MULCH MATTERS EP. 21

History and Future of Sustainable Plasticulture in CA with Jazmine Mejia-Muñoz

[00:00:00] Nataliya Shcherbatyuk:

Hello and welcome to the *Mulch Matters Podcast* where we will explore the intriguing world of mulch and its impact on agriculture and the environment, as well as update you on the latest research about soil-biodegradable mulch and recycling options for plastic mulch. I am your host, Dr. Nataliya Shcherbatyuk, and I am a communications specialist for the project, *"Improving end-of-life management of plastic mulch in strawberry system"*. In each episode, we'll dive into the latest research, trends, news, and insights on why mulch matters and how we can improve plastic mulch end-of-life options. We'll also branch out and discuss other plastics as well as talk to researchers, experts, and practitioners in the field who will share their insights and experiences on how to use mulch effectively in different settings.

[00:01:00] Nataliya Shcherbatyuk:

Welcome back to another episode of Mulch Matters Podcast, and let's welcome our guest, Jazmine. Hi, Jazmine, how are you?

[00:01:12] Jazmine Mejia-Muñoz:

Hey, Nataliya, I'm doing great, how are you?

[00:01:16] Nataliya Shcherbatyuk:

I am doing good. So, if you ever listened to the podcast episodes that we have, you know that I like to start by asking some stuff about your background. So, let's just see if you can tell us a little bit about yourself, your background, and how actually you became involved with this project.

[00:01:37] Jazmine Mejia-Muñoz:

Well, first of all, congratulations on this podcast to the whole team and I have been following it. So, I'm really excited to be here today. Thank you, yeah, a little bit about myself. So, I'm just me and Mejia Munoz and I'm the water quality program manager with the California Marine Sanctuary Foundation on detail for the Monterey Bay National Marine Sanctuary. And we actually are our history of being involved on with agriculture. Really stems back to the start of the Monterey Bay National Marine Sanctuary. And so, this leads us to about 30 years of history, working collaboratively with agricultural stakeholders with research conservation groups focused on ag. And academia and environmental organizations, and really with 1 key mission, which has been to protect and enhance water in the Monterey Bay National Marine Sanctuary. And the adjacent watersheds while sustaining a world class production of agriculture through voluntary collaboration with managers of agricultural and rural lands. So, from its inception, it's been a very voluntary based, collaborative approach to looking at solutions for, you know, keeping our waters healthy as they go out from the watersheds and into the Monterey Bay National Marine Sanctuary.

[00:03:00] Nataliya Shcherbatyuk:

That sounds really neat and really interesting. And, can you tell a little bit about what role do you play in promoting sustainable agriculture practices? Like, for example, use of biodegradable mulches or what we call BDM.

[00:03:16] Jazmine Mejia-Muñoz:

Yeah, happy to. And our, our approach has never been prescriptive, so we like to explore and understand, the use of different technologies at a commercial scale and really in, in a multi conversational way with our different collaborators, in ways that we can help understand how these practices can be beneficial to improve water quality. But also be sustainable and cost effective for industry and for the strawberry growers. , as we zoom in on this particular project with a specialty crop research initiative, which if listeners don't know, that's, as you know, a United States Department of Agriculture funding, we have focused on, you know, or the team has focused on biodegradable mulches and our role in this particular project has been to collaborate on the trials of the soil biodegradable mulches, in commercial strawberry fields. So our, our collaboration here, you know, we work really closely with Sita's lab at Cal Poly with Mark Bolda with the UC Extension and most importantly, we work really closely with a local strawberry grower, where we host all of the trials.

[00:04:28] Nataliya Shcherbatyuk:

And that's all focused in California, correct?

[00:04:31] Jazmine Mejia-Muñoz:

Yes. These, these trials are hosted in Monterey Bay, where we actually hold them in Moss Landing and, and all of the trials are, are, are hosted locally. There, all of our outreach events around the biodegradable mulch are hosted on the farm. So, we often have field days hosted there locally.

[00:04:45] Nataliya Shcherbatyuk:

And speaking about California and plastic, how do you assess the current use of plastic in agriculture across the state?

[00:04:58] Jazmine Mejia-Muñoz:

Yeah, you know, that that's a really good question. and I think really to understand where we're at now, we kind of have to understand where we're coming from. And so we, we can. We head back, to the 1950s, a little bit of a Nat Geo moment here, a Discovery Channel moment here, but as, as we look back, you know, plasticulture starts really, shortly after Europe had discovered polyethylene as a substitute for glass and, shortly after that, Right around 1948, Dr. Emery Emert from the University of Kentucky began studying polyethylene as a replacement for glass and agriculture. And his studies expanded from the early 1950s to the late 1950s. And during this time, he looked at replacing glass with polyethylene films, not only for greenhouses, but then after that started thinking, well, "What if we use this as a, as a low ground cover?" And, and so with that, he started looking at row covers, plastic mulch, and, and the use of, of polyethylene film for greenhouse film. And, and that really revolutionized agriculture. It, it really allowed us to be what we, to, to, for us to be, in the state that we know of agriculture. And, Dr. Emery Emerit, I'm sure, had, you know, great intentions with all of this research and it really allowed us, to be able to provide, or allow growers to be able to provide food, you know, to a global population

and, you know, he, he had a, he, he died, shortly after publishing his, his, articles and his work, in 1962. So, I don't know if he realized how much of an impact he had, but he definitely did revolutionize agriculture, and so his findings were adopted widely, and it's really allowed us, as I said, to have a productive agriculture. And so with that, now we see plasticulture, which again, that refers to the technology of plastic and agriculture, spread in a diverse set of agricultural systems. From strawberries to tomatoes to peppers to melons, we even see it in some cases in almond fields. So the use of plasticulture is, you know, really, throughout agriculture and it comes with, with an array of environmental benefits. In some cases it's, you know, required for growers to use it, by law, uh, you know, especially during fumigation. And so in, in 2019, our, our team, and this, this, this work was led by Pam Cronin, a colleague of mine, prior to me joining, she conducted an assessment of plasticulture use, across the Monterey Bay region. And so in this assessment, you know, we looked at sort of the high risk plastics that were escaping. And so, in this assessment, she conducted a water bank survey across 10 different, ag dominant watersheds. And, and, she looked at the kinds of plastics that were escaping. And so from there, we identified mulch as one of the plastics, that was escaping from the fields and entering the watersheds and draining out. And so, you know, that that kind of brought us into focus and wanting to collaborate to look at ways in which we can help prevent some of this plastic from escaping out of the fields and into the water, and working collaboratively to look at end of life opportunities.

[00:08:49] Nataliya Shcherbatyuk:

That was a nice back story, history, very interesting.

And I'd like to talk a little bit more about the coverings that you mentioned. Can you tell us what are the different types of covering actually being used in agriculture and what are pros and cons for them?

[00:09:09] Jazmine Mejia-Muñoz:

Yes, happy to, as I mentioned, you know, plastic coverings, or in this case, we will refer to them as as mulch.

And again, just I know that in the past podcast, uh, previous speakers have discussed mulch, but for those that might be new listeners, the mulch is referring to a thin layer of plastic that is used to cover agriculture beds. And so we see this, this plastic be used in an array of systems, as I mentioned. Strawberries, tomatoes, peppers, melons, really, you know, depends on, on what needs are based.

And each scenario could be different. Growers have different, systems that they like to use, but, uh, in general, as we focus, especially for this trial, we have been working really closely with strawberry growers, you know. Strawberry growers have really taken a strong initiative and understanding.

Plastic cultural alternatives and end of life technologies and and so here in Monterey, we've been working really closely with with strawberry growers and so within a strawberry system. We see typically three types of plastic films that are used as per se a mulch. And so one of them is a flat fumigation tarp.

So, this one is used prior to, before strawberry beds are created. So this is used, to fumigate when the soil is flattened out. And then typically, then the soil is turned into strawberry beds and a grower may decide to use a polyethylene mulch film, to cover that strawberry bed. And, or they can go directly with using what is called a totally impermeable fumigation film.

And so this is the, it looks very similar to a polyethylene mulch film also used to cover a strawberry bed. But the difference here is that the grower can fumigate directly on the bed rather than having to do it, prior to the

strawberry beds being built. And, and so, you know, as I mentioned earlier, in many cases, this plastic is, uh, you know, legally required when, fumigation is going to occur.

And also, this, this plastic provides a variety of benefits, from, you know, both from an environmental perspective, as well as from an economic perspective. And so we often hear, you know, that. You know, this allows for an efficient resource utilization. It allows for less use of pesticides, it allows for longer growing seasons, can help with increasing yield and it can help also, with food safety, but, but really, you know, as, as we dive in deeper to this, like, what does this actually mean? And, and, you know, what are the benefits that this plastic provides? Some of the published research that we found through our literature reviews indicate that the plastic mulches can actually help reduce weed emergence by 64 to 98%, which is quite significant.

I mean, if we were looking at labor, what was published in this article was that. That would be, um, you know, if you had someone out there weeding these plants instead of having the mulch, that would result in about 225 days of labor per hectare. So, um, so when it comes to labor savings, that's quite significant.

And in addition to that, you know, when talking about the beneficial impacts from an environmental perspective, because you have this plastic film, this allows for less water evaporation, so a better use of water. And it also helps warm the roots of the strawberry plants and it allows for them to have an increased nutrient utilization.

So all of these are very, you know, strong benefits that this plastic can provide. Now, the other side of that or some of the challenges is that, you know, at the end of the season, the grower is faced with having to find a way to dispose of this plastic, often ending up in landfills, you know, throughout its use, just through natural.

Mechanical wear, maybe a tractor passing by, you know, as, as people step through the plastic, rain, water, um, this plastic can, you know, break down a little bit throughout the season and, and flow out with water, so it also has the potential of, of escaping, and entering our, our watersheds. Yeah.

[00:14:00] Nataliya Shcherbatyuk:

Yeah. And let's talk a little bit about biodegradable mulches. So what about the challenges and opportunities for BDMs when they are being applied on the wide commercial scale? And actually, can you bring any examples of some scenarios?

[00:14:22] Jazmine Mejia-Muñoz:

Yes, happy to. And as I mentioned, you know, strawberry growers have really taken a strong initiative on understanding, you know, or trying to explore different technologies and working collaboratively with us and with our partners in this project.

But I want to take us back to a couple of years. You know, prior to the start of this SCRI project. And so back in in, 2022 and actually in 2021 and 2022, we started with five different trials of biodegradable mulches. And so this was the first time that we were going to be testing soil biodegradable mulches in Monterey Bay region.

And, and we worked with a couple of different growers, and they each brought really interesting feedback and perspectives that we've taken into consideration. And now we, as we're conducting our, a little bit of a, of a larger scale trial, you know, these are challenges that that we continue to see come up.

And so, one of them is, you know, Monterey region, and this might be unique to Monterey, but it's a, it's a highly productive, valuable agriculture land and, in order to maximize this, this, Such great soil, there's what we call a rotating crop system. So typically, you might have a strawberry field followed by a veggie field.

So, for example, with the grower that we're working with now, after the strawberry system is implemented, that ranch rotates into traditionally a radicchio field. So, you have this constant co-rotation. And, the way that the soil biodegradable mulch is produced is that at the end of the season, its intention is that you're supposed to till it into the soil.

And so, um, when you till it into the soil, for those that are not familiar. You basically have a large implement that it's attached to a tractor, and this helps break down the strawberry beds that were built. And as you're doing that, the, the discs are breaking this plastic. So physically breaking the biodegradable mulch and that's what we want, right?

That's, that's, that's for, you know, this plastic was manufactured for that. And and so the, what happens after that is that you end up with having a lot of pieces of plastic in this case, the soil biodegradable mulch that remains on the field. And so, um, afterwards, when you have a veggie grower come in.

This can pose a potential risk of, of contamination for when these when these, when this produce is being packaged. And and so that's one of the things that from the feedback that we've obtained from growers is that ideally, um, you know, that transitioning period from, let's say, a strawberry field to a veggie field.

You know, can be as short as two weeks. And so ideally, you would want this plastic to biodegrade within that two, two week period, which is extremely fast, right? We know that, you know, under the label, this, this, this biodegradable mulch is meant to biodegrade two years. Or 90 percent within two years, so that that of having it biodegrade a lot faster is definitely one of the challenges that this technology faces.

And the other challenge too, is that, you know, if you have all of this plastic, even though it's meant to biodegrade, it also has the potential of flying out. And and so, if you have any surrounding neighborhoods or schools, you might not want this plastic to be escaping. There has also been, questions about, uh, you know, economic considerations.

I can speak a little bit more about that later on. But but those are also some of the concerns that growers have mentioned and then, third is just, you know, making sure that the biodegradable mulch last, enough during the season. So, as I mentioned, the plastic has many benefits. So, you at least, especially for the beginning prior to the strawberry plants.

You know, growing big, you do want this plastic to to remain, um, you know, pretty sturdy. And so, um, to be able to provide the different benefits such as temperature protection, reduction of water evaporation, and weed control, especially weed control. , so if the plastic is breaking down too fast, the biodegradable mulch, if it's breaking down too fast early on, that can also pose some challenges to the grower.

But so. Oh yeah. I, I was just gonna mention about some of the, success case scenarios. So, as I mentioned early when I, uh, earlier when I started this question was that we had trialed this with five different growers, and with one of the growers, we actually saw a very successful case. So in this particular field, this was also hosted in Monterey Bay area, but the, the strawberry grower was followed by sprouts and as we followed this trial, the, the sprouts grower actually said, you know, we didn't have any challenges, with, uh, with the plastic being there, mostly because the sprouts are harvested not low ground, but harvested and so, um, you know, at the top of the plant and it's a pretty tall plant.

And so, so this was one of the cases that when we started looking, we started to think, well, we could potentially see a route for commercial expansion. Um, under a couple of scenarios, and so one of the, one of the scenarios that really comes to mind is if you have a grower that may, may start with flat fumigation, and, and this is important because the biodegradable mulch right now is cannot be used as the total, totally impermeable

fumigation film that I had mentioned earlier. Um, and so a lot of growers do fumigate directly on the bed. So, um, in the case that a grower doesn't use, uh, the totally impermeable fumigation film, or as we call it TIF, um, but they use a flat fumigation approach and then follow it with a biodegradable mulch and then afterwards, um, if they rotate with a brassica grower or a grower, such as, you know, that might be growing sprouts, this might be a pathway to commercial expansion.

Um, and of course this is not, you know, suitable for all growers, but for for growers that are in that scenario, this this might be an option for them to start using, you know, biodegradable mulch at scale, but you could see it's not it's not an easy route and, definitely still lots to learn from this technology.

[00:21:28] Nataliya Shcherbatyuk:

Right, but there is an option. So that's already very good. So, okay, when we have growers. Who are trying to choose between biodegradable mulches and conventional plastic mulch. What other economic considerations they should look at?

[00:21:48] Jazmine Mejia-Muñoz:

Yeah, well, you know what? I don't want to speak for a grower because I think the grower is going to have a better understanding of the economic considerations that they're facing.

But some of the factors that, we've heard from feedback from other growers and some that, uh, you know, some of our team members have looked at our 1 cost of plastic. So. And some of the studies that Tom has said have conducted, you know, they have seen that biodegradable mulch is more expensive. In some cases, it could be double the price.

Um, and so this, this may seem as a, as a drawback. Um, but again, as we look at a holistic picture, another thing to consider is the labor. And again, some of the studies that that Tom and Susie have conducted, really show that the, the, the cost, uh, effectiveness of this practice comes out at the end when you're, when you, when you, consider labor, um, because as we mentioned, the soil biodegradable mulch is meant to be tilled into the soil. So at the end of the season, you don't have to, collect the plastic and take it out for landfilling. Um, you, you can simply, you know, till the plastic right in. And so right now what we see is that at least for Monterey region, a lot of growers, pull out the plastic manually. We, we are starting to see a shift of that from manual, from pulling the plastic manually to mechanical collection. But, but in any case, right now, what we see the most is that the plastic is pulled out manually. And so, in the scenario of a biodegradable mulch, you know, that wouldn't be the case. You would just be able to, instead of having, you know, maybe a crew of 30 or 40, uh, crew members collecting the plastic, you would be able to till in the plastic directly into the soil with the idea that this plastic would, biodegrade, with, with the microorganisms in the soil, and.

[00:23:50] Nataliya Shcherbatyuk:

Go ahead, continue.

[00:23:54] Jazmine Mejia-Muñoz:

I was just going to say that the third option or the third economic consideration that that I want to put on the table is landfilling costs. You know, we've seen in some of the surrounding regions within California that landfilling costs have really gone up as there is limited space in the landfill. Yeah. And and so in some areas,

you know, these landfilling costs have close to double. And and so that's another consideration that, you know, as, as landfilling costs go up, you know, there could be more cost associated with, with taking the plastic mulch out to the landfill, which, of course, would be a cost savings in the scenario of using a biodegradable mulch.

[00:24:39] Nataliya Shcherbatyuk:

So how do you see the future of plastic use in agriculture and particularly talking with the development of more sustainable options like biodegradable mulch?

[00:24:51] Jazmine Mejia-Muñoz:

Yeah, this is, this is a really good question. I, I cannot predict the future, but, but I can speak of, of what, of what I Wouldn't that be nice? I don't know, maybe. But you know, as I, as I reflect about this, um Really, from our perspective, we see a very unique approach, very holistic approach. So, you know, in this project alone, the people that are working on on this project are not just, researchers and academia, it really is, you know, the approach of this project has really been to to bring in and engage the whole supply chain, from, you know, plastic manufacturers to growers, uh, grower, shipper organizations, environmental organizations have been involved and and also, you know, waste management centers. And, and I, and I think this is. It's really important because, you know, when everyone is in the room and and everyone is able to provide their own set of expertise, it allows for again, this multi way conversation that takes into consideration all the different factors. For adoption of a practice, um, and the challenges that that may come up. And so one of the things that that we have observed, you know, from early on, and this is, especially for for the Monterey region is, you know, as as the technology is coming up, there's different, you know, feedback that we get from growers and and so, for example, when we 1st started the trials. Growers, you know, wanted to, have a, use a biodegradable mulch that, you know, in some ways match the, the mulches that they're used to using. And, and this was, you know, this included factors such as color. And so we were able to, because of this collaboration, we were able to collaborate with manufacturer to provide a mulch that, had, you know, the same color requirements that the growers needed for their production. And so, um, you know, in, in a, in a scenario where, where you don't have that collaboration, that kind of accomplishment wouldn't be possible. , and so, so again, working with them has been really key and right now we're, we're working with them really closely to try to see how we can speed up biodegradation. And so our team has looked at, you know, exploring different options, uh, to help speed up that biodegradation. So that way, the adoption of this practice can come with less challenges.

[00:27:24] Nataliya Shcherbatyuk:

Yeah, collaboration is definitely the key.

[00:27:26] Jazmine Mejia-Muñoz:

Yeah. And, and, and the other thing too is, you know, again, really a huge shout out to, to the strawberry growers and, and, industry members because they've, they've taken such a strong, participation and role in this project. And, you know, we see growers that come with us to conferences and are flying across the state and growers are really busy.

They face a series of pressures under, you know, different parts of their business, but the fact that they take time to come with us and, you know, percent on their own, material and their own experiences is, is really

helpful. And, and again, you know, doing the trials with them is. Really important because now we're being able to test this technology in a commercial setting, and not just a, you know, a control lab setting.

[00:28:12] Nataliya Shcherbatyuk:

Yeah, that is true. And, you know, nowadays there are a lot of talks about biodegradable plastic, but so does, there are a lot of misconceptions about by BDMs. Are there any common misconceptions that you would like to address?

[00:28:28] Jazmine Mejia-Muñoz:

Yeah, you know, there's, think, to some people, biodegradable mulch technology may seem, like a super new technology. But, you know, it's new for our region and Monterey Bay. But one of the things that I myself was, um, you know, surprised to see was that this technology has been adopted by other growers within the United States, you know? There's some corn growers that have adopted this technology outside of California. And have used it consistently for the past 10 years. We have a very cool webinar that I would invite other speakers that, you know, want to learn more about to listen where, you know, we hosted a panel of different growers, some that were international and I remember there was a grower there from Italy that, you know, talked about using soil biodegradable mulch for the past 25 years, which was really, you know, uh, it gave me a lot of hope when, when, you know, we heard from him and, and, and, you know, they talked about, using this plastic at a commercial scale. So while it might be new for us here in California, it's definitely been a technology that has been around. So it's great that we're able to look into it. Another thing that sometimes gets brought up to us is, you know, the idea that this plastic could be, you know, mixed and contaminating plastic that would otherwise be a candidate for recycling. And, and I just want to comment that for whoever, you know, if there ever is a case where growers are adopting this technology, it's really important that they understand that the biodegradable mulch is. It's not meant to go to the landfill. It's not meant to be recycled. It's really meant to be tilled into the soil. And that's the way that the technology was developed. And so, so it's not meant to go and contaminate a recycling feedstock or plastic. It's meant to be recycled. It really is meant to be tilled into the soil. This brings additional questions. I know that there's questions around. You know, if this plastic is creating microplastics in the soil and, from. From the findings that the teams have expressed it in this work. And Carol, I think has talked about this in the previous podcast is that, you know, the. The plastic does create or the biodegradable mulch does create microplastics. That's sort of the, the journey that it's meant to go through, but it's really a question about how long is this micro plastic lasting. And the idea is that this, this you know, this, this plastic is being biodegraded through the soil, and, and so at the end, you shouldn't have microplastics. Now, there is a question about if there's any nanoplastics and that's part of what the team is currently looking at to see if there's any nanoplastics that are created from this technology.

[00:31:27] Nataliya Shcherbatyuk:

Yeah, so basically biodegradable plastic mulch meant to be applied to the soil, stay in the soil while it's biodegrading and it's done. So there is no way or reason to recycle or pull it out of the field.

[00:31:42] Jazmine Mejia-Muñoz:

No. Yeah. And it would probably be really hard actually for, for a grower to try to, to, to try to pull it out at the end because part of, part of it is that it's meant to biodegrade a little bit during its life on, on top of the bed. And so,

you know, if, if they were to, to try to pull it out, it might be very, very difficult and not something that we would recommend.

[00:32:04] Nataliya Shcherbatyuk:

Yeah. And, you know, you mentioned, a lot about the importance of collaboration with growers. And also, let's talk a little bit about how important is growers education and community engagement in the successful adoption of BDMs.

[00:32:21] Jazmine Mejia-Muñoz:

Yeah, well, with with all of the work that we have done, and I think also a very strong role of any of the SCRI Projects, it's very important for us to share our findings to share, you know what, what we're learning, but. I, you know, in some ways I, I feel like I have learned so much and, and, and this is where I find the value of, of our outreach events. Usually in our outreach events, we might begin with a presentation sharing what we found. But, you know, I think to the core, the, the, to the true value is how much we've learned from, you know, the true experts of these land, which are the growers who've been with their land for so many years, and, and we learned so much from them. You know, I, I'm not a strawberry grower myself, I'm not a veggie grower myself, so often when, when I have an idea, I really enjoy that I get to work so closely with a strawberry grower because we're able to brainstorm together. We're able to look at, you know. If we have a finding, how can this be implemented? Or does it bring up new questions and how can we, you know, what should we be doing to answer those questions? And so, so that's really beneficial. And, and the other thing too is, you know, recently we've been participating in, the agricultural plastics recycling conference and the agricultural film conferences, and this also has allowed us to expand our conversation, you know, again, with with members of the whole supply chain with plastic manufacturers. And so having that conversation is so key because it helps us answer and. And really identify what are, the different details that we should be paying attention to. So, in many ways, you know, I feel like our team has learned so much from, from all of these collaborators and these experts. That sounds not only very beneficial, but also rewarding. Yes, for sure. Yeah. It's, I feel like we've all been able to create really, great memories.

[00:34:23] Nataliya Shcherbatyuk:

Okay, so if we have any growers today who are listening to this episode and considering transition to biodegradable plastic mulch, what advice would you give them?

[00:34:35] Jazmine Mejia-Muñoz:

Yeah. In some ways, you know, we're not a prescriptive organization. So I think our job is is just to try to help answer questions that may arise through our research. And while considering, you know, the different factors that that come into the equation. So for us, we've always been very, um, you know, open about our biases, which is we, we want to look into practices that. Can help improve water quality, but we also recognize that in the adoption process of these practices, we have to consider the needs of, of our other partners from, you know, strawberry growers to plastic manufacturers. And so, as we have done this, you know, the team as a whole, has worked in in a, in a series of, of different research efforts. And so, um, so what I would, what I would tell a grower that that is interested is. One, feel free to call any single one of us, because I think all of us would be willing to jump on a call and talk about this technology. But two is that if they just want to explore and learn

a little bit more, you know, the team has worked really hard in creating a series of of educational material. So, you know, Washington State University has their Small Fruits website. That has, all kinds of, resources in there from economic studies to, yield studies. As I mentioned, we've worked collaboratively with local growers and, national growers as well as international growers and putting together webinars. So in our YouTube channel, we have a, one webinar that I really like because it, it, it focused. Early on the perspective of the growers and their experiences, and they were all very honest about how they felt about the technology. And so you could probably link the video on the description. If anyone is interested in looking at that webinar. But, but yeah, there's, there's a series of these resources that are available completely free. And, and, and they're all, you know, made to be easy to, to understand and, and read and comprehend. And if you want more detail on any of those, you know, there's additional papers that accompany those resources. So I would say, you know, to be able to make an informed decision, feel free to look at those resources. And then second is, you know, you can always start small. And that's actually been the approach that we had when we first did some of the trials. We started with just a couple of beds, really allowing for the grower to have a sense of, you know, how they felt about it, and, and doing a low risk trial. So, so that's another thing to consider that that if you want to, you want to start small with, with a low risk trial. You could definitely do that as well, and then and then decide for yourself if this is the right option for you. We obviously understand that each each farm is different. Each farm has its own unique scenarios. And so ultimately has to be an individual decision of whether this technology is right for you or not.

[00:37:45] Nataliya Shcherbatyuk:

Yeah, absolutely. And I have some fun question for you. Can you share some of the exciting things you've done or discovered in the course of this project?

[00:37:54] Jazmine Mejia-Muñoz:

Something very interesting. Yeah, you know what? In a million years, I would have never, you know, thought that I, that I would have ended up, working on, on this project. And mostly because I, I didn't even know about, you know, sort of, plasticulture and, and things like that. You know, when I was in high school, I didn't know about this. When I was in college, I didn't know about this. And it was really, when, when I was in high school, I was in FFA. So I always had a strong interest in agriculture. And I also had a very strong interest in ocean conservation, but I don't know how to swim. So I didn't want to be out in the water. I wanted to really focus on ocean conservation from inland. And so, so in many ways, this was the perfect opportunity for me to do that. But when I first came into one of the of the meetings, that was hosted in Washington State University in the Mount Vernon Center. I was really surprised to see the, you know, just the one, that diversity, but also the amount of team members again from industry, academia, researchers, environmental organizations present in our, in our first meeting. And, you know, I want to say that there was. probably there are probably over 40 team members that are working on such a niche subject right? Such a niche topic of plastic use, you know, as, as mulch technology. And so that was that was really surprising and and also kind of, you know, rewarding to see that there's all these people that care so much and, and, and that growers care so much and that academia. You know, that there's researchers that are focused on this, from everything from, you know, microorganisms to, the economy to the manufacturing to the tensile strength. I mean, the amount of detail that goes into this project, is, is just really. Quite surprising. And so I'm, I'm happy that you're able to capture all of this through this podcast, but it's, you know, for it being such a niche topic, it's really great to see all the great minds that are working on this. And every year Monterey Bay gets between four to, you know, five million visitors. And,

right now, regardless of, of what way you enter, by road, Whether you're, you're coming from the Salinas Valley, whether you're coming from Highway 1 or Highway 101, you know, you're, you're bound to see the great diverse agricultural systems that that this region has. And you're also, you're also bound to see, you know, the great coastlines that Monterey region has. And so, you know, most, most people I, I, I assume might not know of this great research that is happening. But, but it's great that, that it, that there is this strong collaboration. And I think that's something that, we're really proud of, within the California Marine Sanctuary Foundation and the Monterey Bay National Marine Sanctuary.

[00:40:54] Nataliya Shcherbatyuk:

That is so nice. Thank you. Well, thank you, Jasmine, for taking your time to podcast. That was really good. Thank you so much.

[00:41:03] Jazmine Mejia-Muñoz:

Thank you.

[00:26:27] Nataliya Shcherbatyuk:

That's it for today and until the next episode. You can find more information by following us on Instagram and LinkedIn by @mulch_matters and going to our websites www.smallfruits.wsu.edu and choose mulch technologies. This work is supported by Specialty Crops Research Initiative Award 2022-51181-38325 from the USDA National Institute of Food and Agriculture. Any opinions, findings, conclusions, or recommendations expressed on this podcast are those of the author(s) and do not necessarily reflect the view of the U.S. Department of Agriculture.

Note: Intro and outro music credit to Zakhar Valaha from Pixabay (https://pixabay.com/music/introoutro-motivational-ident-main-9923/)