



Research-Driven Insights: Ecosystem Service Markets

Featuring LaKisha Odom

Scientific Program Director at the Foundation
for Food & Agriculture Research

DJ May (00:02):

Welcome to the Decode 6 Podcast, where we take your questions about carbon and ecosystem services and match them to the experts with the answers. I'm your host, DJ May. We've talked a lot on this show about carbon credits, which is signed value to a certain amount of carbon reduced or sequestered in the soil by agricultural practices. But we haven't talked as much about ecosystem service markets like a carbon market ecosystem. Service markets put a value on a farmer's action that results in a positive change in an ecosystem. Today we are talking about what ecosystem service marketplaces are and how research can help us make them better. Our expert with the answers is Dr. LaKisha Odom from the Foundation for Food and Agriculture Research, or FFAR for short. LaKisha joined FFAR in September 2016 as a scientific program director to pursue her commitment to promoting the use of innovative science and interdisciplinary thinking to tackle today's complex challenges in food and agriculture. A soil scientist by training LaKisha is also committed to cultivating increased diversity in a new generation of food and agriculture scientists. LaKisha, welcome to the podcast. It's so great to have you here.

LaKisha Odom (01:16):

Hi, DJ. Thanks for having me.

DJ May (01:17):

No, it's great to have you on. So we're going to jump straight in. What are we talking about when we talk about ecosystem services?

LaKisha Odom (01:24):

I really appreciate you asking me this question because it made me really think about how many definitions there are for ecosystem services and what we even mean when we say that. So there is one definition that I like from USDA in preparation for this webinar, and it's one from USDA and it says the dynamic balance between plants, animals, and the surrounding environment. And the reason I like this definition is that the balance is dynamic. It's constantly changing. And I think sometimes when we think about ecosystems and our environment, we think of them as very static, meaning that they don't change. But in reality, there is quite a bit of balance and opportunity for us to shift that balance depending on what decisions we make. So I like the idea of thinking about our ecosystem as this network of plants, animals, and environment that are all influencing each other all the time. So when I think about ecosystem services, I'm thinking about that system of give and take, that our animals, our environment, they're all interacting with each other and then humans are in there influencing as well. Right?

DJ May (02:42):

Yeah, I mean it seems obvious, but it's like everything in there, it's alive and it's not going to be the same all the time. Yeah, I really like that definition too.

LaKisha Odom (02:50):

Yeah.

DJ May (02:52):

Great. Here's where we kind of run into trouble. I feel like when we start thinking about marketplaces around something is dynamic is ecosystem services. What does that look like? What is a marketplace?

LaKisha Odom (03:05):

So first you got to figure out how you account for the system of things or the services that ecosystems can give you. So you've got this dynamic system, we get the sense of that. But then there are these direct and indirect benefits that these ecosystems provide to humans. So things like clean air or bees or beetles that are turning over like dung in a field. These are all services that our ecosystem provides as our ecosystem is constantly cycling nutrients and providing nutrition to our plants or cleaning our water or the natural system of cycles that happen in the environment are constantly benefiting humans. And so those are ecosystem services. So the challenge then when you start thinking about ecosystem services markets is how do you quantify something that kind of doesn't have what you would consider to be a traditional way to value it, how much a bale of hay costs or a bushel of apples, but how do you metric clean water or air or different and biodiversity in the soil?

LaKisha Odom (04:21):

How do you metric that? And so that's why I think sometimes ecosystem markets can be a bit challenging to conceptualize because how do you quantify the unquantifiable? And something else I read that I really like is that ecosystem values can be both tangible and intangible. That's a great thing, but it's also really challenging when you think about a marketplace. So a lot of what we'll probably talk about is how folks are trying to measure and then assign a value to these things and then create a market within that. And that can be very difficult because you're trying to, how do you price air? How do you price water? And so there are metrics that can do that, but it's not something that I think everyone naturally goes, oh, clean air is worth X amount to me. And so that's why I think sometimes ecosystem markets are challenging to work through and think about.

DJ May (05:21):

Can you give me some examples of metrics we have figured out for an ecosystem service?

LaKisha Odom (05:26):

Absolutely. So often when people will think about carbon markets, you think about the amount of carbon that is sequestered. And so that's something that you can theoretically measure how much plant materials in the soil, how much that then translates to a particular unit of carbon removed from the environment. That is a clear metric. I think people are starting to do some great metrics with water quantity and water quality. Those are things I think it's easy. You can visualize whether or not your water quality is improving and you can measure how much water. So those are things I think we're also starting to see more metrics around biodiversity. And so then that might be number of particular insects or pollinators. And so you're thinking about things that you can actually in some ways count or calculate and you can understand your baseline state. And then the change, sometimes you can't necessarily measure how much, but you can measure if it's something has improved. So you can say, oh, well I have this much water and it has this much sediment or runoff in it, and then I can measure a future state and see there's less of it at that time. So you can measure the difference between a state as well. So I think when you're thinking about those more tangible

things, it's units like that that you'll see most of our markets are trying to figure out calculations for or models or programs that help us to project those amounts.

DJ May (07:04):

Okay, perfect. Perfect. That's a good segue. So when we're thinking about the people who are figuring this stuff out, the metrics, the tangibles, the intangibles, what does the relationship look like right now between research and ecosystem service marketplaces, and how are they making use of all that research? I'm sure there's so much going on.

LaKisha Odom (07:22):

I feel like that's a really great question specifically for an organization like mine. So for those of your listeners that are a little bit less familiar, I'm with the foundation for Food and Ag research pronounced FFAR. And one of the things that we do is look at these stop gaps in research. Where are gaps that exist? Where are places where innovation is needed? And there's a lot that's in this ecosystem services space. I think as an organization, we believe that we want to empower our producers with evidence-based recommendations. And so for us, having research at the core of the foundation of ecosystem services markets is really quite key. One of the major investments that we've made is that FFAR has financially supported the research for our ecosystem services market consortia. And so a lot of the funding that we provided to them was to understand a lot of these baselines to understand how do you measure carbon and how much has been sequestered, for example, how do you come up with metrics to understand water quantity and water quality?

LaKisha Odom (08:28):

And I know that they're also starting to look at the biodiversity. So I think one of the things that FFAR has supported is looking at ways in which we can more accurately monitor, measure, record, and verify, which I think folks that are in the ecosystem services spaces, they hear the MRV or the MMRV, and that's what we mean when we say that. If you hear those terms like MRV and MMRV, it's really how do you monitor the ecosystem services that you have that you're focused on? How do you measure them, how do you record them? And then how do you verify that you actually have sequestered or preserved what you have preserved? If you think about it in anything, if you want to ensure, even if you're like a contractor and you have billable hours, you have to have some documentation of how many hours you spent, what deliverables you produced, and then verify that that's how much time you spent doing that.

LaKisha Odom (09:24):

That makes sense. So the same thing with the ecosystem market is you need to understand where you started and then if you adopted different practices that are supposed to help, for example, soil health or clean water, then you want to see what the change happened, what was that change when you did adopt these different practices, and then are you better off on the other side? And ideally, these ecosystem marketplaces, they're a tool to help encourage and reward those folks that are either already doing the work that allows them to clean up or have healthier soil or more clean water or increase biodiversity or whatever the ecosystem metric is because there are more than just those three. And so I think that a lot of the work the marketplace does is to help put a monetary value on these things. Then reward producers that are adopting practices that would benefit or increase those ecosystem services, if that makes sense.

DJ May (10:25):

Yeah. And can you get a little bit into, you talked about the consortium, the ecosystem services market consortium. I might've butchered that, but Nope, we did

LaKisha Odom (10:35):

Not. Nope. That's good.

DJ May (10:38):

Can you get into what that actually looks like on the ground? So when we're trying to figure these things out, what are researchers doing? What are farmers doing? How do they work together on this?

LaKisha Odom (10:49):

So what researchers are doing really when we think about these ecosystem services is they're trying to answer those questions around, okay, how do we measure? How do we market? How do we verify? How do we understand how much carbon sequestered and how long it's sequestered? How do we recognize which practices will result in some of these ecosystem services? Do all practices in every region result in the same outcome? Absolutely. Not every region has different soil types, different rainfall, different precipitation, all of those different management styles, all of those things will require more specialized guidance. So a lot of the bodies of research I see in these spaces is around understanding what is the production system, what needs do they have, what type of soil, what type of production management do they utilize? And then are there things within each of those production systems that can be added that would increase soil health or biodiversity or water or carbon sequestration or whatever the ecosystem service is.

LaKisha Odom (11:52):

So that's what I think the science is doing is really helping to give those sites specific recommendations and really give some guidance on what do you think that baseline would look like? What do you exist in your current farming system? What are you doing? And then if you adopt these changes, what do you think you might see? That's always a moving target because our systems, as I said earlier, are dynamic and they're living and they often don't want to do what we think they should do. And also you have the added barrier of changing climate weather variability. I think everyone's familiar with how weather has been shifting so much lately. So we have a lot of predictive models of what should happen or could happen. But then reality is that that target is always changing. So I think a lot of research is really trying to address some of these variabilities to be able to provide producers with clear recommendations.

LaKisha Odom (12:46):

And what producers are doing is actually the hard work which is implementing. So then recognizing that there are these additional practices that could be adopted that might increase your ecosystem services. They're making the calls as to what makes sense for their production system. Now FFAR, as an organization, we only want the recommendations to be evidence-based. We don't necessarily say that a producer has to use a particular management silo or system, but we want whatever they use to be something that could be evidence-based, science backed, and that they're making sure that they understand why they're making some of the decisions and what they might predict and see. So I envision the role of producer and researchers quite close in that we need to understand what producers are struggling with, and then that research we fund will reflect those things. And then at the end of the day, the producer has to be the actor that adopts the practices and science can support that, but they have to be the folks that are in the film making those choices, making those decisions. We just want to ensure that whatever choices and decisions they make, they have all the information available and that information is vetted, that information is back with sound science.

DJ May (14:00):

Yeah, that's great. So with the vetted information, the data backed evidence-based recommendations that FFAR is trying to make, how can farmers and ecosystem managers, I mean they're busy people, how can they determine that what they're being asked to do is really data backed and evidence-based?

LaKisha Odom (14:18):

Right. I feel like there's a relationship that happens that isn't just between research and producers, but there are all these other actors in the middle that are technical assistance folks, your CCAs, your extension people, and they also are huge stakeholders in this process. So I think that in thinking about how to ensure that you are making the right decisions for your own production system, I think one of them is having that engagement and entrust with your tech assistant supplier, whoever you're getting that guidance from, they're plugged into these research sources, these information sources. And then I think the other piece is for me, baselining, in order to understand whether something you've adopted is making a difference, you have to know where you started from. So I think it's really important to have that baseline information provided such that you can say, oh, well, I'm at whatever state in my soil health, I'm going to adopt two new soil health practices, and then I want to see in two to three years the benefit to me over time.

LaKisha Odom (15:34):

And sometimes that benefit can be very tangible and financial. You may be able to see a reduction in cost in some way, and sometimes that benefit might be in some intangible way where you can clearly see. Some of the anecdotal evidence I've seen is things like people get super excited to see wildlife come back to their lands. They are very excited to see more birds where maybe for years and years and years, they haven't had the grouse or whatever that local populace and a fonda there and they see it coming back. That isn't something you can quantify necessarily by metrics necessarily, but that doesn't mean that it isn't a value that you can somehow capture. So I think that those are those spaces where to ensure that you are kind of moving in the direction you want to move in. Ideally, it's understanding and having guidance and support in making these changes and then understanding the changes like the change and from before and after you adopted a particular practice, if that makes any sense.

DJ May (16:43):

No, it does, and I'm glad you brought up some of those intangibles. I know I've talked to some people who've made these changes or made them a long time ago and are seeing the benefits, and it's not all my profits are through the roof. It's like, oh, my land is healthy and I can see that things are back in their thriving, and I think that makes a bigger difference than maybe we give it credit for.

LaKisha Odom (17:05):

And sometimes you can monetize those things. I remember some anecdotal stories around people that maybe ended up adopting a particular no-till or some other practice, they noticed more butterflies coming back, so then maybe they opened up a butterfly garden and had folks come and see the butterflies in their field. That's one way you can monetize it. But some folks just got really excited because they could tell that there were more dug beetles in their field, and then that meant that their field was healthier. There are these other metrics of health that maybe don't have a specific dollar amount, but definitely have value. And again, I think that's why ecosystem services is exciting, but sometimes very difficult to conceptualize because how much value do you put on butterflies being back in your field? For some people, that's a lot, for some people less. But that doesn't mean that it doesn't have a value. It just means it's hard to quantify that particular value, but it does have a value.

DJ May (18:08):

Yeah. Yeah, I appreciate that. I want to talk about timing a little bit because we've talked about carbon markets quite a bit on the podcast, and that's something that comes up over and over again. I mean, it's like you're not going to see changes in your soil carbon for, or at least not substantial ones for five to 10 or more years. It's a long game. Is that true of ecosystem services too, or could you flip a switch?

LaKisha Odom (18:32):

It's still true of ecosystem services, but I think you'll see changes a little bit sooner, right? It's hard to tell or look at your field and say, oh, my fields se question a lot of carbon today. But you can definitely see, let's say you knew in your grandparents' lifetime that you had birds in your field and you didn't have any. And now you're noticing because of the practices you've adopted, you see them coming back. See, you may not be able to quantify it, but you can tangibly see, oh, there is a shift. So I think in some ecosystem services, things like cleaner water or biodiversity returning, that is a thing you could easily see. I think soil, which I'm a soil scientist by training, so soils are always my favorite, but it is very often, sometimes a little bit challenging to see what's happening in the soil for some time, right?

LaKisha Odom (19:28):

They're slow to grow back, like your organic matter. You can build back your organic matter though. But can you easily see that after a year, perhaps not. Ideally what you want to see over time, there will be things you can see. You can see water retention. You can see less standing water in your field. You can see maybe the color of your soil, depending on your region, may become a bit darker as you see more organic matter in it. So there are definitely things you can see, but could you automatically say, yep, that's X number of units of carbon scores right there. No, no, no, no. But I do think that in understanding that there are other intangible things that you can kind of signal that positive change is happening, I think paying attention to those helps you to think about like, oh, I am making a positive difference in the way that I steward my land and the way that I protect my land for whether it be for if you're renting or owning for future generations.

LaKisha Odom (20:29):

And I think whenever I talk to producers, that's the thing that I'm always so struck by is their commitment to protecting the land for future generations. So another way to look at it is it may be an investment that you're making now that won't come to pass for 15, 20 years, but that's just putting money in a bank and investing it for your kids. You don't expect that money to have a dividend right away. You know that you're going to have to invest for 10, 15, 20 years and you're leaving it for your kids. So I often think about it maybe in a way that would feel more like the timeline makes sense is it's like if you were putting away \$5 a week for your kids for 25 years, \$5 in and of itself doesn't sound like a lot. And after a year it probably doesn't seem like a lot, but if you do it every week for 20 years, you're amassing a good amount of an inheritance. So that's a way that sometimes I think about it is that it isn't this immediate payout, but it's a longer term investment for your future.

DJ May (21:32):

No, I like that imagery a lot. Just kind of to put a nice bow on everything, we've touched on it a little bit, but LaKisha, why do you think this is so important to get this relationship between research and ecosystem services going?

LaKisha Odom (21:47):

I think that ecosystem services, I think that our environment is constantly providing for us. I think that over time we haven't necessarily accurately done the accounting on how much our environment protects us. And so then in some ways, we don't put as much into protecting our environment, our soil, our water, because we don't think about the true cost of it. And I think ecosystem services is one way that we can accurately account for the cost of it and also support our producers that are not only feeding us, they're doing that work, but they're also often managing their land in such a way that they are helping us to manage our soil, our water, our air, our animals. And so the other reason I really appreciate our carbon markets and why I think they should be evidence-based is because that then allows us to accurately account for all the hard work that our producers are doing for us.

LaKisha Odom (22:50):

And they're doing things that we are benefiting from, but we're never really having to do anything, right? They're managing the land for us, and we're benefiting from a lot of those results of that. So I like the idea of ecosystem system markets as a way to quantify and attach a market value. And in some cases, if the market system works, provide some sort of financial contribution back to the producers that are doing that. And we recognize, right in creating any market, it's going to take a little bit of time to get everything right and to get all, but that's why I think the research is so important is the getting everything right of it all is really having clear ways to measure, to record and verify that these system services are being provided and that they're being actually demonstrated. And so I think that's why research is so important is to make sure that we get the accounting of it as close to possible as we could.

LaKisha Odom (23:49):

And then I think the reason why it's so important to have research engaged, that that's how we ensure that we're actually noticing a change and a change in a positive direction. And the beautiful part about this is a lot of this work is already happening. We're just doing the work. Research is helping to support producers in making those decisions that make sense for their production system, for their region, for their soil type, for their future, however they want to be stewards. We want to support them. And I think the research that FFAR funds is always keeping our producers in mind as to what they might need and how we might support them in becoming the stewards that they would want to be of their land and what tools, resources, guidance, and recommendations they need to do that. And so I think a lot of the work that we have funded really supports producers in kind of having that evidence-based database, baseline information, sharing of information, all to support them in making decisions that make sense for them.

DJ May (24:56):

Perfect. No, I love that. Well, thank you so much for your time today, LaKisha. I think this was a great overview.

LaKisha Odom (25:03):

Thank you, DJ.

DJ May (25:04):

I just want to take a minute to thank FFAR for their early support of Decode six. FFAR has helped Decode 6 with its mission of bringing that research back to evidence-based information that LaKisha was talking about to producers, certified professionals like CCAs and CPSSs, and students and educators across the nation. If you're interested in learning more about ecosystem services and the work FFAR is doing, check out the show notes or come visit us at decode6.org. We'll see you there.