Tackling the Carbon Challenge: Track, Trace and Transparency

Description:
The race to develop systems for carbon capture and reduction is on!
We dig deeper into the carbon challenge and talk with two innovators who are working with food companies to ensure transparency across the supply chain. The speakers tie together the importance of ESG, effects of climate change, carbon programs and how technology is the “unlock” to solve these issues.

Speaker:

- Anthony Kingsley, Benson Hill
- Dave Stangis, founder of 21C IMPACT

Vonnie Estes:
Welcome to PMA Takes on Tech. The podcast that explores the problems, solutions, people, and ideas that are shaping the future of the produce industry. I'm your host, Vonnie Estes, Vice President of Technology for the Produce Marketing Association. And I've spent years in the AgTech sector. So I can attest, it's hard to navigate this ever-changing world in developing and adopting new solutions to industry problems. Thanks for joining us and for allowing us to serve as your guide to the new world of produce and technology. My goal of the podcast is to outline a problem in the produce industry and then discuss several possible solutions that can be deployed today.

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As many of our listeners are keenly aware the race to develop systems for carbon capture and reduction is on. Today we're going to dig deeper into the carbon challenge and talk to two innovators who are working with food companies to ensure transparency across the supply chain. Joining me today is Dave Stangis, who is the former Chief Sustainability Officer at Campbell Soup and founder of 21C Impact and Anthony Kingsley, head of ESG, which is Environmental, Social, and Governance and Impact for Benson Hill. Welcome to each of you.

Dave Stangis:
Thanks so much.

Vonnie Estes:
Dave, tell us more about your background and the work that you're up to now.

Dave Stangis:
Yeah, thanks Vonnie. It's great to be here and great to be with you, Anthony. I think this is the time we've met virtually, but I've been following some of the work, you and your company. My background is I would say, it started in core Environmental Health and Safety. I spent more than a decade at Intel Corporation where I created their sustainability and ESG strategy, clearly different than food. In 2008, Campbell asked me to come and join them to create their first version of this. The food sector was a little bit later in mass than the tech sector. And was there, again for a little over a decade and worked on sustainability as well as responsible sourcing and sustainable agriculture and some of the public affairs and reputation programs. And for the last couple of years, I've been advising companies across sectors. Some big food companies, some very small, startup even, food companies, but also companies that are in different sectors in life sciences or finance or tech as well. So I'm having a lot of fun and I'm cutting across a lot of these topics we're going to talk about.

Vonnie Estes:
So what services are you providing for your clients?

Dave Stangis:
Primarily it's advising on strategy. So most of these companies are at some point along the maturity curve of ESG or sustainability, and they're either starting, they may be getting questions from investors if they're private companies or they may be getting investors or questions from institutional investors and other stakeholders of their great big public companies. Some are well on the path and they're just looking to amplify or actually integrate this into their business functions, whether it's HR or marketing or procurement. So they're across the board. And mainly I sit as a extended member of their leadership team just to help accelerate that progress.

Vonnie Estes:
That makes sense. Anthony, you recently joined Benson Hill as impact and ESG Director. Tell us more about your role and your focus there.

Anthony Kingsle:
Yeah. Thanks. So same, Dave. Great to meet and great to hear about your work as well. So Benson Hill, we are a food technology company that combines food science, data science, and plant science leveraging the natural genetic diversity of plants to produce more nutritious and sustainable foods that really address consumer demand. Especially from those millennials and Gen Zs. We're really focused on developing products that are better optimized from the seed level to really help meet this demand. And so I joined Benson Hill in January and it just really attracted me, I think because they're so

focused on innovation and not only for themselves, but enabling innovation throughout the food industry as well. And that was just very, very appealing to me. And then of course they have what we call a closed loop strategy that provides us insights at each of the stages of the value chain.

So working with growers, working with processors, working with retailers and CPGs really provides just a very unique look at the entire supply chain as a whole. And so I thought that was just super interesting and of course their focus and their purpose for existing is to provide nutritious, sustainable, and healthy foods and provide greater access to those foods and ingredients as well. So, I'm just really, really happy to have joined Benson Hills at such a great time.

Vonnie Estes:
People listening, there may be people that don't know Benson Hill, which would be surprising, but there could be, but it's a company that has grown really quickly in the last couple of years that I've watched really prosper and do well. So was this a new role? Are you the first person to have this role? And was it a new role that was created?

Anthony Kingsle:
Yeah, so I am the first person to hold this role, but as I said the purpose of Benson Hill is really to develop sustainable, healthy and nutritious foods. I think bringing myself on board was an opportunity to really formalize and solidify all the great work that had already been put in place and really build a more strategic and intentional approach around it as we continue to grow as an organization.

Vonnie Estes:
Which is how companies grow. That's great.

Anthony Kingsle:
Yeah, part of that sustainability journey curve, I think that Dave mentioned earlier.

Vonnie Estes:
Yeah, exactly. So Dave, in your work, you talk with many food industry executives. I'm curious about your perspective on the recent reports claiming that supply chain disruptions during COVID will be nothing compared to those from climate change. What are you hearing about that?

Dave Stangis:
Yeah, there's some truth to that. I would say, I think that the challenge with the COVID related supply chain disruptions is they were not seen, they were not anticipated in the way they played out. They came up so quick. Everybody might've had global pandemic on their risk map, but it was way out in the fourth quadrant. So, they're going to be different. I think that the shifts and the

impact that we're going to see from climate change across the food supply chain, but a lot of other supply chains as well, both from physical risks that people understand, sea level rise and other things like this or disasters and hurricanes and weather, but also the transition risk and not being prepared to manage technology transitions like Anthony is describing in agriculture, but also other shifts that come with electrification and the analytics at the farm level, these are huge disruptions.

The good thing is that they are visible. Everybody may not be reacting to them in the same way, but they're at least there and people are working on them and they can start to plan now. The bad thing is they're going to be life-changing for some of these people in the value chain. They're going to change careers, they're going to change skill sets needed, and they're definitely going to change the way food is produced, delivered and communicated about.

Vonnie Estes:
Anthony. What do you think? And looking at this and the climate change disruptions.

Anthony Kingsle:
Yeah, Dave, I think what you mentioned is spot on. And I would think of it really in two pieces. One is that resilience, what can we do to continue to prepare for the changes that we'll see when the IPCC report came out a couple of weeks back, it was very clear and evident that climate change is happening, it's happening today. And we'll continue to feel the impacts in many different ways. And then the second piece being, it doesn't have to be as bad as it could. If we continue to mitigate, to see organizations, industries, government policies being sent around the different commitments, we see a lot of private sector companies focused on long range, sustainability and GHG reduction commitments. So, I think both of these, having the resilience, having the mitigation coming together and really being able to avoid some of those worst case scenarios is certainly an opportunity for us. And I think the food industry is poised to contribute in a very significant way.

Vonnie Estes:
Yeah, I think having people with roles like yours or companies like yours, David, this is front and center and that those 10 years ago, people like you, weren't in leadership conversations. And so I think that makes a big difference too. So, kind of pivoting to carbon, there's so much talk about carbon capture and sequestration in Ag and even some programs out there for payment, mostly in broadacre crops. Anthony is Benson Hill developing or participating in carbon capture or credit programs with your partners.

Anthony Kingsle:
Yeah, that's a great question. So in short, yes we are. We're very interested in carbon. So, at Benson Hill we have a proprietary technology platform that we call CropOS, Crop Operating System. And this system combines large scale,

data analytics and artificial intelligence with plant biology and food science to produce crops that are optimized for taste and nutrition. Now, big data, essentially, predictive analytics and machine learning are things that are being used and delivered across different industries. Now by harnessing this we're able to simulate breeding outcomes and produce crops that again, are really optimized for certain characteristics, for example, such as protein content. So engaging with our growers in that way, collecting data, leveraging on farm technology is really important. And a key piece of that is how are we measuring carbon?

How are we measuring our greenhouse gas impact and output on those farms? And so just this year, we've become members of the ESMC, the Ecosystem Service Market Consortium. And they're very focused on producing a carbon market and actually water quality market as well. And so as part of that membership, we're very engaged and working through how we can prepare our growers and our farmers for entering into that type of carbon credit market and data and technology and understanding what's happening at the field level is a critical component of making that happen.

Vonnie Estes:
So what types of programs are either of you seeing that might work in the produce industry? I know that this isn't really your focus, but Dave in some of the work that you've done, Campbell type companies, what are you seeing? What are each of you seeing in that area that might work?

Dave Stangis:
Yeah, I think that the parameters that Anthony just described are the consistent themes that have to come through with this. So a lot of what is happening in agriculture around carbon is better agricultural practices that focus on healthier soils and carbon sequestration. All that is great for the farm, it's great for nutrition, it's great for the environment, but it needs to be measured and it needs to be accounted for in order to put it into a trading program. So the data is really key and the same type of systems you put in place around tracking and measurement. The hardest thing is really getting down to the measurement of the sequestration to the change in the carbon, in the soil. How long has it in there? Can I account for it? Then, can I assure it and monetize it? That's been the challenge.

Campbell looked at a couple offset programs in rice in the past and companies are clearly they're doing forestry. You've seen this play out all over the place, but it's the same technology if you're in produce. For the same ranges of topics, got to have the data, you got to be able to measure the change, got to be able to measure the timeline and then account for it. So if I'm in the produce sector, I'm thinking about it the same way that Anthony described in his sector. It's more difficult, I would say because there hasn't been as much piloting going on in produce. And the other thing is, I think it's

just the way the customers, a lot of this has pulled up through the value chain and up by brands up by publicly traded companies, making carbon commitments that sometimes the produce line, frankly, where it goes in the food system and where it goes up, the brand chain is a little bit different than some of the row crops. But generally,

Vonnie Estes:
And you see that as a positive? Because a brand would be able to say, it'd be able to say that this is carbon neutral or however they want to phrase it as a branding thing. Does that make it more positive for produce, you think?

Dave Stangis:
Yes, and what I think is sometimes produce may be challenged because there may not be a lot of brands that are stamped on produce. There are a few, and we know the ones that there are, but the way these programs work is you're looking for value across a bunch of channels. There's a value in carbon reporting, there's a value to the brand, perhaps in marketing, there's a value in reputation. Somebody is going to be paying for the pilot and paying for the work. So you're looking to spread that brand value out if you can. And definitely if I'm a company that can take credit for it authentically, transparently in my product, I'm going to take credit for it. And some of the attributes that Anthony has talked about in his products as well. Whether it's nutritious, more sustainable, carbon's a great way to start in a great data piece to go after.

Anthony Kingsle:
Yeah, I might just add onto that as well. I very much agree. And I would think of this as really two ends of the value chain that are working harmoniously. So on the one hand we want to work with our growers and enable them to improve their soil health. It's something that a lot of growers are focused on and we want to help enable that. Now, part of doing that is the potential to sequester carbon. So through implementation of some of these agricultural and conservation practices they're able to achieve improved soil health. And as a byproduct, their carbon sequestration can then potentially be monetized as carbon credits. And what's nice is then when you turn in position to customers and consumers, yes, you can definitely bring that story through and provide the sustainability marketing, the sustainability storytelling around what the growers can do and how we are providing ingredients or providing foods that have such a great nutritious, reduced carbon emission and healthy story around it. So I think these two components really work hand in hand with one another.

Vonnie Estes:
Yeah. I think in talking to a lot of the producers in our industry, I've heard a number of them say that focusing on carbon is really not the right place to focus, that we really should be focusing more on healthy soil. Like you mentioned, because that, if you develop a healthy soil, you're going to get

return on investment. And so a lot of the practices that sequester or capture carbon, are the same as going to give you healthy soil.

Right now, we did a think-tank with a bunch of producers talking about this. And they basically, some of them felt like they were missing out. They're like, okay, everyone else is getting money and I'm not getting money. Like how do I get money? But a lot of them just said, look, this is part of the practices that we do for healthy soils. And so we don't expect to get money. So, if you were talking to a group of growers, would you say that the soil is the most important thing or that it's a two component thing?

Dave Stangis:
Yeah, I can give you my 2 cents. Sorry, Anthony. I don't think that we're talking about two different completely things. I have actually been asked by investors looking to set up the investment screen several years ago, about how to manage or how to assess these companies that were taking claims about healthier soil, frankly. One of the ways you do that is measure carbon content. So, healthy soil is the, I would say the north star. That's what we're looking for, but in order to take credit for it, in order to monetize, you have to measure something and maybe you measure organic content, which is carbon, or you measure water or a reduction in certain things. So I think that instead what either or, a lot of advice I would give is, look at carbon as a measurement to drive and to assess soil health.

Anthony Kingsle:
Yeah, I very much agree with that. And I think to your point, Dave, it makes sense at the field level too. Because the end goal is for us to produce foods that have nutritional content. That have good yield. And so soil health is a key component of doing that. I think what helps drive growers or farmers toward that outcome as well is when there are food system, I'll call them enablers that are happening. Such as, okay, I'm doing this practices already and now that I can measure it, there's the potential for additional revenue through carbon credits. We're seeing even this Congress right now, the Growing Climate Solutions Act was passed by the Senate, so the ability, again, an enabler through the government to potentially help farmers and ranchers to set up a carbon market, we're seeing a lot of talk from the SEC and Mr. Gensler right now on ensuring that there's better regulation on the SG. So I think all these enablers are going to help motivate and push the food system in this direction.

Vonnie Estes:
So when you look forward, how do you think this is going to evolve? Like, in two years, Anthony, do you think that there'll be more programs in place and farmers will be getting paid or, right now it's a little, all fools rush in. It's like everybody, use my program, no use my program. And it's really kind of hard to figure out how to go about this. So how do you see it evolving?

Anthony Kingsle:
Yeah. That's a great question. My guess would be that we will start to see a little bit more policy around it that we'll start to see more, these private-public partnership, like the SNC, for example, who will begin, or at least help to frame a little bit more quantification and more standards around where this is going to go. So, I would suspect that we'll start to see that.

Vonnie Estes:
Dave, what do you think?

Dave Stangis:
Yeah, I agree. The other thing I would add, I agree a hundred percent with Anthony. I also think that there's going to be advancement in the platforms and the technology, both in terms of the data overlays, think of like a Google idea or an operating system, like a Microsoft where the platforms, the technologies are able to speak and we're using common language and this is going to accelerate. It's also going to take away some of the burden on some of the smaller suppliers, because they don't need a separate piece of software for every customer that comes to them. But it's also going to accelerate a lot of the learnings that we see and some of the standardization, which is what we need.

The challenge in Ag is that nature is not a standardized environment. So, doing something in a field in one part of the country, doesn't automatically, you can't sell that carbon or that practice somewhere else in the country because it's not identical. You've got temperature, water, fertilizer, implements, everything else. But I think all those things are going to advance. I think it'll still be messy in two years though, I don't think we'll be all the way there, but I do think it will be further along and there'll be more players at the table.

Vonnie Estes:
Yeah, I think when you look more at like five years and you think about if it's standard, if there's policy and if there's standardization, then that's going to make it a lot easier for people to participate, I think.

Anthony Kingsle:
Yeah, I think so too. And I'd also add how important the evolution of technology will be here. Dave, as you pointed out earlier now, testing soil organic carbon, soil organic matter, bulk density of soils in those fields that's not cheap. And it's not easy to do. You have to go into those fields and pull multiple sub samples. And so I'll also be very interested in how technology continues to evolve and, and makes that easier and more cost-effective.

Vonnie Estes:
Yeah, because a lot of that work is being done with models now. And Dave, as you said that it doesn't take into account or it can't take into account all the

variability. Also, I was talking to someone that they were talking about a technology where a drone could fly over the top and using a sensor could better predict what was going on under the soil. So I think you're right. I think there's going to be technologies where just going out and taking those core samples it's just too cumbersome and we can't build the industry on that, but I think there's an open door for, and a lot of money to fund companies that have different ideas. So in this series of the podcast, we've been talking about how to rebuild a resilient and secure and transparent supply chain. Can you both speak about how fresh food companies are using technology to realize ESG commitments on farm processing and onto the plate? Dave, let's start with you.

Dave Stangis:
Yeah, thanks Vonnie. It really is a nice transition from the question you just asked. You're talking about drones, perhaps hyperspectral technology or robotics, a lot of imaging going on. I think that technology is really the unlock and where consumers understand technology it's a win-win, bonus all the way through. There's some technology coming to market that consumers need to be educated on a little bit. So they're bought in and they're brought along, but we're seeing this as we've talked about on farm, this conversation's been basically kind of what we're seeing at the farm level, and it hasn't been the hardware piece, which is a ton of that. Also, just in how food is grown. We had relationships and conversations with vertical agriculture, indoor agriculture, agriculture in a box, specifically design agriculture for certain ingredients that we wanted to, and then replicate that anywhere in the world. Inside the processing or conversion, for example, there's plenty going on, especially around traceability and transparency, making sure that we know where everything's coming from.

If there's claims being made about a lack of a certain ingredient or component or free from this is all enabled by technology. And on the plate, I think is really where the payoffs is. Anthony and I'll let him talk about some of the nutrition, we've seen it play out before there's things in their pipeline and things, and other companies' product pipeline that are really interesting and value added both to the planet, but also to the customer, the consumer, but backing that all up and helping the consumer make informed decisions that they trust and that they feel good about for their family or for themselves is where the value is for everybody. And we had a couple of examples where we were able to tie just some of that storytelling from the plate to the farmer and the farmers feel better.

You know, the mills feel better, everybody on the chain feels better because they're part of the story. And I think that's another opportunity that technology is going to enable.

Anthony Kingsle:
Yeah, I very much agree Dave. At Benson Hill we're very focused, engaging those different levels of the supply chain. Those different stages. And connecting our farmers and our growers with consumer trends and really understanding what it is that's driving consumers. And what I think is interesting here, you mentioned around transparency and traceability, those are key words that are really going to help drive this connection, bringing that value chain just a little bit closer together. And technology is going to play a fundamental part. How can we bring that story, that information, that data of that food along with the physical product as it gets to the consumer? I think telling that story really enhances and certainly improves the trust that consumers have within the food industry. So yeah, I very much agree. I think technology is going to be a fundamental component here in order for us to really share that story.

Vonnie Estes:
So sticking with you, Anthony, on Benson Hill's website, there is a strong statement from well-meaning to well measured. Tell us more about this work and how you are going about ESG from a measurement perspective.

Anthony Kingsle:
As we touched on earlier, there are a lot of companies that are doubling down on their sustainability commitments during COVID and we really saw this in 2020 during the pandemic, we really saw this enhance. We saw a lot of organizations were really focused on this. And at Benson Hill we're not any different, we're really focused on a commitment to the environment, the social responsibility, it's the core of our ethos. And we recognize that these strategies and objectives are really just the first step. So when we talk about this well measured component, we know that there is a thirst for more quantitative information and data from investors, from consumers, from all sorts of different stakeholders. And so at Benson Hill, we're very actively working to identify and measure these quantifiable goals for our behavior as a company and the performance of our products and the impact that we might contribute, whether it's on the farm, through manufacturing or processing or even at the consumer level.

Now we've partnered with an organization called CropTrak where we are aggregating information and data so that we have deep insights into each of those stages of the value chain. And for example, because we're connected with each of those stages, we're able to influence and pull that information instead of going through multiple tiers of suppliers and vendors, we're directly connected. So we have a higher confidence in the information that we're receiving, and we can then feed those insights back into our CropOS system and using tools like a lifecycle assessment, for example, we've identified that during the processing stage for our ultra high protein soybeans, we can actually skip certain concentration steps to reach a high level of protein. And

in skipping those steps to create soy protein concentrate, we're able to then remove carbon. And through that lifecycle assessment, we're able to reduce carbon and reduce water use at those stages as well.

Vonnie Estes:
Dave, do you have anything to add about measurement and importance?

Dave Stangis:
I think just to add a layer above what Anthony said, but I think that ESG space is noisy right now in a good way for some companies. Companies like Anthony's that are focused on this and are building their story early days, there's opportunity to frankly, create a differentiated story with the frankly differentiated results that support your brands and support your mission that supports your marketplace, your financial bottom line. There's noise to manage, especially if you're a publicly traded company. But I do think there's great opportunity in this space. And technology is an enabler.

ESG is very broad, which sometimes it can cover everything and feel like companies have to boil the ocean, but it's a great opportunity for companies to pick the most material things for them, and then build the data systems to back it up because that's really where you get the credibility and the eventual authority on the topic.

Anthony Kingsle:
And I think it's combined with what we mentioned earlier on carbon markets, the more information, the more validation or verification you can provide, the higher level of confidence, the industry and potential customers will have when looking at the carbon market and purchasing carbon offsets.

Vonnie Estes:
So my last question, both of you have been focused on sustainability and ESG throughout your careers. What are you most excited about for the industry, the food industry, Dave, let's start with you.

Dave Stangis:
I'm really, and I don't want to take the story away from Anthony, but I really am excited about technology. I think that technology is something that needs to be embraced. It needs to be put to work. It needs to be communicated in a way where consumers are brought along on the topic and not sold on the topic. And some technology is super easy to understand, and they're 100% onboard and they're frankly taking part. And some of the technology that's coming to play in the food sector is super interesting, but it's also different for consumers. And we need to be able to have a conversation with them, help them understand the value to the environment, the value to the food and to kind of welcome their conversation in the topic.

But I know when I joined Campbell, I came from Intel and I said, we're going to be a technology company. And they're like, no, we're a food company. I'm like, no, every company is a technology company, trust me. No, we're just going to focus on the food. It didn't take long before everything happened. And it wasn't just hardware and software. It was chemistry and biology and transparency and packaging. So I think that the food sector is in a complete positive disruption from technology. And that's what excites me the most. I think it's also what excites the new talent coming into the sector.

Anthony Kingsle:
Yeah, completely. And, I've always been in love with the food industry. From when I was much younger and it's because it impacts our lives in such a positive way. It influences our health, our personal health, it brings our community together. Families come together around the dinner table. So I think what really excites me is our capacity to continue to leverage technology and really touch the lives of everyone around the world and help improve the health, nutrition and the sustainability of the food system. And what I think is really interesting, and we have the stat, I think, on our website that talks about how the US spends $1.7 trillion on food annually and spends equally even a little bit more on diet related illnesses. And so our ability to invest in this and invest enough in nutrition, to invest in nutrition and health and the sustainability of our foods, it really has the ability to have such a significant impact. And to Dave's point, technology is going to play a critical role in helping us achieve that.

Vonnie Estes:
This episode was fascinating to talk to experts about carbon through the lens of ESG and how technology is, as Dave said, the unlock. As Anthony stated, we can leverage technology and touch the lives of everyone to help improve the health, nutrition, and sustainability for the food system. Well, that about nails it, thank you for listening.

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