UF/IFAS CITRUS STATE

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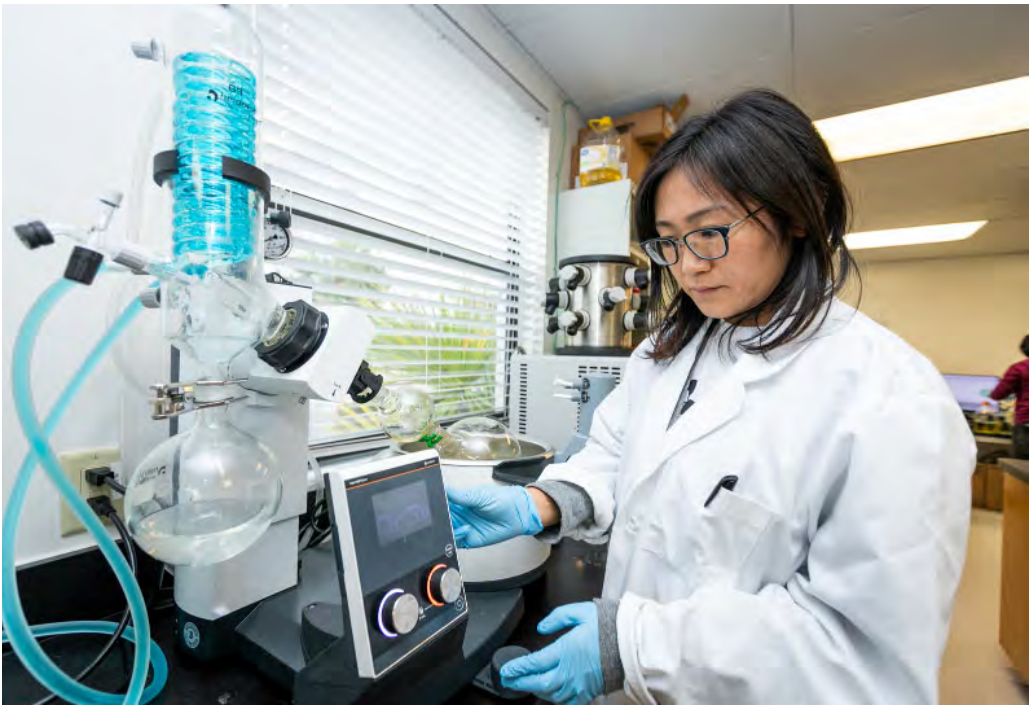


Yu Wang's research focus is on citrus flavor.

Searching for sweet solutions

Just as HLB can affect fruit flavor, so can our numerous innovations to manage HLB. Yu Wang works to make sure our solutions are sweet.

When the University of Florida Institute of Food and Agricultural Sciences (UF/IFAS) hired her as a flavor chemist seven years ago, Wang worked primarily with breeders. Her objective was pretty straightforward — make sure consumers liked the taste of the new varieties before thousands of new trees went into the ground.

COLLABORATION WITH COLLEAGUES

Today, Wang works increasingly with the scientists who work with the trees you already have. She is an expert in how a change in the grove might trigger a change in the glass.

For example, Wang collaborates with Davie Kadyampakeni. As he improves how you irrigate to manage HLB, Wang looks for any resulting change, or perception of change, in flavor. She and Tripti Vashisth have talked about the need to validate the flavor of fruit treated with gibberellic acid. Wang and Fernando Alferez have crafted a funding proposal to evaluate the effects of brassinosteroids on flavor, pigment, nutritional value and consumer acceptance of citrus varieties.

As the UF/IFAS scientific campaign against HLB has expanded and evolved, so, too, has Wang's profile. Her increasing workload is good news. It means that there are more production solutions to subject to taste tests.

FULLY FUNDED

Wang was a one-woman lab when she showed up. That is, if you consider a vacant room a lab. She got to work quickly and has earned funding from the U.S. Department of Agriculture's (USDA) National Institute of Food and Agriculture, USDA's Multi-Agency Coordination Group, the Citrus Research and Development Foundation and the state-funded UF/IFAS Citrus Initiative.

Wang's work is also supported by an endowment, the Tropicana Professorship for Florida Citrus Innovation.

She has invested some of the agency funds in a team of 10 biological scientists, post-docs and graduate students.

Even that understates Wang's reach across UF/IFAS. Through funding Wang secured, UF/IFAS Food Science and Human Nutrition Professor Renee Goodrich was able to put master's student Stephanie Hricik to work on citrus flavor.

In May, we recognized Hricik with the 2022 UF/IFAS Award of Excellence for Graduate Student Research in Human Systems for her work on consumer perception of citrus flavor created through a blend of Sugar Belle® and traditional varieties. The goal was to explore experimental juice flavors that consumers like as much as commercially available products but are created using hybrid fruit that is more tolerant of greening.

BEYOND BRIX

It's part of Wang's work to contribute to a new OJ flavor that consumers prefer over the traditional taste. Her focus expands beyond Brix and acid to encompass many other scents and tastes.

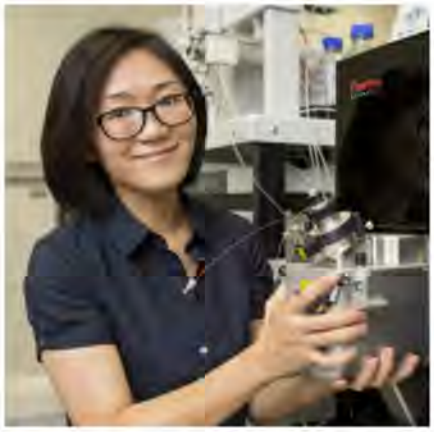
And that vacant room? Wang has filled it with mass spectrometry and other technology.

The latest tool she's brought to the search for sweet is artificial intelligence (AI). Wang, backed by UF's investment in AI and a supercomputer, is one of the reasons AI will revolutionize agriculture. In this case, it will accelerate and make more precise Wang's inquiry into the chemistry of citrus sweetness.

What's more impressive than what's

gone into Wang's lab is what's coming out of it. It's the very future of flavor.

Wang believes that consumer preferences will continue changing as a result of the pandemic and as new generations seek new flavors. She sees big corporations concocting flavors aimed at specific demographics.



Wang

The upshot is, you'll get paid by more than Brix content. Juice will be valued for the ratio of various compounds, Wang says, but identifying those components of juice and finding the right blend is complex.

Wang herself represents great hope for future advances. She is believed to be the first assistant professor in the history of the Division of Agricultural and Food Chemistry of the American Chemical Society to be named a fellow. She has also been honored with the UF/IFAS Outstanding New Faculty Award.

She's on a two-track approach — solutions now and for the future. The now is figuring out what to do with what you have — what blends of currently available fruit produce the best tasting juice. The challenge is finding a blend that can be called orange juice. She looks for the right combination of volatiles and compounds to produce the sweet without the sugar.

In the long run, Wang's flavor chemistry can inform breeders to produce HLB-tolerant fruit with great flavor. She's also exploring uses for citrus peel oil in food flavoring. For you, that could mean a future of flavor beyond juice.

J. Scott Angle is the University of Florida's senior vice president for agriculture and natural resources and leader of UF/IFAS.

Program Needed to Protect Citrus Land

By Rick Dantzler, CRDF chief operating officer

One of my great professional honors was being appointed by President Obama to help lead the Farm Service Agency (FSA) during his second term. FSA is an agency within the U.S. Department of Agriculture that runs programs in four policy areas: price support, disaster relief, farm loans and conservation. These programs are outlined in the federal farm bill, last authorized in 2018.

I have been reflecting on those years and how FSA compensates farmers, especially the Conservation Reserve Program (CRP). Initially created to reduce "sod busting" in the Great Plains of the Midwest, farmers are paid a yearly rental payment for keeping environmentally sensitive land out of production and planting species that will improve environmental health and quality. Contracts are for 10 to 15 years in length and have the long-term goal of improving water quality, preventing soil erosion and reducing loss of wildlife habitat.

Think now of citrus groves and where they are located. Citrus trees do not like wet feet, so they are on dry land, including sand hills, which are critically important for water filtration and aquifer recharge. What are these lands also good for? Development, and we are losing tens of thousands of acres of ag land — especially groves — every year as it converts to housing and other uses that create non-pervious surfaces. Many grove owners don't want to sell, but HLB has put them in a box, and they see no other way out.

Rightfully, government goes to great length to protect wetlands because they are critical habitats for flora and fauna. They also filter water, but in the aggregate, I suspect that more water filtration and aquifer recharge take place on uplands than wetlands. So, when ag lands, especially those on sand hills, convert to other uses, we lose not just the agriculture but water filtration and aquifer recharge functions, something equally threatening to our state's long-term wellbeing.

Where am I going with this? The farm bill runs in five-year increments and is up for renewal in 2023. What if the CRP portion of the statute was tweaked to allow payments to farmers who own high-quality water filtration and aquifer recharge land in exchange for agreeing not to sell for a negotiated period? FSA knows how to administer programs such as this, and many citrus growers are already enrolled with FSA for other programs. Amending the CRP program to include lands that provide aquifer recharge could provide just enough support for growers to hold onto their land and get back into citrus when economic conditions improve.

Therapies are on the way that will help citrus production, but many growers are out of time. Let us find a way to help them keep their land and replant when we have HLB behind us once and for all. Not only will we have saved the land from development, but we will have preserved critical water filtration and aquifer recharge in the process.

CRDF Grower Dollars at work for you

Column sponsored by the Citrus Research and Development Foundation