

[Andy] This is the Ag Engineering Podcast that rolls right into the details on tools, tips, and techniques that improve you, your farm and our world. I'm your host, Andy Chamberlin from the University of Vermont Extension. And this podcast is sponsored by Northeast SARE. Thanks for listening. Today's episode comes to you from South Hampton, New Hampshire, where I took a visit to one of the larger vegetable farms within the Northeast with Andre Cantelmo of Heron Pond Farm.

[Andre] My name's Andre Cantelmo, we're here at Heron Pond Farm in South Hampton, New Hampshire, where we grow 60 acres of mixed vegetables and gross between a million and million five a year. We have a diversity in sales with wholesale, direct to consumer, roadside stand, Farmers Market, and CSA.

[Andy] This is the last episode in the series that we've been doing with Andre. And this one is everything involving dirt. So, what I mean by that is cultivation equipment primarily. We kick off the episode talking a little bit about a transplanter. So we get into that. Then we talk about cultivation tractors, flame weeding, and like a cultivation box of tricks we call it. So stay tuned and hear what he has to say about dealing with weeds and planting directly into the soil.

[Andre] So this little beauty, this was like, if someone told me how easy it would be, I would've done it five years ago. I got this from Brookdale Fruit Farm, you know, Checchi Magli, you know, three row carousel transplanter. This is the baby compact. We had to get the baby compact, because we like to do three row on fifteens. I also selfishly want to be facing in the direction that we were traveling. I don't like transplanters that go the other way. You fly with this thing. When you transplant, everything is exactly set up for cultivation. And then when you look at this, this front roller, see how wide that is? It rolls this nice little area and then, unlike the other watering systems that we've had that have been mechanized that put a can down, this waterer puts a whole water right in the trench, and it's a whole line of water. And so you're not just trying to shoot water right on top of the plant or anything. And it's under the plant in the root zone. The amount of adjustments are just amazing for, you know, your depth of furrow, how far, like depending on the size of the plant, you can kick back further to cover or cover it quicker so that the plants don't fall over if they're small. It holds 40 trays when you're planting, and I splurged on the reduced gearing. And if you come over here, you can see that if I put in, at the head, there's a gear. If I put the 10 in there. And at the shaft part, I'm running the 14, then the big gears are these down here. And we can plant four inches apart. This is centimeters. So, we can plant four inches apart with this 45. So we put our onions in and, you know, if you're do trying to beat some weeds or get out early with like beets and stuff, we've done beet transplants before, but we've always been like subject to putting them in as close as you could put 'em in with the water wheel, you know? But now you could put these sets in four inches apart. And the other thing is, this is set up exactly like our cultivators. So, you know, on the water wheel, there's some wiggle room. People plant to one side of the hole or the other side of the hole. And that wheel that I showed you up front makes it so flat that when you're coming in with that first cultivation, your transplant is sitting there on perfectly flat, sealed ground. It's really sweet. I really enjoy this machine. What I need to build for it is a rig for the front of our tractor, the forks, we have those big 275 gallon drums that are in the cages, you know? And I wanna put a DC pump on that, because when it's, you know, drought conditions and you're really putting down the water, this little tank, you go through water quickly. And you can't put any more weight on the back of your tractor. So a bigger tank isn't gonna help you.

[Andy] It's a big unit.

[Andre] So putting the water out in front and pumping it in as you go is what I'm gonna do.

[Andy] And in contrast to this shiny new piece of steel, we've got an old Allis-Chalmers sitting right next to it, kind of rusty, but still works. So that's what we talk about next.

[Andre] I have a bunch of fancy other European equipment and stuff that we're gonna see, but like, I also, I still like these holes and everything. You gotta have, like a couple of horses.

[Andy] You can't beat the classics, right?

[Andre] Yeah, I mean, this sucker still does stuff when you need to get down and dirty and do some ripping. I mean, we are in a time where shallow cultivation, zone cultivation, let's sterilize the first two inches of soil in the profile and grow those crops great. And that's why these are out of favor. But when I'm about to go out, and like this year, all these heavy rains, and then I need to hill my potatoes, the ground is all rain compacted.

[Andy] Yeah.

[Andre] Take this sucker out, rip through it. Then I go through with my hillers, you know? I mean, it's got its place. There's a place for these old girls, for sure, you know? And they're cheap enough to have around. Like, what would anybody give me for it?

[Andy] Right.

[Andre] Like why would I sell it?

[Andy] Exactly. Yeah. It's not worth getting rid of it. Even if you only use it a few times, it's--

[Andre] Even though I've got a piece of European equipment coming down the hill to show you, Buddingh, by the way, Buddingh is folding up, they're stopping.

[Andy] I had heard that.

[Andre] So if you need any tines, go get it. But this is, you know, we do the five row. We have a five row system. It could be a three or a two row system as well. And then, did you go to the tool stacking talk? I guess that's a couple years ago now.

[Andy] I don't think so. No.

[Andre] There's a couple really good papers. The guys at University of Michigan have been doing, like, documented research. And we're the people who are like, we're just doing it. So basically the idea is the

more tools that you can put together, the more modes of action, it's an exponential increase in your effectiveness against weeds, not a linear increase, you know?

[Andy] Yeah, it's not a one plus one equals--

[Andre] Yeah. So basically, this is a Williams tool system. They sell it as a standalone product out of, Oh, Ralph is his name.

[Andy] Oh yeah, I have--

[Andre] Down in Pennsylvania. Market Farm Implement.

[Andy] There you go.

[Andre] Okay. So you can get one of these from Market Farm Implement. They sell, right on that square shaft, they'll sell you all kinds of shakes and sweeps and all kinds of other things that you might want to do. We put spring-loaded teeth just for the wheel tracks. And we use this system. I like the Williams because you can adjust the tension and you can take certain rows completely out. So if I'm gonna go over like baby beans, baby beets or something, I don't want one of these tines ending up, like right on a beet and just ripping it out.

[Andy] So yeah, you can just pick up the one that you--

[Andre] You pick up the one. There's a million tine weeders. This one is pricey, but you can also find tine weeders that, especially tools like this, that people don't want. And so once you find one that somebody doesn't want, it could be yours, like cheap. There's Lely systems that do the whole rack. You can adjust the whole rack at once. I like this for the individuality. I think that you could go a lot of different ways, but stacking is just definitely the way to go.

[Andy] And I assume the 245s got a pretty good float on the three point. So it just rides on the gauge wheels?

[Andre] Yeah. I mean, down is down with this. Rides on the gauge wheels, you can adjust, you have to have this center link to adjust, because you can end up pitching the machine. You know, 'cause we're not running with rear wheels, but that sits on the rear sweeps. So you can end up perching your sweeps up and not sweeping, but you know.

[Andy] And you can go pretty quick with this?

[Andre] Yeah. I mean, it depends on, you know, the crop, I mean, if you're doing just emerged carrots, you don't wanna go that quick. But if you're doing beans that are this high, I mean, you could drive as fast as you feel like you don't wanna fall over.

[Andy] Right. Cause these seem a little bit beefier than some of the other tine weeders I've seen. Like a lot of those seem really light and loose, and you can just fly, but this seems a little bit more like you wanna be precise and not just let 'em go everywhere.

[Andre] Yeah. You can also change the angle, which changes the tension. But then you have to change your height, which is not that big of a deal. All that stuff you saw on the Terrateck Culti Track.

[Andy] Yeah.

[Andre] We originally bought with this unit back in 2013, this Argus frame from KULT Kress, and then I added these brush weeders from Terrateck, and then kept it on this frame. And I think the next move is probably just to make it onto a toolbar that we like, just move back and forth with the other machine. This is what I was talking about. You've seen a lot of people have the steerable frame. If you come down in here, these right here are hard. And then this, you could put your hand on it. This is like, you would almost brush your hair with this.

[Andy] Yep.

[Andre] And then this is a medium, I think they're from street sweepers.

[Andy] Okay, yeah.

[Andre] Yeah. So in any case, you can order it in any combination you want, but we ride right up on the plastic with the white one, like right next to the plastic.

[Andy] And it doesn't shred it?

[Andre] And then you have this guard here for your crops.

[Andy] Are you using biodegradable plastic or--

[Andre] I am. So you have the guard here for your crops, a little back thing, cuz it'll go shooting out. We also, I don't have it on right now, but, see this arrangement of clamps? I have another set of arrangements of clamps that have a little disc. So if I'm bringing the soil out a little bit, I actually bring the soil back in. So just a couple sets of tines, sweeps, you know, right up next to the plastic, you got your depth of how heavy you want to go with this. And then you can just ride along and do each side of the, we do both sides of the plastic. And then, you know, this is the steerable unit of course. And what I wanna do is I wanna change these tires out to agricultural bar tires. I think they would grab better. Most people are running steel wheels. I can't because of all the rocks here. But if I run bar tires, I bet you then I would get more bite so that when you turned it, it would turn on its rack a little bit better.

[Andy] Oh yeah. Yeah.

[Andre] Because you know, sway--

[Andy] Tires would make a difference on that.

[Andre] This, yeah, this is on sway chains, like your sway chains are loose so that when you steer it can move within--

[Andy] It's fully independent.

[Andre] It's fully independent. Yeah. And I mean, this has been a really valuable tool for plasticulture. The stone burier? Change your life.

[Andy] I just talked to a farmer about that last week.

[Andre] Yeah?

[Andy] Yeah. They were on an old road farm.

[Andre] This'll change your life. Yeah. This is a small one. But yeah, still highly, highly, you know, I can't say enough about it.

[Andy] What is your favorite thing about it?

[Andre] My favorite thing is how flat the bed top is. And then the great thing about it is I thought I, well, seeders go through it like butter because there's no rocks. I like that. But cultivating. You don't throw crap into your little, yeah. Especially at the super cotyledon stage or like real micro stage, like when the carrots first come up, you just go through them and not throw all kinds of material and stuff into there. Yeah. Oh! That's the other thing about this! And I'm gonna adapt other tillers and stuff for this. I didn't understand that this corrugation, when you go, like I said, we're doing stale seed bedding, right? Well, when you go with a tiller or something or a roller and that bed is flat, when the rain hits it and stuff in between, or let's say you have to even irrigate it, we use those mega nets. You saw that bucket of mega nets? We have them all over the farm for little fine seeded stuff. And also when we're stale seed bidding in the last few years, except for this year, it's been a drought, right? So we've had to irrigate the beds that we were going to stale seedbed to get the weeds to germinate. You do that on a flat, smooth surface, and that top layer turns to concrete. This corrugation really, really makes a huge difference with that. Immense difference. And even slightly a little bit with erosion, I'm not gonna make huge claims about its like anti-erosion capabilities.

[Andy] Right. But it gives it some texture to the surface.

[Andre] Exactly.

[Andy] As opposed to the flat roller.

[Andre] Yeah, yeah, definitely. And so that is a really great thing. And because it's spring-loaded, it's really making like a corduroy-looking surface. And then the other thing is you go through with a seeder, instead of having flatness that you're going through, you're going through textured, but it's micro textured. You definitely get better seed to soil contact. And so, seed to soil contact and non-compaction and all those things really add up. The other thing that I didn't know that I would love with this is either bed renovation or cover crop incorporation. So you're more inclined now, you know that seeder that we used? We could put cover crop seed in that and just like, oh, you're done with that bed? Just cover crop that one bed.

[Andy] With the sutton

[Andre] With the sutton. Oh, we wanna use it? Cover crop's only this high, but you did something. It was not bare ground. Incorporate it with this. Oh, in the past, if I tried to do that, now I got junk. I can't ride a fine seeder through that. I can't run the transplant through that. It's catching all the stuff and raking it, you know? With this, it incorporates that organic matter--

[Andy] And buries it.

[Andre] And buries it. And then, there's a rake in here. I don't know if you understand how they operate. But this rake, it hits the, you know, the soil goes through and everything else falls. So everything that your seeder would've raked, it rakes and puts at the bottom of the furrow. So I would be interested to see a study on, like, we don't like roto-tilling. We don't like doing this stuff, but like certain crops, like greens, carrots, beets, like they need a good seed bed or we're not getting what we want. And so, we've done a bunch now that we have that Chechi, we used to have to roto-till every frigging bed that we were gonna transplant. Because you couldn't hand plant them into like a Perfecta bed, but now with the Perfecta, and now we're getting a five foot Perfecta just to make beds with. And so not having to till, that's another thing I should have said about that Chechi is like, minimal soil prep because it'll go through some stuff as long as it's flat, you know? So I think he's bringing my other new favorite toy down here, which is the Virgo Flail Mower. And we have the hammer flail. It's not like a grass flail. So I mean, you can, oh, the Rockies? You like that?

[Andy] Yeah. Is that a rock picker?

[Andre] Oh yeah. It's a rock picker with a built in rock rake. So the rock rake brings it into your hamster wheel. Your hamster wheel takes the rocks, shakes them loose of the soil. And then when they come around, they slide down there and into your dump bin.

[Andy] Nice.

[Andre] Yep. And we pick a lot of rocks every year. So buying a stone burier is not the solution to stone. You gotta pick 'em up. So we pick 'em up. And then we use a stone burier. Let's see what's in this bag of tricks over here. Cause I was just like looking at this. I was like, you know, there might be some cool stuff in here.

[Andy] All right. Now you'll have to use your imagination a little bit here as he's talking about cultivation tools. And so use your imagination and get a gist of it. But if you're interested, I did shoot a video while he was talking about this. So you can watch that on our YouTube channel or on the podcast page. So make sure you check it out there.

[Andre] There are cool stuff in here. All right. See what we have. Ah, this'll be cool. So these, I don't have a tool with me, but these are great because they go on here on this shaft, they'll go down here, right? Right on back of the shaft and they're little hillers like for leaks or something. So I like these little hillers. This is for the one you're doing the center row. And then we have halves for hilling just sides. So this would be on the outside. This would be in the middle, and then you would hill. You could hill your leaks. You could hill brassica stuff, so after you're getting in with your in row, the last time you've gone through, maybe with one of these fingers, the last time that you've gone through, you wanna make sure, oh, I'm not gonna be able to get in there again. I'm gonna throw some soil on there. You could do that. This is that setup I was telling you about that I put on brush weeder. And then this little disc runs along the side and puts a little bit more soil right back to the side of the plastic. So you're kind of pulling the soil away a little bit and putting it back, keeping that nice and clean. So there's that. That's funnies. What else we have in here? This is like Christmas box here.

[Andy] Toy box.

[Andre] My son's toy box should be so lucky, right? These are offset side knives so that you can get closer to the crop without hitting the leaves. So when you're coming in to the soil right there and you wanna get this sweep and you wanna be right next to the plant, but then, you know, like broccoli and stuff has all these leaves in it. If you had a straight shank, a straight shank with maybe a side thing, this shank is hitting all the leaves.

[Andy] Oh yep.

[Andre] And not, and maybe tearing 'em up. If you go offset like this, you can move the blade in closer and be away from the leaf and stuff like that. So that's another little cool thing.

[Andy] What's your go-to source for buying all these tools?

[Andre] I just go right to KULT Kress for these. Some people like Hack. Decent brand. I like the way that the KULT stuff is put together a little bit better than Hack. For walk behind stuff. Like if I had a walk behind tractor, I mean, like I see that what Tilmor's doing. And I'm like, if I was starting out again, the first thing I would do would buy a Tilmor walk behind. But as far as all their tractor stuff, it's, see, these are true bearings. And the shaft design and grease fittings are different. And because of the high use that we use 'em for and all that stuff, like I prefer the Kress over the Tilmor for that. The KULT Kress stuff. But I have gone to farms that have invested in Steketee. You ever hear of them?

[Andy] Yep.

[Andre] That stuff is gorgeous. I know, it is. It's really, really beautiful equipment. It's incredibly well made as well. I don't even know where you would buy it. There must be a dealer someplace. But if you ever get down to Wishing Stone Farm, he's got a Steketee bedder, a stale bedder. So you know how we were doing all that different stuff to stale bed? He's got something set up that literally just goes over the bed continually, not like a tine weeder and stuff. It is more sophisticated than that. It was designed by Steketee. There's a lot going on there, like three different modes of action. Incredibly shallow, really just minimal soil disturbance. But like, if you go over and over it, I don't even know if you need a flamer after that. It is a really, I mean, like, of course, like everything, these things cost a fortune, but if it does the job and saves you that money in the weeds. Weeds cost so much money. I know I envy that piece of equipment. That's a nice piece of equipment. You should get a couple pictures of that for your website. I don't even know what it's called, Steketee bedder? I don't know.

[Andy] I'll look it up.

[Andre] You should look it up. Yeah, Steketee equipment is definitely good. But the other thing is like KULT is in Pennsylvania, and they manufacture some of the stuff there now, and they ship, and you can get it in, I mean, I know of people dealing with me trying to get TerraTeck stuff. I mean, I'm like, oh, well we have to get a container. And then, by the time you get, it's like four weeks on the ocean. And you know, I mean, the good news is that Terrateck now is gonna be moving a branch, a division, to the United States.

[Andy] Oh really?

[Andre] And so, yeah. We're hoping--

[Andy] That's good news.

[Andre] We're gonna hope. I don't even know if I should announce that. Maybe you should keep that kinda to yourself. I dunno. But in any case, the goal is over the next couple years to move some of the manufacturing over here, bring the cost of some those tools down a bit. And availability, right? Because when people order a tractor, they want it. They don't wanna wait five months for a tractor, but--

[Andy] We're ready for it! Yeah. We decided we want it. Let's get it.

[Andre] Okay. I have the money. I wanna spend it. And so that's the goal there, and I hope to be involved in that to a certain extent, but I am never leaving this place.

[Andy] Right, right.

[Andre] I'll always be here. I really have enjoyed, like doing tool development with somebody?

[Andy] Yeah, yeah. Yeah.

[Andre] Like I came up with those ideas and the next week the engineer sent me like a CAD video of my idea working. On like a cartoon.

[Andy] R and D.

[Andre] Yeah. I mean, I was like--

[Andy] I love R and D.

[Andre] you're kidding me! Wow! That's great! You know, and I like working with them.

[Andy] And if cultivation doesn't take care of the weeds, the flame weeder might, and here he explains how his is built.

[Andre] So this is like one of the most used things on the farm. And so this design for the shroud, I got originally from Michael Kilpatrick, and he got it from Pete Johnson, and Pete Johnson got it off another guy. I thought that Pete actually invented it. My contribution to this, so if you ever wanna build one, my contribution is this back here, this plate, every other one you see, the frame is twisted. And the frame is twisted because metal heats up and contracts and then is pliable. So mine isn't attached. This is just a piece of plate steel. And it's just double nutted. So the hot pan, as you can see, has been, there's hot spots where it's gotten warped and buckled, but it doesn't pull the frame, because it's not attached to the frame.

[Andy] Loose fit. Yep.

[Andre] It's just sitting there. Now, when you go down the road, it's like you know, but hey, you know, it definitely does the job. I thought this was gonna be wicked important because of, you know, the height and stuff. You know, how long it took me to do these barrels?

[Andy] Yeah. That's, like custom building.

[Andre] It's like completely unnecessary. You don't need it. But my idea was I had such a hard time with crab grass. So when that crab grass it first germinates, you could go over with a regular flame weeder, and it comes back. But like this, you know, that's 6 million BTUs down, like hooded, you know?

[Andy] Yeah.

[Andre] So now the other modification I need to make is I'm going to, up here, I'm gonna put a squirrel cage fan that's gonna run into a pipe. And the pipe is gonna come down here with holes drilled in it. And the reason is because I have such a shroud, unless I'm in a slight breeze to the head, 'cause you're a liquid feed, not a gas feed. So my propane to air gets--

[Andy] You can't get enough air in there.

[Andre] There's too much propane, not enough air. So believe it or not, mine get cold. I got, even though I'm running heavy on fuel, I'm running colder. And if you go into a slightest head breeze, you could feel and hear it just crank up. And so that goes nuts. Yeah. It goes absolutely nutty. And the original kit is from flame engineering. And then the rest is like custom weld jobs.

[Andy] So did you build the whole thing?

[Andre] I had a fabricator down the road do it. I just designed it.

[Andy] Oh, okay.

[Andre] Yeah. I didn't have time. It was my intention to build the whole thing.

[Andy] Yeah. It looks like it wouldn't be too expensive to put together.

[Andre] It was expensive.

[Andy] Really?

[Andre] Yeah. I mean, like, I think I got 4,000 in this.

[Andy] Okay. Yeah.

[Andre] Which was more than I thought it would be.

[Andy] Yeah. Thanks for listening to today's episode. I hope you enjoyed it. If I can ask you or direct you to do one thing that is to go to the website for this podcast. agengpodcast.com. That's A G E N G P O D C A S T.com. There you'll find the show notes. You'll find links to the farmer who we chatted with today, as well as photos or videos from the call when I visited the farm. If you've got some feedback to share, my contact information on there, or you can leave me a voicemail, and you can do that right from the link in the description in the mobile app you're listening to this to, so go ahead and do that. Thanks again for listening, and I hope you have a great day.