

ENVIRONMENT

'Grow it if we can': Aquaponics pioneer reimagines food in victory gardens, 'edible landscapes'

Erin Stone Arizona Republic

Published 6:45 a.m. MT Aug. 10, 2020 | Updated 9:34 a.m. MT Aug. 10, 2020

Since he was a boy, George Brooks Jr. has had a propensity for supporting life in surprising places.

Every summer, his father took the family to Southern California, where Brooks learned to swim in the Pacific Ocean. They went fishing and walked in the tide pools, where the young Brooks collected sea creatures — a fish, a sea star — and took them home to Phoenix, where he'd keep them as pets in a tank.

Brooks' mother noticed her son's talent for nurturing aquatic life early on. When he went to college, she suggested he try to make a profession out of it: He could grow fish for a living.

That laid the foundation for a career of working in and experimenting with aquaculture, the process of breeding, raising and harvesting fish in marine or freshwater farms. Over the decades, Brooks developed a way to bring the science of aquaculture and hydroponics — a method of growing plants without soil — into backyards in the middle of the city.

Today, he is a leading aquaponics researcher and holds a Ph.D. in wildlife and fisheries from the University of Arizona. He sees aquaponics as a way to not only address the needs of underserved communities, but to reimagine the food system at a time when even getting the basics at the grocery store is no longer a given.

Reimagining the system

On a recent summer afternoon, Brooks and his longtime friend Ed Mendoza installed water filters in tanks in a 2-foot-deep pond they had built in Mendoza's backyard on the Salt River Pima-Maricopa Indian Community.

The pond is an experiment the two had been working on for a few weeks to create an aquaponics garden that can grow fruits and vegetables, along with tilapia and catfish for food. It's the pairing of the two that helps make the system work: The waste from the fish fertilizes the produce growing in rafts on the water's surface.

Once the air filters were in, the men plopped goldfish into the tanks to start a process called cycling, which helps establish the bacteria needed to condition the water for growing. Just a few weeks earlier, Brooks had reached an important milestone in his own backyard aquaponics garden: He'd succeeded in growing more than 200 pounds of food in a 100-square-foot space. His goal is to reach 400 pounds by November.

He calls the concept an aquaponics victory garden, a name going back to World Wars I and II when, amidst national food shortages, Americans were encouraged to plant in every patch of available soil, from their backyards to public parks. It was estimated that at one point the "war gardens," later dubbed "victory gardens," produced about 40% of the nation's fresh vegetables.

"The whole idea was that you wanted to grow food locally so that the big farmers could focus more on feeding the troops," Brooks said. "And, amazingly, it worked."

That idea particularly resonates today as trips to the grocery store become fraught with fears of coronavirus exposure and Americans are increasingly concerned about the pandemic's strain on the industrial food supply chain.

Those fears are only exacerbated in areas that already have limited food access. South Phoenix, once a thriving agricultural area, is now largely a food desert, an area that has limited access to affordable and nutritious food.

"South Phoenix is a very vibrant area, but because of the institutional racism of the past, it still has that legacy that many people who are here do not have access to healthy food," Brooks said. "So the idea here is to activate backyards. We must be sustainable so that everyone can live and prosper. If a child can't eat, a child can't learn."

'To be equitable for citizens'

Brooks started his career at the University of Arizona as the school's first aquaculture extension specialist. He helped farmers around the state incorporate fish farming at an industrial-size scale.

But as someone who had been born and raised in south Phoenix during the civil rights era, Brooks witnessed firsthand the inequities plaguing his community, especially when it came to healthy food access. As the area increasingly urbanized by way of racist policies that kept land values low and allowed polluting industry to move in, Brooks wanted to find a way to bring his scientific expertise back home.

Today, Brooks is once again watching his neighborhood change as developers buy land cheaply to build luxury homes and apartments. As a vice chairperson of the Phoenix General Plan Committee and member of the South Mountain Village Planning Committee in 2014 and 2015, Brooks was instrumental in ensuring the city incorporated healthy food system goals within its broader development goals.

“This is the first time our general plan has ever had that kind of a goal,” said Rosanne Albright, the city’s environmental programs coordinator and lead author for the 2025 Food Action Plan. “We really had not had any kind of programs primarily focused on the food system.”

The focus on healthy food systems was further solidified in 2016 when the city’s 2050 Environmental Sustainability Goals were approved by the City Council. In 2018, the city developed a 2025 Food Action Plan, which includes a specific plan for south Phoenix, in part due to Brooks’ advocacy.

“He really got folks to look at expanding the idea that a general plan is not just about how things get developed, but it's part of a holistic community in that you're looking at the three pillars of sustainability: economic, environment, and community,” Albright said.

“He brought that lens and also reminded everyone that we're doing this not to be equal, but to be equitable for citizens all across the city.”

Brooks would like to see an economic system grow up around locally grown food. He emphasizes that each aspect of the food system is an economic opportunity.

“It's the lack of flexibility that is the real problem with environmental racism and environmental equity issues,” Brooks said. “If people can be provided with some additional ways to bring in income, it gives you more flexibility. You can buy health insurance, you can buy a diaper for the kid, you can buy an iPad when that child right now needs to do distance learning.”

Brooks owns an agtech company called NxT Horizon that focuses on affordable urban aquaponics. At Mesa Community College he teaches a course about aquaponics, showing

students how to grow their own tilapia, vegetables, fruit, and freshwater prawns in backyard ponds often made from kiddie pools.

“This is one opportunity that you have in your own backyard,” Brooks said. “If I can have this thing sitting in my backyard that can provide protein for my family, as well as an exportable product, it creates a really interesting economic model. That's what we need for urban areas: a really powerful economic model that works. The food hub and the co-op are good foundations, but now we have to reimagine them to work with aquaponics.”

Action rooted in lived experience

Brooks' vision is firmly rooted in his upbringing and family history. His father was George B. Brooks Sr., a prominent pastor and civil rights leader in Phoenix during the 1950s and '60s. His mother, Lula, was a biology teacher and medical researcher who was the first scientist to successfully breed Valley fever fungus in a lab.

For Brooks, science and faith have never been at odds. In fact, he sees the fields as well matched as his parents.

“Between the entrepreneurial preacher and the hidden figures scientist, they created me and my sister,” Brooks said. “It is a tradition within the African American church that the son takes over from the father. Even now I get the question, why aren't you pastoring? I've always had the answer: My pulpit is elsewhere. The Bible tells us what God did, science tells us how.”

On his mother's side, Brooks' family came west by way of train; his grandfather was a Pullman porter, a dining car steward. The porters were highly respected in the Black community and many accumulated enough wealth in the post-Civil War years to help lay the groundwork for the African American middle class.

Brooks' grandfather was able to buy a farm in south Phoenix, not too far from where Brooks lives today. Now, streets mark the edges of what used to be a grid of farm fields.

Brooks' father came to Phoenix in 1954, when he established Arizona's first African American Presbyterian Church: Southminster Presbyterian. As his congregation grew along with the civil rights movement, Brooks Sr. became a leader in campaigning for change in Arizona.

“He had an entrepreneur viewpoint of ministry, that it wasn't simply a matter of preaching the gospel,” Brooks said.

Brooks Sr. served as the president of the NAACP in Phoenix and worked closely with Lincoln Ragsdale, another influential civil rights leader in Arizona.

Together, they organized marches and sit-ins around Phoenix, advocating for, among many things, integration in workplaces and schools.

“Much of what he did came from the Bible verse ‘Faith without works is dead,’” Brooks recalled. “He looked around and saw that in the year 1960, there was still a need. He had the viewpoint, ‘Here’s my community, what can I do to help?’ That same kind of attitude in that ‘How can I do science to support my community,’ is something that I carried from him. I inherited that viewpoint.”

A paradigm shift

Brooks and his wife, Angela, often take long drives around the city, from South Mountain to Camelback. They look out over Phoenix, noticing how it’s changed, how it could change further. They envision a world where urban farms and victory gardens are fixtures of every community.

“We used to drive around various neighborhoods and say, ‘See, that could be a garden, that could be a source for people that no one’s utilizing,’” Angela said. “Whether it’s an upscale neighborhood or not-so-upscale neighborhood — trying to give people a paradigm shift of what they can do with the money that they have or don’t have. A paradigm shift in thinking, a paradigm shift in living, a paradigm shift about community.”

Angela, a University of Arizona-certified master gardener and self-dubbed serial entrepreneur with multiple businesses, from an urban farm to home care agency, always had the mindset of growing as much of her own food as possible. She manages their in-soil garden, while Brooks manages the aquaponics garden.

Their house is a living example of what Angela calls an “edible landscape.” Basil, thyme, rosemary, sage and other herbs line the walkway to the front door. The backyard has a variety of fruit trees, from pomegranate to plum to apple. There’s too much produce growing to name: tomatoes, squash, melons, cucumbers, blackberries and Swiss chard are just a few. One day the couple hopes to grow catfish, clams and eventually giant freshwater prawns in Brooks’ Aquaponics Victory Garden.

“My goal has always been: Whatever we like to eat in the store, grow it if we can,” Angela said. For them, their home is a living, breathing place that exemplifies their vision of

sustainability, self-sufficiency, financial freedom and equity.

“Four hundred years ago, we had an economic system that was based upon slavery. These societal norms were ingrained and hard to get past, but now the nation is changing,” Brooks said. “Eventually, the need for protest will end and the construction of something new must begin. We can create a society that is economically and socially sustainable. We can create a nation, a world, where anyone can prosper, beginning, in my case, with food.”

WATCH: Learn more about Aquaponics Victory Gardens or join the Facebook group.

Erin Stone covers the environment for The Arizona Republic and azcentral.com. Send her story tips and ideas at erin.stone@arizonarepublic.com and follow her on Twitter @Erstone7.

Environmental coverage on azcentral.com and in The Arizona Republic is supported by a grant from the Nina Mason Pulliam Charitable Trust. Follow The Republic environmental reporting team at environment.azcentral.com and @azcenvironment on Facebook, Twitter and Instagram.