HARNESSING FARM DATA

Featuring Ben Craker

Portfolio Manager, AgGateway, President, Ag Data Coalition

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. Today we're talking data. If you're a farmer, or you work with farmers, you're probably also working with massive amounts of data. From crop yields to fertilizer rates, soil test results, equipment, dashboards and pests and disease rates. There are just so many different ways that you can use information to optimize your farm production and make informed decisions. So what can you do to set you and your farm up for success with all of that data? Our expert with the answers is Ben craker. Ben is a portfolio manager at AgGateway, a global nonprofit whose 200 plus member organizations collaboratively develop standards and digital resources. He is also president of the Ag Data Coalition, a nonprofit focused on farmer control of data, the Ag Data Coalition provides an independent data repository for farmers, researchers, and industry members. Ben is a great person to talk about the basics of data management, what it means to collect all that farm data and why it's important. Ben, welcome to the show. It's great to have you on here. Excellent, we're gonna get straight to it. So, every farm has a ton of data that could be useful. But what are we talking about when we talk about farm data?

Ben Craker 01:32
So really a lot of different things that go into that. You know, from my background, traditionally, what I think most people jump to is kind of the Precision Ag data, when they think about farm data. So the stuff coming off the tractor terminal, the Combine terminal yield data, that kind of stuff. But there's actually a lot of information that goes into that, especially, you know, you get into livestock or dairy management programs, you're getting milk production out of a lot of systems there and quality information, their soil sample data. You know, most farms have some sort of payroll and property, there's all sorts of information that goes into it that, you know, I think farmers use on a daily basis, whether they really think about it as being data versus things they just kind of have in their head is probably another question, but really covers a lot, a lot of different things that that people are keeping track of.

DJ May 02:24
Okay, all right, other than the farmer who else kind of has a stake in farm data.

Ben Craker 02:30
So, you know, I think it's pretty widely known that a lot of land, especially in the US here is rented. So most of the time, you've got a landlord, that's going to be interested in having some sort of record on what's going on with their land, basically, there's different people that are going to be interested in different types of data. So a lot of times farmers will be collecting soil samples, you know, that might be done by a service provider, the service provider obviously wants to have the records to be able to make fertility, recommendation, seeding recommendations, that kind of thing. So you get into that, where there's a lot of different advisors and things that farmers work with that are going to be very interested in getting a lot of different data. So it's not just the farmer that's addressed it. And then probably more recently, we've seen the big interest in sustainability programs, climate, smart commodities, things like that, where a lot of that same information that a farmer is using to make decisions about what, what inputs, what were the fields, also relevant for documenting how that crop was growing. So that can be pretty important. Because you can either maybe get a premium, if you can prove that you grew a crop in a certain way, or, you know, in some cases we're seeing that might actually be almost a barrier to entry. If you can't prove how things were done, you don't get market access. So it's kind of

the the carrot or the stick approach there, depending where you're at and which market segment you're looking at.

DJ May 04:00
Yeah, yeah. Well, I know, it's come up quite a bit in talking about carbon markets for sure. Just you know, whether or not you have historic data about a field. And if you can show with practice changes impact carbon, that's definitely one that's familiar.

Ben Craker 04:13
Yeah, that's, you know, a lot of it we're, you know, I think for quite a few years, we've been talking about, you know, there's value in this data, and farmers have been trying to figure out how to monetize it. And I think that's kind of the realization, we've come around to that the odds of directly monetizing data seemed to be kind of maybe not the way it's going to be, you know, selling big datasets to people. That hasn't really taken off, but having the data to verify what was done, and that's where you hear stories, like people have all this planting data, but they never wrote down what model planter was to prove that, well, this was all no till, like, you don't normally document that. So it's some different little kind of nuances in the data but being able to say yeah, this was the planner I used that was actually all no till and now I'm eligible for are different programs and things like that a little bit different, different data on what data you need and who's interested in having.

DJ May 05:08
Yeah, I want to double back, you mentioned that some of this stuff could be things that you don't usually think of as data or things that you just kind of have in your head. And I feel like the planter is a good example.

Ben Craker 05:19
Yeah, everything's all I put this rate or that kind of thing in the field. And that's, you know, some of the education we tried to do too, is making a little bit more of a concentrated effort on collecting quality data, if you're showing up a planner, and you're hitting variety one and going planning across the field, that's really not very valuable information, at the end of the day, you give that to somebody else that doesn't know what's going on, they have no idea what variety you planted, like I mentioned, if you don't know that, that was a no till planter, again, it's going to be harder to document that, you know, this was a no till operation, or I use this exact seed in this part of the field. So that's where, you know, I think a lot of times in the heat of planning, farmers don't want to sit there and type in, you know, some huge long name of what exact varieties and seed they planted. So if you can kind of have some sort of record keeping system in place where you know, you have your, whatever six, eight different hybrids you're looking at, and you can clearly recognize those down the line is a pretty important thing going forward is something that you got to put a little bit of time into when you're in, you know, trying to get stuff planted before the rain comes and all that kind of stuff. So a little preparation work can go a long way there.

DJ May 06:30
Yeah, yeah. Well, I've heard some farmers say that, like the reason they're farmers is because they don't want to be desk jockeys. Right? Like they don't want to spend a ton of time in front of a computer. What advice would you give somebody who maybe doesn't, you know, it's kind of disinclined to do some of that legwork for the data, but needs to maybe think about it, is it business practice?

Ben Craker 06:54
Yeah, and, you know, I think that we're seeing an increase in the value that the data has led for the different programs and things we mentioned. So a lot of it is just kind of little things, you know, if you can just like you're

gonna tune up your plants, or your combat or whatever, in the offseason, kind of get some of your data ready to go. Like I mentioned, having the monitor populated with what varieties you plan to use that year for planting is a really important thing. That helps a lot downstream. Same thing, if you're applying any chemicals or fertilizers, knowing what you actually have in the system is one of the biggest headaches that people receiving the data get, you know, the precision ag industry has been joking for years, that one is the most planted and applied product in the industry, because everybody has one and this goes across the field, and then it's up to somebody else. Later to try to make sense of that data, it's really difficult like that. The other thing is just kind of some best practice stuff, just naming things. So they mean something a lot of times terminals will auto generate something with a date, you know, if you can put the field name or something quick in there, so you know what it was you're doing or where you were, that helps a lot. Otherwise, you know, people using that data, they gotta go through and open everything up and try to figure out which field that is and, and go find it enough, your big pet peeve is just starting and stopping a new job, every time you get to a different peel that you know, everybody's got the the Precision Ag introduced, they combined the entire farm in one file, you got to go back through and split it all out. And it's a lot of time and effort downstream to manage all that. So even if the farmer, you know, is going to be doing some of that management in that little bit of time you spend in the cab to set that up, right saves a lot of headache, when you're trying to pull out a field that you need to share with somebody. And the same thing. If you're having an advisor that does that for you, they're going to be a lot happier with you. If they don't go through and manually split all that stuff out. So just some some simple things like that to help keep things organized and understand when you get a file what what's in it and, you know, have it clearly documented.

DJ May 09:04
Okay, so just kind of setting yourself up with the names of everything that you're maybe going to use and then starting and stopping records and not just getting one giant file that file. That's excellent. Um, I guess when we're thinking about farm data, so say maybe you're somebody who hasn't spent a whole lot of time staying organized in the past? What would you sort of do to get yourself maybe cleaned up a little bit to use a data term to clean up what you've got?

Ben Craker 09:36
Now, so one of the biggest things is trying to get things organized. So I always like to recommend that you keep a backup of all your data, preferably in a cloud system. You know, you see a lot of stories where people put everything on an external hard drive, or it's all on the computer that is in office at the farm, which is great until that hard drive fails and then every things gone. And like I mentioned the carbon programs, a lot of times they're looking for three, five, maybe more years of data. So keeping that stored somewhere, you know, if you're not going to put it in college system, put it on two different drives and keep them backup fairly regularly. But the other thing that people don't want to think about his keep those two drives in two different locations. So if the farm office catches fire, and you've got your external hard drive and your computer there, and they both have that backup to do a lot of good, so it's important if you're going to have that external drives, you know, keep it at the house or out in the shed or somewhere else where, you know, heaven forbid, something like that does happen, you don't end up losing everything. You know, we've talked about this within the cgroups, there's probably no real right way to organize it, whether you put everything by field, and then by year or by year, by field, whatever makes sense to your operation. So you know, where to find stuff that's kind of set up your structure to keep things organized and know where it is. So you can find it. You know, just having a random pile of data that isn't really organized makes it again, a little bit of effort upfront, when you go to store everything and back everything up at the end of the season can save a lot of time down the road, where you're hunting and trying to find stuff that's scattered all over the place. So kind of just, you know, probably some like best practices there to just managing things and keeping track of things up front instead of wait until it's a

problem at the back. And also, I think you mentioned to I'm just understanding where all your data is. So a lot of farmers are gonna have a custom applicator out there that's applying fertilizer or whatever, make sure you have an understanding with him, like you get a copy of that as a five map, how are you going to document that especially, you know, the interest in fertility, that if it's land you own, that can be a value, if you're going to sell it know what the fertility program was, like yield history you've had. So understanding if you have somebody doing a custom job, are they going to provide you a copy of the as applied off that machine. And that's kind of another point too, is to make sure you keep as often as possible that original file off of the machine, when you read data in to one of the software tools, whichever one you want to use, they always do a little massaging they you know, clear out the funny looking points or things that are outside of range. But once you do that, that data is now changed. So when you go to pull it back out of that system, you don't know what is really been done to it some system, it's actually really hard to pull data, they're very good at ingesting data and reading everything in but getting it back out can be a challenge. So that's where that archive that external drive that cloud drive, like I was talking about keeping that original file is important. Because that's what you want. If you need to go back and pull historical stuff out. It's a lot better to manage it that way than you know, be wholly reliant on one system being able to hold everything and be able to pull it back out if you need to go to a different system.

DJ May 13:07
Okay, okay. Yeah, I could see to where, you know, you might run into, you talked about a custom applicator, you might have, you know, three or four different people who have some kind of data about your field or your farm. What advice would you give for managing that sort of situation, if you know, you have lots of folks who are going to be working on this?

Ben Craker 13:27
How to establish off run, you know, I don't know if it needs to be contractual, but at least make sure everyone's on the same page on who's getting a copy of what data is sent to every buddy in that chain. You know, like I mentioned here, having something custom applied on rented land. You know, the landowner has an interest in that data, the person managing the farm has an interest in that data, the company that's actually doing the application has an interest in the data, a lot of times the company that provided the input wants to know what happened as well. So there's a lot of people that are interested in have some level of say that, Hey, that's my data, because of whatever ownership stake they have there. So just making sure that no, ideally, that's documented in some sort of agreement up front. So everybody likes everybody who just needs to know what the expectation is upfront, because afterwards, you know, if there's an expectation that you're going to get a copy from the custom applicator, and they just never saved the file, because they didn't think anybody cared, you know, you've lost that. You can't ever get that data back. That's one of the biggest things is you gotta be a little bit intentional about it. Make sure people know that you expect that and have that that upfront, because it's really hard to go back if you don't capture that, right

DJ May 14:45
Yeah. Yeah, it's like it never happened.

Ben Craker 14:51
Um, I don't know where where things went within the field or what field but you might know how much total stuff Former.

DJ May 15:00

Right, right? Um, okay, so that's, that's really great advice. If you haven't maybe been paying so much attention to data, what would you recommend is like the key things to start keeping track of maybe in one place or with these files.

Ben Craker 15:17
For field operations, you know, ideally, you'd want to get a record of every pass across the field, that's kind of the best practice, obviously, planting and any applications and yield are the most important. But like you mentioned, with carbon programs are going to want to know if you did tillage, so understanding, you know, that most of the times those are, you know, quote, unquote, dumb implement, they're not really logging any data. But just to know that, yeah, you went out and just this field or vertical tillage, you know, trying to understand what the tool was, you know, maybe what some of the settings were a lot of the kind of newer vertical tillage tools, you can, there's a lot of adjustment there, that where you're sizing residue versus moving a little bit of soil around. So so I'm hoping base really looking at that level of detail yet, but I expect in the future, people are going to be pretty interested to understand that. So, you know, just have some sort of documentation on what happened, what day, what was the actual implement that you use, maybe some settings a lot of times, that's, like I said, it's handy to know that because when you come back next year, you probably want to use the same settings on that implement. So writing down what you did to see if it had the result you want to do is a pretty good best practice either way. But if you have some way to document that, again, store it digitally, somewhere where it's backed up, and you're gonna be able to access it, again, are probably some of the best things. Same thing applies on the livestock side, do you want to track a production feeding and all that kind of same information, it really doesn't matter whether you're talking about a field or a pen to really try to document what happened in some of it is to understand management decisions and be able to react like, oh, that worked the way I thought it did or no, that's, that's not at all what we want to do anymore. So you can use it for that. And like we said that there's other benefits of being able to participate at different markets, too. So that data gets to be more and more valuable as you find different places to use it. Yeah.

DJ May 17:17
Okay. Okay. And then one other thing I wanted to ask you about, um, you talked a little bit about keeping your raw data and what can happen when you put it into different software. But how do you make sure that like the raw data you're collecting is transferable to the different software you might want to use.

Ben Craker 17:36
So, at AgGateway, we're doing a lot of work there to try to make sure things are interoperable. That's one of our main missions, we've got to adapt toolkit out there, that isn't anything a farmer will really ever use. But it's something that different software providers use to so kind of, regardless of what format, the different equipment manufacturers decide to use with that framework, we're able to kind of manage that data. So most systems out there today, I think, are able to read the the, you know, files that are out there, most companies realize that the data is important. So they don't want to put up too many hurdles for for end users to be able to use that and whatever tool they choose. So I think we've got a lot going on there in the industry that I think has progressed a lot over the last 510 years even to help solve that. And I mean, it's not an ideal situation where you can just drop files into whatever tool you choose, there's usually a little bit of massaging to make that happen. But like I said, as long as you have that original file, that really helps a lot because most software tools are going to know how to use our files off most equipment. So it's like it good enough space where you don't have to worry about it too much that you know what some weird child horror mammoths, everybody's kind of coalescing down to a few few different standards that are gonna work.

DJ May 19:01

Nice. Okay. Okay, and then maybe this is a silly question, Ben. But once you've, you know, got yourself all set up, you've collected your data, what are some common ways that you can use it to maybe enhance your business practices or just make the farm more efficient? What are some of the best ways you can make use of all of that stuff you've so meticulously collected?

Ben Craker 19:25
It's really going to depend a little bit on the farm operation to and how, what level they're managing at. So, you know, like I mentioned, I usually start thinking about precision data. So being able to manage at that sub field level to make decisions on where you're putting inputs within the field, you know, and being able to vary that you know, kind of gets into a little bit of training thought they're thinking about where things are happening within the field. If you're able to vary the inputs and everything. Edit at some field level, doing like an on farm, try Miles and that kind of thing, that's a big benefit to be able to say, okay, we can do little test plots across the field, understand next year, what's going to make a difference. That's one big use. We've mentioned, documenting different production practices for the carbon programs and things. You know, like I mentioned, there's interest from landowners, we're seeing a shift, you know, to like the absentee landowners that aren't, they maybe don't live just down the street and don't see you going across the field, you got to report to shareholders or something like that. And they're probably a little bit more business minded and want to have better documentation and records of being able to prove to them, this is the soil test, fertility program, we're using this as the yields we've been getting. So they have an understanding, because they think of it more as an asset, not you know, that's where we we grew up, or, you know, spent a lot of time so it's a little bit just shifting the mentality on what the expectation is there. So trying to keep track of that stuff. So that, you know, you want to keep your landowners happy. So you can keep burning the ground usually.

DJ May 21:05
Right, right. Okay. You talked a little bit about maybe some downstream interest in in farm data. And I've seen a little bit of this, especially with, like sustainability, and with some of these, like bigger acts with money attached for changing practices. What do you see as, like the most important part of maybe telling people about your farm practices or your data?

Ben Craker 21:31
Um, I think just having the documentation of backup, I think ag gets a bad rap a lot of the times that, you know, everybody's coming to help solve farming, because we have no idea what we're doing, right? So it's not financially sustainable to just keep throwing away inputs, I don't think there's any farmers out there, like, I'm just gonna dump on as much nitrogen as I can and see what happens. Like, that's not the way anybody really farms. So I think having the documentation to prove like, Hey, we're managing this, we're trying to get the nutrients, you know, the the four hours on getting the right place at the right time, at the right rate is, it's just making business sense, though, to prove that that's what's actually happening, I think is a big benefit. And consumers want to go out of people not twice as well, people want to know where their Cheerios came from. And, you know, there's a whole issue of commingling and large grain bins involved there to actually figure that out. But being able to, you know, prove that, you know, the majority of this grain was grown using these practices is kind of the, the proxy for actually true traceability. So being able to say, Yeah, we have all this grain that was growing this way, or cattle that were raised this way, or milk that was produced this way. And being able to document show that is getting very important. You see a lot of the different big consumer goods companies putting out initiatives where they want documentation saying this is what was done, you know, we're seeing in different regions where they can have their, their little supply base for you know, a lot of it's in the area right now with the interest of ruminants and greenhouse gas emissions there. I don't think all this carbon stuffs going away, joking with somebody that I got a new pair of shoes, and then the bottom of the heel,

it says there is 9.8 kilograms of carbon used to make this pair of shoes. I have no idea that that's how much went into it. But clearly, consumers want to know that companies are trying to figure this out foods, no different people want to know where it came from, you know, I think it's a pretty common monster now that people aren't as involved in farming, they're a couple generations removed, removed, they have no idea what's going on. So having some of this data to back up some of those claims. And, you know, say that, hey, we're actually doing a pretty good job with a lot of this stuff is important.

DJ May 23:52
Yeah, no, that's a great point. I know, I know, people like to point to farming is something that's, you know, harming the environment or whatever. But it is so nice to kind of flip the perception and say, look, look, we have the numbers we can we can show you. Yeah.

Ben Craker 24:08
Yeah, look at how much production is increasing in the last 50 years, and how relatively affordable food is compared to a lot of other places in the world. And there's a lot of I think, good things to be said there. Obviously, there's probably still room for improvement. But you know, I think that's a lot of what this data is about is just being able to back that story up and kind of documented prove it because people don't have that core understanding of what goes into raising your crop or an animal or anything anymore, that they just kind of understand what goes into it that you need to have a little bit different viewpoint on being able to prove what's happening.

DJ May 24:47
Yep. Okay, Ben, I have one last question for you. You clearly made a whole career off of talking about data. What keeps you going with this? What got you into it? Why was it like I gotta help people figured out the data issue with farming.

Ben Craker 25:03
I grew up on a farm and was always just kind of a nerd into technology and that kind of stuff. So kind of went together pretty well, I hit the market at the right time when all this stuff was kicking off. So just something that I've always been interested in seeing a lot of the value, like adopting the new technology and being able to manage it that, you know, everybody always wants to get down to that individual plant level and being able to, you know, spoon feed it nutrients and micromanage everything, until we get a bunch of the little robots running out. I don't know if we'll get to that level. But just being able to help produce more with less manage resources, like nine times out of 10, most of those sustainability programs make business sense as well, I think you're just managing your inputs better. So utilizing the technology and the data to make those more informed decisions to not only have a better financial outcome on the farm, but be able to prove some of the social or environmental benefits that people are more and more worried about is just exciting to be able to help work on that and kind of make it make the world a little bit better place matter.

DJ May 26:09
Yeah, absolutely do and more with less. I love it. Well, thank you so much, Ben, for your time today.

Ben Craker 26:17
Thanks for having me.

DJ May 26:19

That was Ben craker, with AgGateway and the Ag Data Coalition. A quick recap. Ben's recommendations include doing an audit of the data that you already have, figure out what you've collected, and make sure you have it backed up in the cloud or in a separate hard drive in another location. Keep your raw data files and come up with a naming convention for those files, including dates and field names. And as you think about collecting data this year, think about the different players involved, whether it's a landowner or a contractor that's coming through to help you out or someone else and make sure that you talk with them ahead of time about sharing the data that you need. Finally, do your best to figure out what you might need in the future when it comes to sustainability programs. Whether that's checking out your own suppliers or talking with downstream groups to think more about the data that you collect. now's a great time to do that. Most of all, don't forget that it's never too late to start digging into this. There's always more to learn. If you want to learn more about today's guest or data collection, check out the show notes. And if you have questions about carbon ecosystem services or farm practices, come visit us at decode6.org. We'll see you there