

# **Finding Roots: Asian American Farmers in Contemporary America**

**Arthur Lee**

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**Interview conducted by Katelyn Reuther**

Arthur Lee is the founder and owner of Mazu Mushrooms in Santa Cruz, California.

This was a remote interview conducted during the COVID-19 pandemic. Arthur Lee joined the interview from Santa Cruz, California, and Katie Reuther joined from Boston, Massachusetts.

## **Interview Log**

- 00:00:00 Introduction
- 00:00:31 When Arthur thinks of his family’s food culture, he instantly thinks of his mom. In a lot of Asian families, the mother does a lot of the cooking. His mom is a phenomenal cook, and she cooks everything from memory. Arthur’s family grew bean sprouts in Gilroy, California, and his mom would cook bean sprouts with garlic every night. He would watch her process food from start to finish, beginning with butchering the animals. His dad would also help with butchering and growing the vegetables.
- 00:02:10 When Arthur was younger, he wasn’t particularly interested in his heritage or his culture’s food. He took it for granted, because he had it every day. As he got older, he started to realize how special it is to have a mother who knows authentic recipes, and to have access to fresh ingredients. In university, he began to learn about food systems and how to grow in ways that are good for the planet and for our bodies. He wishes he appreciated it more when he was little.
- 00:03:17 In addition to growing vegetables, his parents also raised the animals they ate, including meat goats, chickens, geese, rabbits, pigeons, turtles, pigs, and more.
- 00:03:47 They raised a variety of animals for fun and for food.
- 00:04:12 Growing up, Arthur had responsibilities on the farm, including feeding some of the animals.
- 00:04:41 Arthur’s parents stopped farming when he was a teenager, but for a lot of his childhood, he and his sister would run around the farm as his parents cared for

everything. When he was around thirteen, his mom got a job in Silicon Valley, and they transitioned away from farming.

00:05:38 When Arthur was younger, he thought his family's farming lifestyle was weird, and he felt like an alien. He says growing up in Gilroy, California, as a Chinese American, you stick out. East of Highway 101 in Gilroy was farmland where there were many immigrants and a handful of other Chinese families farming.

Arthur stuck out and never felt like he fit in. He would mingle with the mostly white kids from the suburban areas who didn't have animals or land to run around on. His parents are also very thrifty and keep things around for practicality's sake. He was ashamed of it at the time, but now he's ashamed that he was ashamed of it. As a child, all you want to do is fit in, and the fact that his family was so different made him want to hide it.

00:08:06 In high school, Arthur took an AP (Advanced Placement) environmental studies class. It was around the same time that Al Gore's *An Inconvenient Truth* came out, and environmentalism was on the rise amongst his generation. He went on to study ecology and evolution in college, which is still one of the most important things to him. It was around high school and college when he realized that food systems and different ways of being are important ecologically.

00:09:32 Farming plays a huge role in the environmental and ecological picture, in terms of land use, carbon emissions, methane emissions, resource extraction, and water use. There are many different elements that thread into where our food comes from. Some people argue that growing things more sustainably is the most important environmental issue.

When he was in university, Arthur lived in a co-op with a lot of students who were studying agriculture. They had a plot of land and would grow their own food and cook meals with it. Living this way made him believe that it could work, and that there is another way to be that is better for the world and for ourselves.

00:11:21 While Arthur was in college, he didn't have any aspirations to farm. He wanted to do something in an ecological field, but farming food didn't cross his mind until after college. Working in a variety of different fields and doing different jobs made him realize what a dream farming really is.

00:12:21 After graduating with a degree in Ecology and Evolution, he worked for the state parks as a service aid, in edible landscaping, and at farmers markets. All of his jobs were closely related to food systems, but never centered on growing food at a large scale.

00:13:09 Farming felt like the right thing to do at the right time. It feels good to grow food for people in a way that's not commercial. Arthur has a mechanical mind, and he likes to build and fix things. Farming requires a lot of that, especially mushroom farming. He is always tinkering and trying to figure out water and pressure systems.

00:14:17 Arthur started growing mushrooms for himself in college. He only started growing them commercially in the summer of 2020.

00:14:47 Arthur gained most of his mushroom production knowledge on his own. His grandmother, who held a lot of mushroom growing knowledge, passed away before he started farming commercially. After she came to America, she went back to Taiwan and learned about mushroom cultivation there. She was a biologist for most of her life and knew about bacteria and fungi. The significant language barrier has also prevented him from acquiring family knowledge.

He learned by reading books and doing research online. There are now many different resources online that didn't exist in 1990 when his parents started. At that time, you had to go to a farm, learn from an actual person, and have background in microbiology and lab sterile technique.

00:17:10 Arthur loves mushrooms. They aren't a plant or an animal. He says they're aliens just like he is. They are diverse in flavor, texture, color, shape, size, sporulation method, and more. They're a piece of science that has barely been touched by science, so there's a lot to discover.

Annual vegetable farming doesn't sound appealing to him. You use tons of land and water, and you are often on a tractor for hours on end. He does, however, love to garden and work with fruit trees.

00:19:01 Arthur describes the process of growing mushrooms. He says there are different starting points, so you could start from the beginning with a culture, or you could start later in the process to fruit out already-made bags. Specific spawn producers make and sell grain spawn (grain with mycelium grown on it) to farms to fruit out on substrate (usually hardwood sawdust mixed with agricultural waste products like soybean hulls or rice bran).

You can skip having a lab and buy already-made fruiting blocks, fruit the blocks, harvest, and sell the mushrooms, or you can start from the culture, make grain spawn, and grow it out onto bulk substrate.

- 00:20:49 Arthur does it all. For him, a lot of the fun of mycology is the lab space. He likes working with the cultures, picking out the healthiest ones, and discovering new things. He believes seeing how mycelium grows on a glass plate says something about the vigor of the mushrooms.
- 00:21:37 The total cultivation process from start to finish differs from species to species. For the fast-fruiting strains like oyster mushrooms, it can take about six to eight weeks. Shiitake can take a few months.
- There are also different cultivation methods for different strains. Log cultivation is often used in Japan, Taiwan, and China. Bag cultivation requires growing mushrooms in polypropylene bags. Each method of cultivation comes with benefits and disadvantages.
- 00:23:43 When you do transfers from one medium or substrate to another, it's best to do it in a sterile space. Before putting the culture on it, you must first sterilize the grain spawn in a pressure cooker or autoclave. Two hours at fifteen psi (pounds per square inch) should kill off the other organisms on the grain, providing a clean slate for the mushrooms to grow on. Otherwise, the mushrooms can be contaminated and possibly outcompeted.
- Sterilization is an essential part of growing mushrooms. Thus, it's critical to have a lab or clean space where you can sterilize and use a still air box or laminar flow hood to move mycelium from a petri dish to a bag of spawn grain without any particle contamination.
- Transferring grain spawn to the bulk substrate is a similar process. You take a handful of the grain spawn, put it into each bag of bulk substrate, seal it, and let it incubate for two weeks before bringing it out into the fruiting chamber.
- 00:26:04 Arthur is growing his mushrooms in bags. The large plastic bag use is one environmental cost of growing mushrooms. Although biodegradable bags do exist, it still takes significant resources to make the bags, and they take up space in the landfill.
- On a small growing scale, there aren't really other viable alternatives. Arthur knows people have tried using buckets, but because mushrooms learn how to break things down and grow into things, buckets are difficult to clean. Most mushrooms in the United States and Asia are grown in bags. Although they produce less plastic waste than conventional farming, it's still something on every mushroom farmer's mind.

- 00:28:55 Arthur goes over the materials, equipment, and facilities needed to cultivate mushrooms. Aside from the bags, you need a fruiting chamber. A lot of mushroom cultivation is done indoors to tightly control the temperature, humidity, and pressure. However, Arthur's fruiting chamber is outdoors.
- His farm is in Pescadero next to the ocean. It's mostly sunny, and the temperature stays around sixty to sixty-five degrees year-round. It's an ideal place to grow mushrooms. In fact, the Campbell's Mushroom Soup mushroom farm used to be there, and they produced something like fifty thousand tonnes of mushrooms a day for their canned mushroom soup.
- Mushroom growing also requires a sterilization or pasteurization unit. He has a one hundred gallon autoclave that was passed down from his grandmother and parents. They imported it from Taiwan in the 1980s, which is pretty rare because of the high import cost. Large-scale producers in the United States have walk-in autoclaves with double doors connected to the lab. Arthur also notes that substrate, cultures, and lab equipment like a still air box or laminar flow hood are needed.
- 00:32:24 Arthur's lab is about twenty feet by twenty feet. The fruiting chamber is twelve by twenty feet. The autoclave and bulk substrate area is about thirty by thirty. The lower amounts of land and water necessary for mushroom farming differentiate mushrooms from other kinds of food farming. All of the water the mushrooms need to grow is added to the bulk substrate bags as they're made. The fruiting chamber or greenhouse must also be misted to maintain the humidity. Mushrooms are a fairly environmentally friendly way to get nutrients and other health benefits.
- 00:34:12 After the grain spawn is put onto the bulk substrate, they're incubated indoors at seventy to eighty degrees Fahrenheit for two weeks (for oyster mushrooms). Once the mushrooms take over the bag, the bulk substrate will turn white from the mycelium of the mushrooms. Once it's fully white, or fully myceliated, they go to the fruiting chambers outdoors. When the fungus senses the drop in temperature, and that there's fresh air through cuts made in the bag, they'll start growing.
- 00:35:28 Arthur is growing around eight or more different types of mushrooms. He's trying to scale back, because it's too much to keep track of and he has limited space. He is growing many different types of oysters, including pink, pearl, golden, and blue king, two strains of shiitake, reishi, Lion's Mane, native oysters, native Bear's Head, shimeji, and maitake.

- 00:37:29 There are many suppliers online that sell culture on plates or as liquid culture. You can also buy from farms and spawn producers or culture yourself from wild mushrooms or ones you find elsewhere. No matter what, you need to start with a good culture and a good strain to ensure that the mushrooms will grow at a faster speed and produce well.
- 00:38:48 Whenever Arthur has a question, he can find information online. It takes a community to help each other and share knowledge. There is so much to know in the field because of the many different variables that exist in the cultivation process.
- He also references books. He says when you can't find an answer, that's the time for you to experiment and share what you learned from that experience. The more experiments done, and the more people who share them, the better it is for mycologists around the world.
- 00:40:48 Arthur has worked with others to do outdoor installations for bioremediation, but he has only grown mushrooms for personal consumption with close friends.
- 00:41:34 Arthur started his own farm, because he was tired of working for other people. Working ecological jobs outdoors is hard work, and he felt like it was time to use his energy to start his own thing. He wanted to create something lasting that he felt good about.
- 00:42:33 Arthur started his farm in the spring of 2020. He began collecting necessary materials and doing research on how to scale his operation. Mushroom farming is very scalable.
- 00:43:45 At the beginning, it was about learning and gaining the confidence to grow at the scale of an operational farm. Because he started the farm with only his own savings, he has been trying to be as resourceful as possible when gathering materials. Every step of the way, he tries to find the best used equipment and materials through websites like Craigslist and Facebook Marketplace.
- 00:46:33 Arthur is growing in Pescadero, California, at a place called The Mushroom Farm. While looking for land to start his farm, he attended a conference and met the Director of Agricultural Development at The Mushroom Farm. They were looking for a mushroom farmer to grow mushrooms there, and some months later, Arthur was able to start moving in. After sitting in a field in San Martin for about thirty years, they moved the autoclave to Arthur's new farm. Even now, Arthur is still gathering materials and equipment.

- 00:51:10 Arthur wants to include education and outdoor experimental growing projects at his farm. One of his favorite parts of mycology is performing experiments and learning new things, so having a demonstration/educational piece on the farm is important. He hopes he gets to the point where more of his time is dedicated to trying things out and pushing the field further.
- 00:52:44 There are a lot of different ways to capitalize on mushroom farming. Not only can you sell the fruiting bodies, but you can also sell every part of cultivation up to that point (liquid cultures, grain spawn, pre-made kits for people to grow their own mushrooms at home).
- Right now, he is testing out his capacity. He thinks he wants to focus on medicinals. There is a lot of room to grow in the medicinal field, and there are many different products one can make. Mushrooms have many medicinal properties, and to be able to get that out to people would make him feel good.
- 00:54:42 Some mushroom companies will make medicinal products using myceliated grain. They dry it, powder it, and put it in capsules or make tinctures. Arthur prefers to fruit the mushrooms and use the dried fruiting bodies to make medicine. The fruiting bodies accumulate healthful compounds that people want, while the capsules or powders made from myceliated grain are mostly made of grain. To produce medicine in the best way possible, he wants to grow out and use the fruiting bodies.
- 00:56:23 Arthur wants to sell his medicinal products at local health food stores and online. He plans to sell his fresh mushrooms mostly to local Santa Cruz residents who order from his website and pick up at the local farmers market. He doesn't have a refrigerator, so he's currently looking to find one. Overall, he's still trying to figure out what his limits are.
- 00:58:10 Currently, he does bulk sterilization on Fridays and inoculation on Mondays. The autoclave holds about eighty-six bags (one bag makes one to two pounds of mushrooms). That's around one hundred pounds of mushrooms per week.
- He is hoping to have a schedule where he can make a batch every week and use the rest of the time to do everything else (make products, dry fruiting bodies, process, make tinctures, do lab work).
- 00:59:29 In the future, Arthur would like to hire employees. There are already people who have volunteered with him and would like to work for him, but at this stage, he isn't ready to add that component to his business. In addition, because Pescadero

is somewhat isolated, it would be a commitment for employees to drive there from surrounding locations.

- 1:00:56 Arthur is interested in plugging into communities that are focused on environmental cleanup and sustainable food production. He works on projects with the nonprofit organization CoRenewal, which does mycoremediation and bioremediation work domestically and internationally. After the fires in the Santa Cruz mountains last year, CoRenewal organized work groups for people to leave mycelium in the area to break down debris and capture toxic waste. There are also many local farms around Arthur that are dedicated to farming and growing food in sustainable ways.
- 1:03:45 Arthur says there are many fungophiles in Santa Cruz. There is a regular fungus fair, other fungus farms in the area, and home mycologists. Many people in the cannabis industry also grow mushrooms to build soil. The decriminalization of magic mushrooms has led people to grow for that purpose as well.
- 1:05:23 Within the mushroom community, Arthur hopes to be a provider of medicinal mushrooms, equipment, and knowledge. Eventually, he would like to start making videos to share his knowledge. People have very different methods of cultivation, so the more experiences and teachers available, the better. He hopes it will give people the confidence to start, try new things, and hopefully become teachers themselves.
- 1:07:23 As an Asian American growing mushrooms, it feels like Arthur fits in for the first time in his life. People have been growing mushrooms in China and Japan for centuries, because they valued mushrooms as a society much sooner than western culture. Since they have already invested heavily in mushroom farming and associated technologies, a lot of people from the United States go back to Asia to learn about the newest technologies. Arthur says he would love to go on a mushroom farm tour of Asia.
- In the past decade, mushroom farming has become a thing here in the United States. Most people were growing button mushrooms and portobellos, but no one was growing specialty mushrooms like oysters, king oysters, or maitake. The internet has allowed people to discover these things and learn how to grow them.
- He feels a special connection to growing mushrooms, in part because his parents and grandmother were also mushroom farmers. His mom studied fermentation at university, and she and his grandmother were two amazing scientists doing microbiology way before fermentation became cool. For Arthur, it feels like the right thing to do, and it lets him connect with his heritage, too.

- 1:10:52 Most of his life, his parents have been fine with what he does, as long as he does it well. They wanted him to do something well that made sense financially and allowed him to be healthy and happy. He feels lucky to have parents who have supported him in that way.
- A lot of immigrants come to the United States and do hard work in hopes that their child doesn't have to. He gets that sentiment too, but farming mushrooms makes him happy, and he feels there's a lot of room to grow.
- 1:12:46 As a kid, Arthur says he was naive. All he wanted to do was play video games, have the newest toys, and live like his white friends did in suburbia. Why didn't his family have two stories, a minivan, and a room dedicated to toys?
- Now, he looks back and sees it as a unique experience that has helped him develop into who he is today. It's important for other Asian Americans to see that there are alternative ways of being than just what is portrayed in the media. He wants to be the inspiration for another Asian American kid to start farming.
- 1:14:25 There's a lot of social awareness around nonwhite farmers who have been historically marginalized taking up farming now. They are using a mix of traditional knowledge and western technological advancements to do great things. Arthur isn't personally profiting off of that idea. Chinese people aren't throwing their money at him because he's Chinese. However, he's not shying away from the fact that he's an Asian American farmer, because it's part of the story of the farm and who he is. He hopes it inspires future generations to see that their culture can farm and do things other than what's portrayed in the media.
- 1:16:22 As Arthur goes into his first full year of farming, the biggest thing on his mind is scheduling. He's still trying to figure out what kind of products he wants to sell and how he wants to package them. He has to order products, get them designed, and get them out into the market in different ways. There is a lot of logistical scheduling required, which isn't his strong suit.
- 1:17:52 Longer term, Arthur is shifting his focus to mycomedicinals with some edible mushrooms. He hopes to be a local, organic mycomedicinal provider for other people making products, as well as selling directly to consumers. He notes that there is also room to grow in the psychedelic mushroom market, as Oakland and Santa Cruz decriminalized them recently.
- 1:20:15 Arthur would like to see more small and local farms. He would also like consumers to be more aware of where their food is coming from. As mushroom farming explodes across the country, in large part due to the internet, there will be more small growers like him in the future. It's up to consumers to support these

businesses. Even though it might cost a little more, you're doing society and the environment a favor.

1:22:10 Arthur gives advice to other people of color who are trying to get into farming. If you feel like it's the right thing to do for you, do it. There are many challenges involved, and you will have to learn your limitations. At the beginning, Arthur thought he could do everything. He's learning now that he has to scale down a bit.

If you're interested in farming, don't let the fact that you're a person of color dissuade you at all. There's a lot of support nowadays for people of color in farming. That works to your benefit. Go for it. It's rewarding. It might not make you rich, but you feel good about what you're doing; you're bringing home healthy food to your family, and you're feeding the world in a sustainable way.

1:25:08 End of interview