Plant People Season Three Episode Six "Pawpaws with Anya Stansell" Transcript

Jennifer Bernstein Narration: Have you ever heard of a pawpaw? Though it's the largest fruit native to the United States, there's a good chance you've never heard of it, let alone tasted one. Sometimes called a custard apple, today this fruit is often restricted to specialty growers due to its peculiar growing requirements and short shelf-life.

Welcome to Plant People. I'm Jennifer Bernstein, CEO and the William C. Steere, Sr. President at the New York Botanical Garden.

Today we're joined by fruit specialist Anya Stansell to explore the story of a uniquely American fruit that grows throughout much of the Eastern wilderness. It was long a staple in many indigenous diets, so why is it so obscure to most of us today? Let's dive in.

Jennifer Bernstein: Anya, welcome to Plant People.

Anya Stansell: Thank you for having me.

Jennifer: We're so excited to have this conversation today. So, let's start with the basics. What exactly is a pawpaw?

Anya: A pawpaw is a fruit. The Latin name is Asimina triloba. It's in the plant family *Annonaceae*. This is a big shrub that grows into a small tree. So, this tree is found throughout the Midwest and into the northeast a little bit, and it makes really big fruits and it's native to the U.S., which is unusual for its size.

Jennifer: Yeah. Maybe you can describe what a mature fruit looks like and maybe tastes like. But also tell us what other aspects of this plant are unique.

Anya: Okay. A really good pawpaw is about maybe eight inches long. And it's fleshy. It's soft like a peach. The skin is yellowish green. It's very thin. You can just break it with your fingernail by scraping it. And inside is this super sweet flesh that has like no acidity at all; and it's really creamy. Some people say that it tastes like vanilla ice cream.

Jennifer: Mmm.

Anya: It can have mango-y flavors, but again, no acidity at all. And it's got these really big seeds in it too that are really pretty; they're shiny and dark

brown and maybe an inch long. And the seeds are super toxic. Everyone always wants to eat them, but don't do that.

Jennifer Narration: Pawpaws do contain neurotoxic acetogenins in the skin, flesh, and especially the seeds. These chemicals have been studied for insecticide use and also for their potential as chemotherapy agents. But the jury is out on whether long term pawpaw consumption may pose health risks.

Jennifer: It's true of apples too, right? The seeds of apples and high amounts could be toxic, so it's a sort of feature of the plant that helps it stay safe, but eater beware, I suppose.

So Anya, historically pawpaws were eaten and cultivated by indigenous tribes across what's now the Midwestern, Eastern and Southeastern United States. A big span of land. How has that heritage influenced their presence today?

Anya: We know that there were transport routes between peoples and that pawpaw seeds were being transported through these sort of corridors indigenous peoples maintained, and we think that pawpaw plantings along Lake Erie and Lake Ontario and New York, were actually not brought there through megafauna, but actually brought there by people and cultivated there intentionally by people. There's also the Seneca Nation. They are members of the Haudenosaunee Confederacy and they are in what is now close to Erie County, New York and Cattaraugus County, New York. And they actually are growing pawpaws again. They have a lovely planting and they've been caring for it and no fruit yet, but the trees look really good.

Jennifer: That's great. So, one of the problems of commercialization of pawpaws is that they don't store or travel very well. Is that right?

Anya: Yeah.

Jennifer: So, what's the pathway for them becoming fruit that we would find on a grocery store shelf, or is it really not going be possible for them?

Anya: I tell myself to think like a peach. Peaches are also soft and juicy. And we have like special transporting containers for really good peaches. We pick them a little bit under ripe. There's also breeding to breed firmer peaches, and all of that is being done by Kentucky State University. They believe in pawpaws being transported far distances. There's also some research at Cornell on a pawpaw ripeness indices basically being better at identifying when a pawpaw is

just at the right ripeness to transport without necessarily squishing it and doing the finger test.

Jennifer: Okay, so where there's a will, there's a way in terms of getting pawpaws into grocery stores. That's great. So, we've been talking a lot about cultivating pawpaws, but do they still grow in places in the wild?

Anya: Yes. If you go to Ohio, you'll just find them in the woods and they make these little knobby tiny fruits that don't taste very good. In New York, there is a researcher, Dr. Steven Tulowiecki. And he actually mapped out like the last remaining pawpaw groves in New York, and he's doing advocacy work to help get those groves protected by the state so they don't get developed.

Jennifer: So, pawpaws are self-compatible when it comes to pollination. Can you explain what that means and how the plants are pollinated?

Anya: Yeah. So, if a plant is self-compatible, that means that the flower by itself can produce its own fruit just with its own pollen. So, it may still need someone to take the pollen and put it onto the stigma, but the flower itself will not reject its own genetic material and will produce seeds and fruit. A self-incompatible plant basically needs pollen from another plant to be brought in to produce fruit, and that's really annoying in terms of agriculture because that means that you can't just grow the same variety; you have to mix it up or else you won't get any fruit.

Pawpaws are interesting because they technically are self-compatible, but the thing is that the way that the flower matures, the parts of the flower that make the pollen mature first and then they die, and then the part that receives the pollen matures after that.

So they – they're not alive at the same time. And that's why you need the different varieties. There's one variety called sunflower, which allegedly the flowers mature quick enough and synchronously enough to actually be self-compatible some of the time.

Jennifer: So, they're self-compatible, but they have a timing problem.

Anya: Yes.

Jennifer: Okay. So, how are they pollinated then?

Anya: Usually they're pollinated by insects. And pawpaw flowers, if you've ever seen them, are this kind of brownish maroon color; and if you smell them, they smell bad, but you have to get like really close and take a really big whiff to get it. They look kind of like rotting meats and they attract bugs that are attracted to rotting meat.

So, that's your little gnats; all sorts of little forest flies. And that's another challenge that farmers have is that a lot of times people will plant like six trees because that's what they have room for. But six trees don't generate enough of a massive stink to attract the flies. So, some growers who have small plantings and want fruit will actually put their trash cans or I know one grower who will go and pick up roadkill and put it there to attract more of those stink-loving bugs to pollinate.

Jennifer: Lovely, lovely. Yeah. It's not an uncommon strategy and visitors to NYBG will be familiar with the corpse flower, the Amorphophallus, which is pollinated in the same way by mimicking the smell of rotting meat. So, nature finds a way, but it's great to hear that farmers are getting creative. I'm glad that it's happening. I'm not sure I would want to visit at that particular time, but good to know. So, so before human population, they were relying on wildlife and they weren't laying out road kills.

So, how was that happening? Was it the massing that made it work?

Anya: Yeah, pawpaws naturally will form groves and thickets. They have a really cool root system because individual trees, they have this really deep tap root, and then they have feeder roots in the top, oh, maybe four feet of the soil if there is that much soil.

But then they'll also send these side shoots and make little sucker trees that spread out, maybe like a meter from the base of the trunk, then further on, and those never form a trap root. They just have the feeder roots and then they get a lot of nourishment from the main tree. And so what you get is a thicket. And those thickets can even kind of like walk up or downhill given enough time; because the trunks only live like 30 years, but the root system keeps living and they just kind of make those thickets. And anyway, they're very dense if they're not managed. And usually they're in like shaded woods where there's a lot of bugs hanging out. So, they pollinated themselves just fine.

Jennifer: Okay. I'm curious, you're a co-author of a guide to growing pawpaws in New York. What inspired you to focus on this fruit and can you tell us a little bit more about what it takes to grow a pawpaw well?

Anya: So, I went to grad school at Cornell University and it's a very agricultural university; and as a grad student in the horticulture department, we were actually entitled to a little section of orchard that we could manage. We'd pick the apples, sell the apples; there was another section of that orchard that was largely not really used anymore, that was pawpaws. It was a pawpaw planting that had, I want to say, 130-some trees.

So, quite large, and that planting was installed in the 1990s because there was a professor at the time who wanted to evaluate pawpaws for commercial production. So, as a grad student, I got really used to introducing my friends who weren't in horticulture to this fruit. Pawpaws are charismatic. People have opinions, they either love them or hate them, and it was just like a very fun fruit to get to have access to.

So when I got my position, I started talking to growers in New York about pawpaws and people are so interested and there was this big desire to have access to a planting for the seeds to be able to grow trees, and for the fruits. And there's a lot of people here who would like to have an industry of pawpaws here in the state, but there's not really a lot of connections between people and there's not really a lot of standardization. So, the guide was just an attempt to really talk to more people about it and write down what we knew at the time for best practices. But, it was published a couple years ago, and we already have learned a lot about them. So, it's time to update the guide.

Jennifer: It's not surprising to me that the novelty is part of the appeal for you and for other people. I think the monocultural nature of our agricultural system can be – it has lots of environmental consequences, of course – but it can also be boring. So, it's exciting to learn about some of these plants that were once prevalent, once important parts of our diets, and that have become less popular, and to think about what it would mean to reintroduce them. I'm interested also because you're a botanical illustrator. Is that right?

Anya: I tried my hand at it for the guide.

Jennifer: So, okay, so you're an avocational botanical illustrator, yeah.

Anya: Yeah.

Jennifer: A lost art but a wonderful one. I thought your illustrations in the guide were quite beautiful, so thank you for that.

Anya: Thank you so much.

Jennifer: You said you've learned a lot since the original guide. What are some of the biggest challenges that growers who are interested in pawpaws are facing, especially in the northeastern U.S.?

Anya: I think the two biggest challenges for folks are getting access to trees. Something happened during the pandemic where the price of pawpaw trees skyrocketed. A good, sturdy pawpaw tree that will actually survive the winter in New York costs $70 to a hundred, which is just – that's okay if you have a big-ish gardening budget, and you want to plant maybe 10 trees, right? A thousand dollars.

But, if you're a grower and you want to plant 50, a hundred trees, oh my gosh, that's so expensive. And that's prohibitive for the demographic of growers that I find is the most interested in pawpaws, which is beginning farmers, young farmers, people who don't necessarily come into it with generations of farming. Well, these are people who are struggling to find land. Shelling out that much for trees can be prohibitive.

Another sort of challenge in New York is that there's two ways to get pawpaw trees. You can plant a seed, or you can buy a grafted tree. And the grafted trees – basically, we don't have any rootstock breeding that's been successful yet. So, the roots, even of a grafted tree are just kind of random. Like what you get is what you get.

And then the tops, Kentucky State University and also our Neil Peterson are both breeding out lots of pawpaws and we've identified some varieties that do well in our cold climates, but it's kind of hard to get the scions to graft onto the root stalks at this point. And it's also hard to get the seeds to sprout if you want to do it yourself. So, no matter how you cut it, it's kind of expensive to get it done.

Jennifer: Let's say you get it going, you get past all of that. How long before the trees begin to bear fruit?

Anya: Well, that's if they survive…another challenge we have is that survival rates in a planting can be as low as 50%, or even 70% death of trees if you have a bad year or bad management. So, if you're able to get those trees and they survive those years with a lot of effort being made into not letting them get too hot, too cold, too dry…. then it's eight years. Five years is really optimistic, but pawpaws, as they come into maturity, they'll often make flowers, make fruit. The fruit falls off, and then they're mature.

Jennifer: Okay. So, hard to get the source material, then hard to ensure that they survive and then a while before they start to make fruit. So, why are people still persisting, do you think, in pursuing it if it's so difficult?

Anya: It's so charismatic. The fruit, there's nothing like it.

Jennifer: Okay, so it's the novelty.

Anya: Yeah.

Jennifer: Have you developed different recipes for pawpaws? What is your favorite thing to make with a pawpaw?

Anya: I think pawpaw ice cream is a really good use of it. There's this researcher in the Ohio State University. Ohio has a pawpaw festival every year, and they do a pawpaw bake-off thing. And so there's like a competition. Everyone makes something and then they judge it.

And so they were primed to do a research paper where they basically evaluated all those recipes and in a very scientific way described like, “Okay, these are the best things to make with pawpaw. These are the worst things to make with pawpaw.” And ice cream was pretty high up in that list. I think it's mild and you kind of dilute the flavor of pawpaws. So, even people who don't like it, they're not overwhelmed with pawpaw flavor.

Jennifer: Where do people go if they wanted to try some sort of pawpaw product? Where might they go in, in New York or beyond?

Anya: There are websites that sell frozen pawpaw pulp.

Jennifer: Okay.

Anya: And so you can get it that way; but if you want to like go in person and talk to the person growing it, I'd say the Hudson Valley. There are pawpaw festivals in Maryland, Pennsylvania, and Ohio as described.

Those can be really miserable experiences because there's still supply and demand problems, and you'll wait like four hours in line to get half a pawpaw.

Jennifer: That sounds like a…yeah, it could be a frustrating, they need to add other things into the festival so that people feel like they're able to distract

themselves while on their journey to secure a pawpaw. Or maybe we need one in New York where there's a lot of pawpaw available.

Anya: Yes.

Jennifer: Um, you're, generally, as I understand it, a cultivator of unusual crops and of course, as we're learning, pawpaws are one of those crops. Are there other crops that you're interested in addition to pawpaw?

Anya: Oh yeah. If it's cold-hardy and it can make folks money in New York, I'm excited about it. I think the problem always when we're considering the commercial viability of an unusual crop, is once you grow more than you can harvest by hand, how do you harvest it? And often we don't have the equipment to harvest these things easily.

And then that makes processing really difficult. But with that caveat, I really like honeyberries. I'm really excited about them. For growers who like to do on-farm fermentations, basically if they take the berry and they add sugar to it before it gets to the consumer, anything that involves that, I think honeyberries are great because they're super hardy. It can be like below freezing and these guys are flowering and you still get a crop because they're just that frost tolerant and they're super high on antioxidants. Unlike pawpaws, the bushes start fruiting when they're a foot high; they just keep doing it. And, these guys, unlike pawpaws, are so novel that no one really knows what they are and no one really feels curious to try them.

Pawpaws are big and there's something about a big, new fruit that's exciting and a tiny new berry is just not so exciting. But, I keep hoping honeyberries will catch on because they're healthy and delicious and they process really well into all sorts of tasty things.

Jennifer: Yeah, it's interesting to think about what makes a food plant charismatic.

Anya: Yeah.

Jennifer: I mean, I would put the taste at the very top, but before you taste something, you have to be induced. You have to be, you have to be motivated. And so I guess I've heard you say in this conversation, it's really the size of the pawpaw that you think draws people to it. Is that right?

Anya: Yeah. Yeah. Yeah. I mean…I am a very greedy person, and when there's like a big thing, I want it more than the little thing.

Jennifer: Yeah. Yeah. Well, it is significant and it's interesting. I mean, it was a prevalent part of our diet. If we go back, I guess a hundred years or more, was it really the banana that kind of displaced the pawpaw in the food system?

Anya: I've heard that said, and I know the pawpaws used to be called "Poor Man's Banana." So, there was definitely like a status thing where people were like embarrassed to be having to forage for their food. Blueberries, actually, people used to forage for them in the woods, and then they became a commercialized crop and no one really forges for blueberries too much anymore.

Jennifer: In other conversations, we've talked about how that connects to conservation efforts because when there was more of a foraging system, let's say, communities were naturally protective of places where these things grew in abundance.

And when we put them into a system that was more cultivation-oriented. The native places where these things are coming about, became less a focus. So that's an interesting dimension of this. Is anything happening at the state level to incentivize the growth of unusual crops?

Anya: I'm so glad you asked that. New York State is awesome because there are agencies like Northeast SARE, S-A-R-E, which is a funding organization, and they have grants that are specifically for experimenting with novel crops, which pawpaws, I'd say, are still novel enough that they would count. And growers can apply for over a hundred thousand dollars of funding to purchase infrastructure plants, machinery to make money off of these fruits. And that's not the only one. We actually have this wonderful non-profit called the Small Business Development Center. This is nationwide actually. And these folks specifically work to help farmers secure grant funding to grow whatever they want. But oftentimes something like a pawpaw, or a honeyberry, something that's a little bit more fringe and unproven…

Jennifer: Yeah. Well, that's great to know that there are resources out there. We're very interested in biodiversity in general and biodiversity in the agricultural system because food plants are plants. As we lose biodiversity at large, we lose food plant diversity, and that becomes a long-term risk to our food resilience and it's also not as healthy for us or for the planet. So, the more different kinds of crops that are out there being grown, the better.

Anya: You know, one thing that is really awesome about New York is that we don't have a standardized cropping system when it comes to any of the crops that I work with. But with berries, you visit a strawberry farmer or a blueberry farm, and there's going to be so much diversity in what varieties people are growing, how they're spacing them, how they're mulching them, all the things. I think part of that is because people are learning from their neighbors.

People are learning from YouTubers, people are learning from books, and people are also learning from us in Extension, but there's no one authority on how to grow it. And that sort of lends itself to having more diversity and it actually does translate to more resilience…I think because in New York we just have a lot of different topography. A lot of different soils and our weather patterns have been so weird in the past couple years that people have been not following my advice on how to grow strawberries, for instance, and having like the best crop of their life in a year when more than half of the other people are having like total crop failures.

So, young growers – I'm hoping that they have a network amongst themselves where they can connect and talk and share what they found. But, I think that they're coming in from a very different information landscape than 30 years ago.

Jennifer: Well, Anya, thank you so much for being with us. It was really wonderful to have this conversation.

Anya: Thanks for having me.

Jennifer Narration: To read Anya's guide on growing pawpaws, check out our link in the show notes and keep an eye out for them at your local farmer's market this August.

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