting in the panoply of dogs that we have today. We have Great Danes, we have Chihuahuas, we have German Shepherds, we have dogs for swimming, dogs for hunting, dogs for…

JENNIFER: Laying around and eating. When I look at my shih tzu, I think to myself, “You descended from a wolf? Really?”

ALEX: Exactly. They've lost some dignity, some more than others.

But, we often don't think of that analogy as it applies to plants. But almost all the plants that we eat, just thinking of mainstream American diet, are the result, at least largely of humans.

Carefully deciding which plants survive to the next generation, which plants mate with each other and what they want out of a plant. A culture in one part of the world might want a plant that has really watery stems. You think of bok choy has these big, juicy stems. A plant in the other side of Eurasia in Italy might say, “I want a version that's really bitter because it really complements this particular pasta.”

And so add a thousand years and stir and you have broccoli rabe and bok choy. This is the same ancestors, they’re the same wolf, so to speak, that people turned into these different things. So, the one that I study most is called brassica rapa or field mustard. And that that turned into, under human care and preference, bok

choy, broccoli rabe, but also turnips, a bunch of oil seeds, closely related to canola. And a huge number of East Asian vegetables, mizuna, mibuna, tatsoi, you name it.

The other one that's really diversified like this is Brassica oleracea. So, that's wild kale, and people took that. It came from the Mediterranean and Atlantic coasts of Europe, and they turn that into broccoli, brussels sprouts, cabbage, collard greens. All depending on what grew best at different altitudes that people were living at, different climates, different preferences, so these have been shaped by humans, and I think it's important to remember that humans have the capacity to live with our world around us in ways that do not reduce diversity and can actually increase diversity. We have evidence from that in evolution with Brassica, but also in ecosystems like these ecosystems that are created by Ethiopian farmers who are mixing different crops. They are creating ecosystems that mimic wild ecosystems, which are characterized by diversity.

So these look a lot like wild grasslands that you'd find in the prairies of the Dakotas, for example. You have different heights, different colors, resistant to different stresses. And there are reasons that these work in nature, and there's reasons that they work in farmer's fields as well.

JENNIFER: That's fascinating. So you're saying that you're looking at farming practices that are creating biodiversity and the benefits that that may confer both in terms of the nutritional profile, but also the resilience to climate and other human benefits.

It makes me wonder, I mean, in all of this, as I talk to both of you, there's this complex array of facts that you're gathering about practices and plants and the implications of that data are very widespread. They could be used in a variety of ways. And John, you were talking about the importance of democratizing that information and making that data widely available.

We have so much opportunity to guard against the many challenges that we're facing, both challenges and opportunities, opportunities to improve human health, challenges related to environmental pressures. The sky's sort of the limit, isn't it?

JOHN: Yeah, and then, every one of those foods, also has a universe in itself of options, right? Because you know, I've talked about this idea of the tomato-ome.

So, if we talk the genome, the metabolome…Well, imagine you're a tomato researcher, and Alex was talking about all the different shapes of tomato and flavors and things like that. Well, every one of them has different contributions to potentially our health or flavor, enjoyment of food, all those things that are important.

So those are just different varieties of tomato, but then how was it grown? Is it tomato sauce? Is it a fresh tomato on a salad? Is it a salsa? There's so many different things that you can do with that tomato. Each of those things can then change the chemistry. So even with one species, you might have 10,000 versions of it.

What we've provided is now a way to ask and answer those questions. Equally important to the identity and quantity of the chemistry that's in that food is what we call the metadata. So, these are like additional data beyond that.

Like, "Okay, where in the world was this picked? What was the weather like when it grew?" We have a whole module on regenerative agriculture that collects like 40 or 50 different metrics. Processing is one big one that people have a lot of questions about how does the excessive processing of our…

JENNIFER: Change the chemistry?

JOHN: Change the chemistry, and ultimately impact human health.

JENNIFER: Yeah, yeah, it's really exciting. So, John, what's up next for the Periodic Table of Food Initiative?

JOHN: Yeah, I mean, first off. I want to say how proud we are to support Alex's work and the work at the Botanical Garden. I mean, this project and some of the preliminary results have been so exciting.

The types of knowledge that Alex is uncovering are things that wouldn't be found out any other way, except through the kind of sensitive, complex curiosity that I

think ethnobotany inspires, and particularly Alex's brand of ethnobotany. I'm so excited for what will come from this work.

And that's part of what we see as next for PTFI. One, of course, we just want more labs to onboard this and we're working on that. And in the coming years, we'll be onboarding more labs. And if you're listening to this and you're interested foodperiodictable.org you can learn more about it.

You can contact us and you can also get a link to the actual database if you want to start exploring the chemistry of what's in your foods. I'll say it's, you know, not every food in the world yet, but it's the applications.

It's the "So what?" part, because some people may be listening to this like, "Okay, oh great, we'll know 30,000, we'll know 450,000 compounds in our food." But who cares? Right? So it's our job to figure out and show why that matters.

So showing actually how the different compounds in food and how they change can then impact human health. The other place is regenerative agriculture. We have a lot of history of work in East Africa, with school feeding, particularly shifting from refined to whole grain school meals.

And recently we've combined efforts between regen ag and school meals. So one of the issues with regenerative agriculture has been who's going to buy this food, and especially if you're going to ask farmers to transition. And one possible answer is through public procurement and one big public procurement space is school feeding.

And because we have experience in that field, that's one of our next big endeavors is to look at what are the possibilities to make sure every child has access to nutritious food first off. But can we make it increasingly regenerative over time? Because if we continue to source food for people around the world in ways that are destructive to the planet, that won't do anyone any good over time.

So it's those impacts that we look at and ultimately we want to push people to think about having a world that is deeply regenerative, centering the human being and we're thinking about livelihoods and we're thinking about human health and maybe

we are thinking about spirituality and culture and because you can only have a truly regenerative system when you're completely taking all those things into account.

JENNIFER: Oh, that's beautiful.

So, we all eat right? So, everybody is having an impact and engages with the food system. And I'm sure people are wondering, what can we do at the individual level to promote a more regenerative system? Alex?

ALEX: Yes, so, I mean, obviously we can, vote with our dollar and buy food that's grown regeneratively. I'm hoping that on the horizon there's less of a difference in price between crops and foods that are grown organically or regeneratively versus conventionally. I think that there might eventually be a turning point where these practices, which are resilient, actually make these more affordable because the current practices are based on investing a lot in a certain crop.

And so at some point with climate change accelerating, we might have a risk of insurance companies refusing to insure farmers in certain areas if they're not practicing resilience minded practices rather than a good yield in a good year practices. And these incentives hopefully will make that change. If you can afford it, buying foods that are grown sustainably certainly makes sense to me.

JENNIFER: Yeah, so thinking about our purchasing. John?

JOHN: That's a great answer. I do think that sometimes people can be overwhelmed by this idea that it is an individual choice in a world where we are only presented often certain choices. So, especially in many communities, you don't have a vast choice to buy food that is better for the planet, right? You have a small grocery store with overpriced options that are highly processed. And that can be quite a depressing viewpoint. So, I think we should think about all the different types of people that may have to make choices for a better planet or their families, or, you know, all these things are taken in those dimensions from global to local.

And I think that. One thing that's important for people to do is to try not to get overwhelmed by the global movement of things. It's important that we stay in

dialogue with each other, and that we stay informed. Because when we aren't talking to each other, and when we aren't informed, that's when these global powers, corporations, governments, that's where they want us, right?

They want a population that's not informed and that feels like it's helpless, and aren't talking to each other. But the more we talk to each other and we bring ourselves back to a real community, I think that's where the real power is.

So community is where it's at.

JENNIFER: Well, it's like we all learned when we were kids, you are what you eat and you all are helping us to better understand that both at the individual level and at the societal level. So thank you for your great work and thank you for being guests on the podcast.

ALEX: Thank you very much.

JENNIFER NARRATION: To learn more about the Periodic Table of Food Initiative, visit foodperiodictable.org.

On the next episode of Plant People, I'll be joined by acclaimed author and poet Camille Dungy to explore the intersection of nature and activism, and redefine what it means to cultivate both land and identity.

Thanks for listening. If you're a plant person, and want to give us a boost, please rate us on whatever podcast app you use. Like iHeart, Spotify, or Apple Podcasts.

And don't forget to follow NYBG on social media. As a special offer, for first-time members, use the code PLANTPOD on NYBG.org for $10 dollars off our most popular levels of membership.

Plant People is a co-production of NYBG and PRX Productions. From PRX, Plant People is produced by Jessica Miller, Courtney Fleurantin, Genevieve Sponsler, Adriana Rozas Rivera, and Pedro Rafael Rosado. The executive producer of PRX Productions is Jocelyn Gonzales.

From NYBG, Plant People is produced by Charlie Nork, Cosette Patterson, Matt Newman, Kait Tyler and Michael Crowley.

Music from APM Music. Sound effects from Epidemic Sound.

Views expressed by guests are their own and not necessarily representative of NYBG.