Engineering a Cleaner Future: Recycling Plasticulture with Andros Engineering

[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.

[00:01:01] Nataliya Shcherbatyuk:

Welcome back. Today we have with us Ben Andros, who is the president of Andros Engineering. Hi Ben. It's so nice to have you here today with us. How are you?

[00:01:20] Ben Andros:

I'm very good. How are you, Nataliya?

[00:01:23] Nataliya Shcherbatyuk:

I'm great. Great. So, Ben, tell us a little bit about yourself. Who is actually Ben Andros?

[00:01:31] Ben Andros:

Well, I'm me, I'm the president here at Andros Engineering, we're a family company. You can guess how I got the job since I'm Ben Andros. My dad, Matt Andros started the company back in the early nineties, and, yeah, I worked here, you know, all through high school and while I was going to college, and then left the company for a little over a decade, and then came back, a little over five years. I think it's been six years now, ago. And I've worked in a bunch of different roles in the company. And then my dad, Matt, retired, semi-retired. If you've been around a family business, he's always here, helps me out, which is great, but I took over as president about two years ago.

[00:02:12] Nataliya Shcherbatyuk:

And did you say you've been in the budgeting of the company?

[00:02:16] Ben Andros:

I've been in a bunch of different roles in the company. Okay, so when I came here I was, I was, came back to the company. I worked just as an engineer, not just as an engineer, but you know, as a junior engineer working for someone who'd been here for a while. Got my engineering chops back, because I've been a while since I've done, that's the core of and then I worked in the ag services, division, which is a big part of what we're gonna talk about today, which was focused on plastics recycling and kind of more of an operational role, which is what closer to what I did. I was in the military before I came back here, so it's closer to what I did there. So, I was able to help out, and then I worked as the GM [general manager]. As, my dad, who was at the president at the time was kind of getting ready to move to his role now as the founder. Kind of on top of the mountain (Yoda figure) keeping us all in line, and then yeah, took over as president two years ago.

[00:03:11] Nataliya Shcherbatyuk:

Wow. You definitely keep yourself busy.

[00:03:13] Ben Andros:

Yep. I've got four kids as well.

[00:03:20] Nataliya Shcherbatyuk:

Do you even sleep?

[00:03:23] Ben Andros:

Not, not, not much. Certainly not these days, no. Yeah, I find time for now and then, but I get it. There's a lot going on, but my motto is “if you want it all, you got to take it all”. And I love my job, I love working at Andros. it turns out I love all my kids and my wife, and my whole family as well. So, I'm a very lucky person 'cause my life is full of exciting stuff. Sometimes it's a challenge, but it’s a lot of fun.

[00:03:47] Nataliya Shcherbatyuk:

This is fantastic. That sounds like a great challenge and thank you again for making time to be here with us today. I'd like to, I'd like to talk a little bit about the company itself. Can you tell a bit about the roots of Andros Engineering and, and also how they get started to work with plastic culture and what is the history of the company and what its mission? I know I put a bunch of questions on you.

[00:04:43] Ben Andros:

No, no, I love it and happy to talk about it. So, like I mentioned, the company started back in the early 90s, or, you know, it's shrouded in mystery or whatever the fogs of time. But really what it was is

Matt Andros was working at Cal Poly, San Luis Obispo as an instructor there. And then struck out on his own. Started the business. It started in my parents' backyard. There's a big steel building behind my parents' house that, you know, guests come over, they'll say, oh, what's going on in the outback, but everyone in my family calls it the shop because that was where, you know, the original, you know, business began. It then moved to a couple different locations as it grew, and then we landed here in Paso Robles, which is a great place to be. We've always been based on the central coast of California, which is the epicenter for plasticulture in California and really in the western US in general but yeah, so started there and we've always been an engineering focused company. Originally designing single article solutions for farmers. Hey, I have a machine that does this. I needed to do that. Or can you build me a machine that takes this what is it manual process and makes it a mechanized process. We did that. We were active in the being in Paso Robles, close to wine country, very active in the viticulture industry as well., however, over time, just kind of the evolution of the market and our capabilities here, those single article, you know, machines, highly custom, highly engineered. We recognized that there was some of that equipment would make a good, It's a niche market, but kind of in terms of agricultural equipment, what we, you know, more mass produced, right. So, a standard line of equipment. So, you know, initially, it was farmers coming to us with requests. Now, over the years, we've built out a line of our own equipment that we offer to farms around the world to solve problems and mostly problems to do with material handling, and in farming, most of that has to do at least in our area of expertise with plastic culture products on specialty crops. So, our major, our most major focus, although we're here to talk about mulch today, is on lay flat drip tape, so we've got a whole line of equipment for doing that, that was developed, you know, Santa Maria area, you know, California in general, but we're very close to kind of the drip tape revolution. So, we were present making machinery when there was a high demand for drip irrigation equipment, we devised over the years ways to put it into the ground, which turns out is kind of the easy part, easier part, but machinery to also take it out of the ground. And for years we built machinery and this kind of is what expanded the, you know, maybe the second of three aspects of our company. So, we've got the engineering part, then our own equipment manufacturing brand. What really blew that up, was our ability to take the tape out the ground in such a way that it wasn't damaged, and then roll it up onto a spool so that farmers could, uh, you know, remove from the ground till, do whatever they need to do, and then put it back in the ground and when labor was relatively inexpensive and drip tape was very expensive, that made economic sense. In the last 10 years, that's really changed as labor has increased because despite it being a mechanized process, it still takes a lot of people to inspect and repair the drip tape from, you know, animal damage or other things that may have happened during its use as that takes a lot of labor and the cost of drip tape has gone down over time, which is to be expected. So now we're in a single use, that's where we, and that kind of, about 10 years ago built out our third, brand, or kind of the third of the three aspects of our, our offering as a company, and that's our ag services division. We found

mostly through our operations in Hawaii. Yeah, there was a big demand that actually it's an interesting topic maybe for another time, the way.

Maybe we can do that one on location. Right the way the sea breeds worked out there for years, was it, you know, field work. So, there's a big demand for the use of drip tape on the Hawaiian Islands, but the Hawaiian Islands do not have very good landfill capability. So even if there wasn't a great option to recycle, it had to be recycled. And so, we've built machinery to recycle that drip tape. Coincidentally, the transition from multi-year use drip tape to single use strip tape in the Western US was happening, so California. And we were able to leverage our lessons learned there to provide a whole suite of equipment, uh, that allows, uh, farmers to efficiently take a drip tape out of the ground and get it to a recycler instead of the landfill. So, that brings us to today where the company's got, three areas of focus. One's that original focus, we call our R&D brand. Where we're still, and it's really the character of the company. We're a technology and engineering focused company, so it's our R&D brand building single article machines or, helping other manufacturers or ag equipment, companies or people with good ideas bring their equipment to fruition. We're doing a lot of cool stuff in that space with robotics and AI powered machinery, there's our equipment manufacturing brand, which is if you go to your website, that is what is apparent and say, hey, here's all the, we call, it's all painted blue is our color, so all the blue stuff that we make, and that's what by kind of mass or percent of what we do. That is the biggest part of our company. And then there's the egg services part, which we just described primarily focused on drip tape, but as we'll get into, also, increasingly and excitingly involved in the world of plastic film and mulch. That brand works hand in hand with our equipment manufacturing brand because if you, you buy one of our mega binders, which is the machine that makes the big roll of plastic, hey, now you are, uh, plugged right into our, infrastructure that'll help you get that recycled. So having to take it to the landfill.

[00:10:31] Nataliya Shcherbatyuk:

Cool.

[00:10:32] Ben Andros:

That's a lot.

[00:10:33] Nataliya Shcherbatyuk:

Yeah. I wonder, do you have like, any videos on your website that our listeners can, actually, everything you said is so interesting that you just want to visualize that and see.

[00:10:44] Ben Andros:

Yeah, absolutely. Great website - hop on there, and then at the top there's, you know, a bunch of different areas devoted to those three brands on the ag services page, you'll get a lot of good, video, links to pulling drip tape and mulch out of the ground.

[00:11:00] Nataliya Shcherbatyuk:

Wow. Very interesting. Well, and as ti culture is in training, I cannot beat my own curiosity. Are you still working with vineyards?

[00:11:11] Ben Andros:

Yeah, yeah. We are sadly in California, the, it's kind of the nature of the beast of the permanent crops. The viticulture or grape wine grapes specifically are pretty over planted. And so, there's quite a bit of them coming out of the ground. Uh, and we're, we're helping farmers, uh, get that material instead of making, you know, that heavy wall drip that, uh, irrigates vineyards is actually, it's pretty tough to handle 'cause compared to lay flat drip tape, it's pretty springy, we've got a special, uh, suite of equipment. Again, that can handle that and get it into a format that you can put on a truck easily and get it recycled instead of, instead of landfill. So we are, we are active in the vertical and some of the, for years we built a line of, super high capacity, great harvesters called AgriTrack, won't be anything on the website about that since, we don't, we discontinued the line, but they were a pretty robust machine. So, some of those are still in operation around California. And then we make, we make deployers and retrievers for irrigation plastic, both for farmers who want to some from time to time. I don't know too much about in vineyards, but in orchards, farmer will want to actually shank their dripper line into the ground. We can do that. We can take it out of the ground, and we can wind it up and we can wind it up in a nice bundle so you can use it. Get next year since the heavy wall drips got a pretty long service life.

[00:12:34] Nataliya Shcherbatyuk:

That's very cool.

[00:12:35] Ben Andros:

Yeah, it's fun.

[00:12:36] Nataliya Shcherbatyuk:

That's what truly recycling is.

[00:12:38] Ben Andros:

Yeah. Right.

[00:12:40] Nataliya Shcherbatyuk:

Yeah. And you mentioned, we spoke a lot about your company having a large segment of the product line is actually, which is focused on to support the plasticculture. So, do you think we can expand more on this specifically for plastic culture?

[00:12:43] Ben Andros:

Sure. A lot of the technology is kind of anchored in the irrigation part. So, putting lay flat drip tape, in the ground. Or on the ground., but we've got, the ability to, for on the installation side, we're also very good at, building equipment that puts, plastic mulch down. We make, an automatic, mechanized low tunnel machine, so. It will deploy the plastic to make a low tunnel, as well as mechanically bend and insert the hoops into the ground. So, do multiple rows at once. It's an extremely labor intensive, operation., but, uh, you know, goes down to just, one person riding on the tractor with the Ability to do that mechanically now. So that's a good one., we make a machine, pretty cool. Are, are you familiar with bee netting?

[00:13:50] Nataliya Shcherbatyuk:

Yeah. Yeah. I actually, I've seen them. Yeah.

[00:13:53] Ben Andros:

Yeah. So, especially here in California a lot of everyone loves their Cuties® or Halos® or, you know, a lot of different brands now of very delicious and nutritious clementines, uh, that have so all those genetics been proprietary. We want farmers want to keep the bees from. Spreading the love, so to speak. So they'll actually cover that grove I think if we're talking about oranges in netting at the appropriate time of year we make a machine that puts that netting out. Then also, retrieves it in a way that you can use it for multiple years, and then our ag services divisional offer end of end of life support for that as well 'cause that can be recycled as well, so let's see. That's deploying in terms of retrieving we build machine that pull, uh, gets the drip tape out of the ground, which is a little bit of a feat depending on how deep it is. We can dig it out pretty in one piece, you know about as deep as anyone uses it. Then for, uh, pulling plastic mulch out the ground certainly possible, depending on the application, when we build equipment that does that just fine for if the mulch, I will, because we get this question a lot like, how come, you know, what can you do for us from mechanically removing mulch from mulch, machines not going to be able to do that. And I'm sure we'll get into this today, but there's a common problem in the industry with mulch, either not being able to stand up to the abuse for fields that have a lot of traffic them or most, that was selected for properties that might be in conflict with its end of life. So, if for whatever, agronomic reason you needed a thinner mulch or perhaps an economic reason, we're trying to save some money, we use some thinner mulch out there, it breaks down. And now, especially depending on the soil type, if you have a heavy clay soil it may be extremely challenging to remove. That mulch, from the field so, yeah. That's where a lot of our focus is for growth on plastic culture is right now on helping farmers as well as mulch

manufacturers land on a type of mulch that will facilitate, a more sustainable practice and we're seeing in the field right now.

[00:16:10] Nataliya Shcherbatyuk:

And when you talk about the challenge to remove that type of mileage out of the field, uh, do you mean that it is just ripping off while you're trying to pull it out?

[00:16:19] Ben Andros:

100%, yep. The most challenging crop in my experience to do this mechanically on is strawberries, it's and the open field strawberries are miracle of farming. The farmers and the people who work in those fields are wizards, you know, very, uh, very impressive how much yield they can get. And I think we can agree, like kind of a flagship in terms of taste and how much joy people get out of having strawberries in their lives. So, it's a great crop and it's facilitated with plastic mulch. We, we couldn't have a kind of ubiquitous strawberry crop in California, in the country, in California, specifically without plastic mulch, and so it's definitely something we want out in the field. Additionally, for food safety reasons, it's, you know, since the berries are up against the bed there it's just all around a good, yeah, but it, it's got, uh, when you look at like let's just compare in terms of plastic culture products drip tape to mulch, right. So, drip tape, even the thinnest drip tape you're going to see on the market, is going to be, extremely thin. But it's also, two ply, right. Because it's got hose holes flat so now it's buried under the ground where no one is stepping on it. It's not getting that hot or that cold.

[00:17:49] Nataliya Shcherbatyuk:

Exactly. Nobody would be. And light. Yeah,

[00:17:51] Ben Andros:

Right and so compared to mulch, which is not uncommon to see between a one- and two-mm film, it's a single ply. On top of the ground where people are stepping on it, drivers are, tractor drivers might accidentally be hitting it with the tires. Sometimes it's actually slit by the farmer to control the bed temperature, which is a reasonable thing to do, but now means that it's not like one piece, you know what I mean. Like we might see a drip tape, right. And that, that makes it, that makes it just harder to handle in the field. And oh, by the way, if you want to recycle it, drip tape. Oh, yeah. Right. Drip tape on the inside is, should be pretty clean, right. Because it should just have filtered water on one half it.

[00:18:31] Nataliya Shcherbatyuk:

And you can probably flush it.

[00:18:33] Ben Andros:

Yeah, exactly, right. If you had been fertigating or doing something like that, you could flush it out which we actually certainly recommend in our recycling guidelines. But for mulch those options aren't really available to you. On the top, you potentially have berries or sugars, lots of organic matter on the bottom, tons of dirt. So, it's just harder handle from a recycling standpoint. And then if it breaks, so you pull it out of the ground, it's just a real challenge. Now there's different kind of, you know, its mulch, all mulch, strawberry being the most challenging, other mulches. It gets, depending on the application, get easier and easier to handle, to the point where it's really no different than strawberries, than, uh, than drip tape. So that, you know, easy to pull off the ground. Maybe it's not on the ground very long, maybe it's a thicker application, etc., etc. so, yeah.

[00:19:26] Nataliya Shcherbatyuk:

So, what crop do you think is the easiest when you're dealing with mulch?

[00:19:30] Ben Andros:

With mulch or plastic film in general?

[00:19:32] Nataliya Shcherbatyuk:

In general?

[00:19:33] Ben Andros:

Yeah. I would say in terms of flat films, the easiest to handle from a recycling standpoint is the hoop house film, like big for big, full-size hoop houses, it's very thick. It's meant to go multiple years. It's usually pretty robust. It's also clear, which, I did not realize until I got into this industry is that having clear or natural, a lot of materials people will call it for the plastic is very desirable because you can tint it or color it. Later for your whatever you're turning that recycle thing into for a lot of mulch. That's interesting. Yeah. For a lot of mulches and certainly for all drip tapes that are commercially available, you're going to have, black, like a carbon black in there as a stabilizer. Yeah. And once that resin has been colored so It's as far as I know, you can't change it back. So, whatever you're making the product back into is going to have to be the same color, so it'll have to be black as well, and just it doesn't mean it can't be a great recycle feed stock, does mean that you have to identify an end market that will, accept that, that color, right. But there's lots of those, you can put it back in a drip taper you can put it into bigger pipes, you make, you know, pots, tanks, or whatever. Or you can extrude It, so you know, for the inside layer of some other item where, you don't really care what the color is 'cause you're going to put the color you want on the outside.

[00:20:51] Nataliya Shcherbatyuk:

So, have you heard anything about the recycling plastic used for furniture? Like outside chairs and anything stuff, stuff like that? Are you involving in that?

[00:21:02] Ben Andros:

Yeah. Yeah. Actually, we are, I know that process well, it's called what you're describing or what I think happens with a lot of it is a process called flow molding where at least that's what is. But yeah, that one option, I think most people in the recycling world would like to see, uh some sort of at least attempt at a closed loop with the plastic. It's very challenging, another interesting thing about mulch is as I'm sure your listeners have heard, I've been listening to this podcast many times as I have as well, is that it, it's like the most, it's the thinnest and one of the most demanding applications for plastic out there and certainly in agriculture, but to do all that, it's actually a very hard thing to make. And at the specifications that farmers wanted at, like, blowing a wide sheet of thin strong film is a tech technological feat. It's not, if people think of plastic film as like, you know, it's ubiquitous, so it's everywhere. So must be easy to make false. It's very, very hard to make good plastic films. Yeah. And, uh, especially, with the size of films that we use in agriculture the dimensions are, uh, get, it gets much harder to make. So, you couple that with like, hey, a desire to send that mulch plastic back into mulch to, you know, to give it a second life doing the same thing it can be a very challenging because, yeah, because the material demands are so high from an engineering standpoint, right.

[00:22:40] Nataliya Shcherbatyuk:

Even soil contamination makes it pretty hard.

[00:22:43] Ben Andros:

Very hard. Yeah. You don't want any certainly, you know, you want to have that barrier, you know, function, so you don't want any holes or anything like that. But the way it's pretty cool if your listeners want to just, you know, YouTube up some blown film extrusion, it's fascinating. This, they make basically a giant bubble of plastic, and it cools, and then it gets rolled into the roll that we know and love, and then apply out in the field. But you can imagine how having any imperfections in that would pretty much destroy the whole process. So, make it much more challenging, I should say. So, yeah, it's hard, It's really hard to get, something that gets as dirty as ag film back into ag film. But there's other ways I think to find it a second life, whether that's in something like a plastic lumber product, that you're describing maybe a thicker film. So, yeah, maybe this polyethylene starts as a mulch film in a strawberry field, but its next application is a geo liner in a pond, which is, you know, many times thicker, just based on the demands for that product. And then maybe after that it becomes plastic furniture, and then maybe after that it becomes, you know, a car stop in a parking lot, and then after that maybe it gets advanced recycled or something like that, so, I

think that's probably the future for a lot of these, that said, when you have people involved who are very interested in the sustainability part of it who have the expertise, like the technical expertise to do it. It is certainly possible, I think the flagship ag company for this the ones that the market leaders in this is and their region product, where they are able to reuse quite a bit of their own material back into their drip tape. And, you know, the industry leaders there, it was some, it's some hard-fought technical knowledge, like they really had to put their heads down and do it. But it's very impressive what they've been able to do. And there's no reason that someone couldn't do that. As mulch manufacturer, it would be required someone to spend the same level of capital and have the same level of intent that Matt did. And who knows, maybe that company's out there.

[00:25:05] Nataliya Shcherbatyuk:

Well, we will see. Yeah, definitely, you know, when you think about mulch being ending up in the landfills or being burned, I would rather have a chair outside.

[00:25:16] Ben Andros:

Yeah. Right, right. I know, not a lot of really good options, or there's a lot of less desirable options, like, you know, making the chair, let's the catchphrase, let's not let perfect be the enemy of the good. Like, yeah making a chair out of it is way better than pushing it into the landfill, the dump. I think most of us would agree.

[00:25:37] Nataliya Shcherbatyuk:

Yeah. And now can you discuss a little bit about any ongoing research or development that you are involved in?

[00:25:47] Ben Andros:

Yeah, I'd love to, maybe the thing in terms of, you know, we're involved in all different levels of proprietary R&D with a bunch of our customers, one or two things I can talk about that are directly applicable and super exciting. One is what we've got going on with the California Marine Sanctuary Foundation and Sea Grant about, you know, years ago now, there was a maybe like a meeting up in Salinas. It's a big meeting where Jazmine Mejia-Muñoz, who runs that program, got drip tape people there, got, you know, farmers there, say, Hey, you know, we're seeing plastic out in the first off, why is the California Marine Sanctuary Foundation involved in this. Well, we're seeing plastic out the ocean and we think it's coming from farms and, you know, we look at the plastic on the farm and there's the drip tape. We think it's coming out to the ocean, which, unfortunately I'm sure it is certainly conceivable that that is happening. Andros at that meeting made the point that like, you know, there's a great solution for recycling drip tape. It's actually a very desirable feedstock you know? The issue we run into often,

especially this time of year, like springtime is like, there are people who have configured their recycling mechanical recycling lines to use this material can't get enough drip taped to recycle. So, there's that, and we think we've got that figured out. The thing that's probably putting most of the plastic outta the ocean and what we should focus on is mulch and, Jazmine, to her credit and really to the benefit of the entire industry took that on board, did some more research, applied for a big grant, and got it to look at ways to reduce the amount of mulch and setting up in the environment, by way of protecting the ocean, or rather to protect the ocean by reducing the amount of mulch that's left down the environment. So, we're involved there with kind of a whole systems approach. We're also working, kind of the field part of that is a company called Flipping Iron Incorporated, primarily a recycler, but they have a business around renting or our machinery, our line of rolling equipment that pulls the material in, and then assisting the farmers with getting that recycled on the backside. So, on the field side we developed a suite of equipment that can do kind of a one-off cleaning of the mulch before it goes, gets shipped out to a recycler. All the components of the process are mechanical, so nothing chemical, and all of it is technology that has been employed in recycling in the PE past with the exception maybe of some of our infield technology. So, the Andros Mega Binder, which is a big roller that makes a very dense roll of material. But in any case, it has certainly been used for mulch before, but never at the scale. We kind of took a whole systems approach to get this field plastic to a point where it was commercially viable as a recycle feed stock. And it's been a hit, it has been much more successful than we thought it was. We've gotten, thousands of acres done that, you know, previously would've gone to the landfill very unlikely that they would've been recycled, which is super exciting. And it's continuing to grow and grow. So that's one thing that we're involved in on the field side. Another thing that we're involved in is working with a company called Bio Flex. They're a film manufacturer in the midwest at Sioux Falls. Very forward-looking company, yeah, they're much bigger than we are, but we're kind of, I would say in terms of a company ethos, Kindred spirits, they're very focused on the technology aspect too and they make mulch so, or they certainly make ag plastics, which include mulch and so we've been working with them to develop types of mulch that are designed specifically to avoid that kind of nightmare scenario that we talked about earlier in the podcast, which is a mulch that degrades, uh, just because of the environment it's in and you can't get it back out of the ground without leaving some in it. So, uh, a lot of cool different things. We're trying, we've got that mulch in the ground right now, at our facility here in Paso Robles. We have a little test plot. So, it's in the ground spending some time doing mulch things, keeping the bed warm, keeping the moisture in. And we're planting a crop through it actually right now, so that we can get kind of an end test and direct that a little bit down the line. I think any mulch manufacturer who wants to take some time to think about. Does this have, you know, they're already thinking about many of the things that farmers care about, they're thinking about cost, you know, obviously. They're thinking about, you know, transparency or opacity, they're thinking about, you know, the right color to maybe impact the pest pressure in the field, like there's all kinds of really neat things you can do with the plastic to improve the crop, right. So, there's that.

Previously how we get it out of the ground has been less of a consideration and that's been, you know, that's had knock on effects, and we see actually in China right now, and you've had guests on your podcast have talked about this. I'm actually going, you know, from, there's too much plastic in the environment standpoint, a lot of people are like, well, let's use as little as possible, which would mean as thin as possible, that my position is is a bad idea. You can't get it out the ground. So exactly. Better to have a little bit more plastic, have the product itself be more robust, and then from there, uh, you'd find that I think, you'd leave a lot less plastic in the field and. Uh, and get it recycled so that yeah. Okay. The amount of waste that we're generating is, is still, on, on balance less.

[00:32:10] Nataliya Shcherbatyuk:

Right. And there is more chance to actually have it recycled.

[00:32:13] Ben Andros:

Right. Absolutely.

[00:32:14] Nataliya Shcherbatyuk:

Yeah. Well, and I have to mention also the importance of your collaboration with our academic project for end-of-life management of plastic mulch. And it's the national level project between different states, so that's quite important as well.

[00:32:30] Ben Andros:

Yeah. And, you know, Washington State I think is a field and thought leader, if people haven't, you know, who are interested in this, haven't been to your guys' website, they're missing out a lot of great videos. A lot of the things that we have, that we've tried have been based o, stuff that, I've learned from previous studies that you all have done. And, so yeah, we're absolutely excited to be collaborating with you. I think, uh, I'm planning on being down with you all in New Orleans at the show down there for a working group in, uh, right.

[00:33:05] Nataliya Shcherbatyuk:

For the workshop. Yep.

[00:33:07] Ben Andros:

Yeah. So, that's really what's got, I think has moved the needle on this which is, you know, it's been a problem ostensibly for some years. And what's moving the needle, is that enough of the people in the right place in the academy on the equipment side, in industry, everyone's kind of recognized it. And

they like, all right, you know, it's probably time we do something about this. Yeah. Like all right, hey, listen, if we want to be, if we want to lead instead of following here, if we don't, if we want to maintain control of how we grow our crops, then let's find a solution that we're proud of. And I've never seen since I've been involved in the last two or three years, I haven't seen, especially on the manufacturer side, and it's not that they were ambivalent or didn't care, I just think that their focus is very much now on like, hey, listen, this is a risk concentration for us let's make sure we give this amazing thing plastic mulch, which helps us grow our food, a way to do that on the farm that we're proud to participate in. So, I think that means like, hey, let's make a product that's recyclable when you're done with it, and yeah, and it's going to be high fives all around.

[00:34:28] Nataliya Shcherbatyuk:

Yeah. Cool. Very interesting. And now tell us what actually sparked you to be so interested in developing technologies related to mulch and mulch management?

[00:34:40] Ben Andros:

Oh man, that's a good question because like, I don't know, I'm sure there's people out there that as children grew up thinking, oh man, one day I am going to be involved in plastic mulch. but it wasn't me, you know, I think if you like solving problems, then hard problems are attractive, right? Like, and yeah, this is a hard problem, it's one I also like working as part of a team Andros in generally is very a culture at the company. And so, uh, the people I have working with me are fantastic employees. They like being part of a team. And, you know, that kind of feeling, kind of like what we were just talking about, where like everyone is aligned. Maybe they're on the team for different reasons. But everyone's aligned at the same goal, which is like, hey, and I would take this even from, maybe people who traditionally would have, maybe kind of poo-pooed plastic mulch, maybe in the academy, who would've been like, no, we need to find you know, a non-plastic way to solve this problem, many of those people, I think, have looked at the data and said like, hey, listen, and if we want a supermarket that's full of, uh, you know, delicious, nutritious, and various, you know, different kinds of foods, the plastic's got a lot of value here. Let's learn how to integrate it into our food supply, um, you know, process in a way that's sustainable, there's definitely, um a place in that for, uh, biodegradable mulches, but for intensively farmed areas like we see here in California. It's just really hard to compete on the, yeah, with mulch in terms of its performance. So, I guess that's a rambling way to answer your question, I'm interested because these are the kind of problems that Andros has solved, and I am excited to do the work because it's a hard problem and the people that are involved in it are really fun to work with.

[00:36:38] Nataliya Shcherbatyuk:

So basically, your new slogan can be “plasticulture by teamculture”.

[00:36:44] Ben Andros:

There you go. Absolutely right. Because it's going to take everyone, right? Anyone could spoil it. Yeah, the farmer could say, don't care. Although they're the ones who care the most 'cause they're the stewards of the land, I could choose to make machinery or, you know, have my company make machinery that did something else, right? There's lots of demand for what we do the mulch manufacturers could wave their hands and say like, yeah, I just can't be done, you know, but no one's saying that. Everyone's saying, hey, let's do it. Or the academy. It could say like, hey, you know, all plastic is bad. And um, and the status quo would just continue, cause people still want their fruits and veggies that are grown with mulch. So, right, and every one of those players has taken the opposite and more positive outlook on it, which is really fun.

[00:37:30] Nataliya Shcherbatyuk:

Yeah. Well, I think you also brought up quite important part of all of this. I would say of the collaboration when you have a lot of people come in with the different ideas and different opinions, but they do have the same goal. That's when magic happens. I guess if you have people that think the same, they're just going to do basically, I guess. Boring things. They're not going to expand their thinking, you know? But when you have people with different opinions, they express, so you don't agree in the beginning, but your goal is the same. So, you have to collaborate and find a way how to get there. So, I think that's a good strategy to do.

[00:38:08] Ben Andros:

I couldn't agree more that it's that diverse background and outlook. And, and multidisciplinary like, I'm going to solve every problem with the machine. And, uh, and the mulch manufacturer's going to solve every problem by trying to change the material properties of the mulch. If we work together, the chances of us being successful just skyrocket. We're always responding to one another's inputs.

[00:38:40] Nataliya Shcherbatyuk:

Exactly. Yeah. And what are your long-term goals for supporting sustainable and efficient agriculture practices? And also, where do you see the future of plastic culture involved in too? I mean, you know, where do we see plastic?

[00:38:59] Ben Andros:

Yeah. Well, I think, the use of plastic and agriculture is going to increase, not decrease, as, uh, for a lot for various reasons, we are farming in more challenging places to farm. My goal is for us as a company, you know, one we are, although this is a very. This is a product and a process that benefits everyone. You know, we're a for-profit company. We're going to go where the work is. There's work here

to be done. So, we're happy to be doing it. So, I definitely want to pursue this solution because it makes economic sense and I think maybe that's one kind of countervailing thing that might have helped align all of us or overarching thing is kind of helping all of us is that the economics around recycling plastic culture projects have changed for a couple reasons. One, the labor required to remove and install plasticulture products as products has become much more expensive, which means that we're going to do it with a machine. When you use a machine to specifically to remove the plastic from the field, you have an opportunity that's much more challenging than when you do it manually. You have an opportunity to format the material in a way that's ready to recycle. And that would be kind of like the big change, I would say or the only like new technology that, uh, for our mulch project on the grant that Andros has brought in is this very heavily engineered, although, you know. simple looking, it looks like there's a lot of different machines on the market that will wind up used tape or mulch, whatever. Okay. No one makes one with the all the special features that we do that makes a roll that's as tight as ours. And why does that matter? Because a lot of recycling is about logistics and. If you can get the roll so tight that you don't need to go to a Baylor anymore, have that second step. Then you get a couple, you know, a couple pennies back in terms of the and now suddenly, hey, now it makes sense. Kind of by a circumstance. The labor picture has driven people to mechanization, which is Andros' core specialty, and that mechanization puts us in a position to be able to recycle, so that's one part. The other part is not nearly as complex as it's got really expensive to throw stuff away, like going to landfills was really expensive and no one wants to do it. And so that's driving people to look towards recycling. That's why it makes economic sense for us to be here, cause there's a demand and it's a problem we could solve. Yeah. Long term. You know, one of the things we're passionate about and the way we bring value to our customers is we want to reduce, we want to reduce the toil it takes to grow food, the physical toil it takes to participate in agriculture. And we also want to it's part of our, our company's values to protect the environment. Like, that's a valuable thing to do. And as, uh, agriculture expands around the globe, and some of the food that maybe traditionally was grown in the states, moves to other parts of the world, we want to be present there as well to have that help them. Avoid maybe some of the pitfalls that we have suffered. Here as plasticulture increases in those other places, which is why we proudly sell equipment all throughout the world we're very active in South America as well helping farmers down there keep their fields, uh, bright and clean and all the plasticulture stuff out of the dirt when we're done using it. So that's where I see us there probably a lot of work down in South America, and helping people do this in a way that allows gives them the option to recycle when they're done.

[00:42:46] Nataliya Shcherbatyuk:

Cool, cool, cool. And you know why I'm actually really wondering, 'cause we talk about so many cool stuffs, but what is the most rewarding aspect of your job that you, you know, you wake up in the morning and you're all excited about doing it.

[00:43:03] Ben Andros:

I love that question, I mean we love building things, so like making machines it's, you know, whatever nickname you wanna give them, gearheads or, you know, whatever, like, we just like making machines, so that's, I guess, really that's very rewarding. I think just building something that works and if you are looking to make a billion dollars Ag equipment is just not the way to do it. Unfortunately. Especially the kind of stuff that we make, you know, uh, it's, most of it is pretty specialized, so the market's never going to be that big, but we just have a passion for it 'cause we love it. And so that's maybe there's three parts to my answer. That's one part. Just love the work. The second part is, uh, Andros has the best employees. We've got great people working here who are passionate about the work, as well, they take pride in doing a job being made in America, you know, a bunch of patriotic folks out there in the shop putting this stuff together. They love being a Made in America company, and that they love participating in, uh, they take some of the same pride I think that farmers take in providing the food for the rest of the world, that hey, we participate in that. So, there's a lot of pride there. So, having a company that employs people, like that, who are passionate about that is one aspect and then there's nothing cooler that we're where we are, there's a diner maybe a mile or two down the road that we eat lunch at all the time. A lot of great farmers and farmers in general, and they're eating and to walk in and be wearing some my Andros engineering sweater and have a farmer I've met, never met before, shake my hand and say, hey, we really like the equipment you build. That's good stuff, it is pretty challenging to come by a lot of free praise from, a crusty farmer, so that's a pretty cool feeling, as well to be, yeah, that's, to be thanked for something like that.

[00:44:57] Nataliya Shcherbatyuk:

It is very cool. Definitely. Hey, since you mentioned names, I have a question for you. So, tell me from The Boss, Boss Junior, Dynamo Extractions to The Beast. How does Andros come up with these names? Are there any new fun names in the making?

[00:45:15] Ben Andros:

Future TBD on future names? We do have, some in the works TBD.

[00:45:21] Nataliya Shcherbatyuk:

It sounds almost like a sandwich.

[00:45:23] Ben Andros:

Oh, to be determined. We don't, and nothing super exciting on the on the names to come but we do have some, you're right, we do have fun names. Our business development director, Brian, Jewell, he

came up with a lot of them. You know, there's like try and invoke, you know, what the machine, the Beast, which you mentioned is like our heavy-duty drip tape extractor. It's got big shanks on it cuts a big swath through the ground and yanks the tape out. You know, pretty big macho piece of machinery that dynamos like a subcompact little extractor. That lot of power in a small thing. I guess the funniest name is we have a machine, so when, actually, Brian came to the company just as I was coming back to Andros to work here on the same, we started on the same day and first thing he is like hey, 'cause you know, it had just been started with just my dad and you know the couple guys he had working for him just coming up, well, let's call it this, say, hey, we need, like, something that makes a little bit more cohesive sense, so he renamed everything, but he got stopped on one machine called, the Bumpy, which is actually was named by one of my little sisters, inadvertently. We lived in a little town called Santa Margarita at the time. A lot of my family still lives there, just over the hill from Cal Poly. And there's railroad tracks as you turn into the town. And as we drive over it in the in the family wagon or whatever, everyone would bounce around and my sister would always yell, bumpy, bumpy. Well, later, you know, years later, my dad and the crew designed this machine pretty hard to describe in an audio format, but suffice to say, it just, it bumps the tape out of the ground. Just like if you were walking along trying to pull the drip tape from the ground with your hand you probably wouldn't just consistently pull on it. You kind of give it little tugs, right? To get it above. All the plants and everything does the same thing, mimics the manual motion and they called it the bumpy bump. That machine did not kiboshed renaming that one. That's the Bumpy. So there's actually one getting painted right now, a Bumpy that my sister Michelle's listening, she named way back then.

[00:47:38] Nataliya Shcherbatyuk:

What was the first name that you can remember?

[00:47:42] Ben Andros:

We called the Great Harvesters. We called Agra Track. Which is not very original, right? It's agriculture. It has tracks, not super fun. We have our big winder is called a Mega Binder, the one we built before it, great machine still in production, lots of orders on it. It's called an Ultra Binder, but it was built first. So even though it's smaller, it's Ultra, which to me has always been, always sounds better than Mega, like bigger but Ultra gets to stay Ultra. So, the Ultra Binder makes the 250-pound roll, the Mega Binder makes the ton to ton and a half size roll of drip tape. So yeah, the names are fun. We have a good time. Yeah, we have a chance.

[00:48:28] Nataliya Shcherbatyuk:

And when you have Boss and Boss Jr, are they like the same family?

[00:48:33] Ben Andros:

Yeah. Yep. Yep. All the B stuff have to do with drip tape like the Boss and Beast and stuff like that, but yeah, they're kind of the same suite of equipment.

[00:48:45] Nataliya Shcherbatyuk:

Cool. Well, Ben, thank you so much. I think that was great, and I'm sure our listeners have a great knowledge after listening and, you know, they can follow up on your website and our website as well. Thank you so much.

[00:49:02] Ben Andros:

Yep. And thank you for what you are doing. I listen to the podcast. I love it. I've learned a lot. It's, you know, it, it is a small, but very active cadre of people who are doing this work, but I learn something every time I listen. So, thank you for what you do and everyone up there at Washington State.

[00:49:22] Nataliya Shcherbatyuk:

Thank you as well.

[00:] 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 in this publication are those of the author(s) and should not be construed to represent any official USDA or U.S. Government determination or policy.

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