

Exploring the California Strawberry Industry with Hillary Thomas

(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.

(00:01:04) Nataliya Shcherbatyuk

Welcome back, today we will be talking to Hillary Thomas, who is research and technical director of Naturipe Berry Growers [Naturipe Berry Growers Inc.]. Hi Hillary, it's so nice to have you here with us today. How are you?

(00:01:20) Hillary Thomas

Doing great. How are you?

(00:01:23) Nataliya Shcherbatyuk

I'm doing good. So, I have a few questions for you, and I'd like to start actually from the beginning. Would you like to describe your background and how you ended up working with the industry, with the berry industry in Naturipe?

(00:01:41) Hillary Thomas

Sure. So, let me just tell you what I do right now. So, I'm the research and technical director at Naturipe Berry Growers. We're a major grower shipper of strawberries based in California. And so, my department, we touch all things technical related to strawberry production. But I do want to tell the story of how I got here, especially in case some of your audience are kind of younger people on a career trajectory in academia and maybe questioning some of that because the reality is a lot of PhDs are not going to end up in academia. So, I was finishing my PhD in entomology in 2008 – 2009, and that's when the global economic crisis was really hitting universities. It wasn't a really pleasant time to be in academics, to be around academics, but my PhD advisor, the great Frank Zalom, who just got a lifetime achievement award in California for IPM impact, let me stay and do some postdoc work on a really controversial invasive pest called light brown apple moth. And that was really transformative for me in my career because this was not a pest of economic importance to growers, but there were huge financial stakes due to the regulatory policy around quarantines. And there were some really sticky situations where the public and regulators and growers were interfacing in the brunt of that was hitting industry. So that drove me to go to the capital of California, to Sacramento, through a program called the California Council and Science and Technology Fellowship Program. I think I was in year 2 and I got to work for who was then Speaker Pro Tempore of the Assembly, Fiona Ma. That was a huge privilege. I loved working in the building, I loved working in the legislature, but I realized there that this wave of legislation coming down the pipeline at industry, no one was really thinking how our farmers gonna meet all these demands and expectations. So that's when I decided the best use of my talent would be to move to, you know, get in the trenches, start helping growers anticipate and find efficient solutions and hopefully elegant solutions for these expectations from stakeholders. And so, I moved to the central coast. And that's what I've been doing for the last 15 years, working with the California strawberry industry, first at the California Strawberry

Commission, and then building my own programs now at Naturipe to serve a specific group of growers.

(00:04:10) Nataliya Shcherbatyuk

That's exciting. I didn't know that you're an entomologist.

(00:04:13) Hillary Thomas

Yeah.

(00:04:14) Nataliya Shcherbatyuk

Good to meet. Nice, that's pretty cool. Can you tell us a little bit more about your role in Naturipe?

(00:04:20) Hillary Thomas

Yeah. So, I mean, as I mentioned, my team and I literally touch everything that's technical related to strawberry production. That could be anything from, you know, breeding to adoption of new innovations, labor efficiencies, etc. So, it's very comprehensive. All the aspects of strawberry production we work on.

(00:04:42) Nataliya Shcherbatyuk

That's great. And let's talk more about strawberry production. Let's cover a bit of some brief overview of the strawberry production in California. You know that we try to reach out to quite a vast listener audience that we have here in the podcast, so I'd like to catch up a little bit with the strawberry production.

(00:05:060) Hillary Thomas

Okay. Well, I mean, it's a pretty challenging time for the California strawberry industry. I'd say the biggest challenge labor cost and growing costs have increased exponentially, in addition to regulatory challenges that are reducing the number of tools that we have available to manage field-level challenges, including soil-borne disease and insect pests. And then there's also in California movement to kind of rebrand integrated pest management or IPM as sustainable pest management or SPM, which is great. So that's like, kind of this broadening of the idea around principles of IPM and decision making to create some foundational pillars on human health, environmental impacts, and economic viability. And so, what comes with that, though, are a lot more data reporting and demonstration. So, you know, I think in reality, the California strawberry industry has always been a beacon of innovation. We've always used IPM practices. I mean, how else would you take a soft fruit that is very perishable, and then supply 90% of the nation with California fruit, right? So, I think it's an opportunity for us to tell our story, and I think strawberry growers have a very good story, but it is gonna be challenging to meet those expectations moving forward and to show, not tell that story.

(00:06:31) Nataliya Shcherbatyuk

Yeah, that is true. And you know lately the word "sustainability" comes out really often and quite frankly saying, it's like everywhere. I'd like to hear your opinion about what are some of the biggest sustainability issues in California strawberry industry right now that you're facing.

(00:06:53) Hillary Thomas

Okay. So, I mean, I think I touched on a couple of them. So, sustainability definitely means different things to different stakeholders. We've seen such a huge uptick in the use of that term. It's different things to regulators, our customers who are retailers, the public, the consumer, and then third-party vendors who are trying to sell

things to industry under that hat. For me as an IPM expert, everything that we do in farming is to achieve sustainability because it's really about using the best tools for the best outcomes while reducing risk to human health and the environment. It's about optimizing all of that. So, I mean, the biggest issue for us is what are reasonable metrics or outcomes to expect at the farm level. What can we expect farmers to do while still being economically viable, and also the loss of these tools. One of the tools that opened or created the foundation of the California strawberry industry was fumigation, and without that, I think, the soil-borne disease pressure on the West coast is so high that we don't have really viable alternatives. So that's a big challenge for us right now is losing some of these tools.

(00:08:05) Nataliya Shcherbatyuk

Let's. Oh, okay, keep going.

(00:08:08) Hillary Thomas

No, I was just gonna close by saying that growers can be making optimal decisions for their inputs, for their production system, but being able to demonstrate that, it's the evidence of especially to people who are from the outside, or who are new to IPM or sustainability, that's what's going to be hard.

(00:08:27) Nataliya Shcherbatyuk

Yeah. Well, let's switch a little bit, and let's talk about plastic mulch. Can you tell us what types of mulch are commonly used in California strawberry production and what are their characteristics?

(00:08:48) Hillary Thomas

So plastic mulch was one of these early innovations in 1950s that allowed this industry to come into existence. There were some breeders at the University of California Davis after World War 2 Royce Springhust, who was a plant geneticist and a guy named Victor Voth, who was a horticulturalist, and they started playing with polyethylene mulch. They knew in other crops that it was advancing those crops right, advancing the earliness of them. And so, they did a ton of different experiments, and you can go back and pull these are all publicly available literature. And they found that clear polyethylene mulch on raised beds, so raised beds of strawberries covered with plastic, did wonders for plant productivity. It advanced the crop, it promoted healthy crown growth and development, and that supported a higher fruit load and that volume of yield as well as fruit quality. It retains soil moisture, too.

So, when we started this industry, we were doing flood irrigation, and that was really problematic, at least especially in the Salinas Valley, right, Salinas salt, so, what you get is a leaching up of salts when we used to use flood irrigation back then. And this idea that we've moved to some overhead irrigation and drip irrigation, but that this mulch would retain the moisture that really benefited crop health. And then it also created this barrier between the berries and the soil. So that mitigated some soil-borne disease issues, berry quality issues, perishability issues right as we tried to move berries to local market outlets, and then versus moving them across the nation. And that also, you know, the last part of the piece is food safety compliance, right? Berries that are not sitting on soil are much safer from a food safety standpoint.

And what I didn't mention is weeds. I think the average homeowner thinks plastic mulch is used for weed control. But we were using clear mulch well into the 70s strictly for moving these production curves to have optimal earlier production. If you didn't need earlier production and at the time we had methyl bromide, so we had fumigants to control weeds, really effective, highly mobile fumigants. If you didn't need to move the crop earlier, you could just use black mulch. There would be some consequences to the quality of the berries, but you could use it for weed control if you weren't using methyl bromide at the time. So that's kind of the history of where we're at. And now strawberry

growers in California use it for largely the same purposes, but different colors of plastic, and it's also for weed control.

(00:11:50) Nataliya Shcherbatyuk

Wow! That's great. And you know, not too long ago I actually heard some requests about banning plastic mulch. What do you think the consequences of that would be?

(00:12:03) Hillary Thomas

Yeah, so, it is a very steep way to think about it. I would say that plasticulture in strawberry production in California isn't about incremental gains. It's really one of the founding innovations that allowed this industry to come into existence. So, for the 5 counties that are prime production regions in California—Ventura, San Luis Obispo, Santa Barbara, Monterey, and especially Santa Cruz—there would be catastrophic and devastating consequences to their economies. This is the number one crop above even wine grapes in all of those counties. But that being said, I don't think we have to look at things in that framework because the collaborative effort that's going on right now to solve this problem has a pretty optimistic outlook and timeline, I think. Because, it's been the marriage of buy-in from the agricultural community, the marine community, and a broad transdisciplinary group of academic expertise, I think that we do have solutions on the horizon. So, I would let that process of optimizing the outcomes play out.

(00:13:31) Nataliya Shcherbatyuk

Hmm, and you're actually leading me to a question I had in mind for you about anything exciting that you potentially see coming, and I am talking about mulch technology or improving plastic mulch management. You mentioned solutions are coming. Is there anything that we want to discuss?

(00:13:55) Hillary Thomas

Yeah, I mean, there's a couple of different parts of this. We have been testing biodegradable mulches in collaboration with everybody involved in the large federal grant that's being led by Lisa deVetter at Washington State. We've seen good deliverables in performance under those, as far as yield goes. There are other constraints to using these mulches: you can't fumigate under them, which is a requirement for our soil-borne disease pressure in conventional production. So, you'd essentially have to be flat-fumigating and using plastic prior. That doesn't solve our plastics problem, right? Fragmentation by design in those materials is also a soil contaminant and a food safety contaminant, so those types of challenges have to be addressed.

What I'm really excited about is the collaborative part of this because we're closing the whole end-of-life cycle of plastics. You've got plastic manufacturers looking at using different materials, using recycled materials, using percent content, using less plastic in the field but having the same performance metrics, and then recycling options. What do we do at the end of life while we're trying to figure out how to replace plastics? There's buy-in from engineers who are trying to figure out how to do that, from the marine community, and I would say, Jasmine Mejia-Muñoz of the California Sanctuary Foundation, a nonprofit here in the Monterey Bay, has done an excellent job of bringing together all these stakeholders, including traditionally landfill people. How do we prevent this from getting into the landfill? So, between all those collaborators, even competitors within the California berry shipping community, we're all working together to make this happen and I think that is the really positive outlook for this particular production challenge in California.

(00:16:10) Nataliya Shcherbatyuk

Oh, yeah. It's definitely so interesting to see all the different minds together, trying to figure out the best way, it is really interesting. I have a fun question for you. You see

strawberries probably every single day, so what is your favorite way of consuming strawberries?

(00:16:31) Hillary Thomas

Well, my favorite, I mean, I have to taste new varieties. The exciting thing for me is walking a breeding program, seeing something that looks commercial, tasting it, and finding out there's taste improvements there. A lot of the things that have made strawberries shippable have been compromises on flavor, and flavor is really important, I think, to the consumer.

(00:17:01) Nataliya Shcherbatyuk

Oh, yeah. There's nothing better than just picking a strawberry from the plant and the taste right in that second. I'm definitely jealous. Last question for you. Do you have any advice or inspiration for our listeners regarding what it is like working with the California strawberry industry?

(00:17:31) Hillary Thomas

I mean, I love this industry because we put the "special" in specialty crops. Every component of our production system has been innovated from the ground up, and it's been a collaboration between scientists and growers. The people who make this industry are dedicated and skilled. It's a very labor-intensive industry. When we came into existence in the 50s, it was at the tail end of World War 2, and it took some time for farmers to come back, including Japanese farmers returning from internment camps. You have diverse groups of people coming together to provide healthy, nutritious fruit to the public. There are a lot of skill sets involved in pulling that off across diverse backgrounds, and we do an excellent job of it. It's a very special part of California's history of innovation, an important part of the economy, and important for all of those counties. That's why I love working in the California strawberry industry.

(00:18:40) Nataliya Shcherbatyuk

That's great. Hilary, thank you so much. That was really really good.

(00:18:46) Hillary Thomas

Well, thank you. Thank you for having me and keep up the good work. We're really impressed with the entire team.

(00:18:53) Nataliya Shcherbatyuk

Thank you. 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.

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