

Texas A&M University-Kingsville

Citrus Center Highlights

FY 2018-2019



Message from the Director



John da Graca
Director

This past citrus season had some unusual characteristics, with a heavy fruit set, but a general lack of good fruit size across the Valley possibly as a result of the heavy June rains and consequential orchard flooding. This resulted in lower than expected returns, and significant tons of fruit not harvested. On another front, the Citrus Center anxiously watched the Texas legislative session as it considered the university's line item request. Thanks to our stakeholders submitting a rider to restore funding, the legislature approved both the request and the rider, which, while still presenting a challenge to meeting our needs, it provided relief, and we thank the industry for your support.

At the end of 2018, we said goodbye to Dr. Steven Tallant, who retired as TAMUK president. He was a strong supporter of the Center, and the news that Dr. Mark Hussey was selected as his successor was great news. His knowledge of the Lower Rower Grande Valley, agriculture, the A&M System and the legislative process, instills confidence that under his leadership, the Citrus Center will be in a good position down the road.

The faculty at the Center were again very successful in their grant writing efforts, securing \$3.7 million for the second year in a row. You can read about their activities in this Highlights publication.

Sadly, our colleague Catherine Simpson resigned at the end of August to take up an endowed position at Texas Tech. She achieved much during her short time with us, and while we will miss her, we wish her great success in her new endeavors. Some projects she began here will continue for the immediate future.

Another development during the past year was designating Dr. Mamoudou Sétamou as the Assistant Director of the Citrus Center. He has been given responsibility for coordinating research activities of the faculty, as well as overseeing orchard care. During the coming year, he will become more involved in center administration to ensure a smooth succession as I plan my own future.

We are again most grateful for the continued support from the citrus growers, packing shed and nurseries.

A handwritten signature in black ink that reads "John da Graca".

Message from the Editor



Dr. Madhurababu Kunta
Editor

It is quite a thrill to take my place as the new editor of the TAMUK Citrus Center Highlights magazine. My colleague, Dr. Catherine Simpson, did a phenomenal job as the preceding editor for last two issues of the 'Citrus Center Highlights' that received overwhelmingly positive responses. As with the previous issues, this magazine brings exciting updates on our research, student, staff and faculty accomplishments, and information on the events that we hosted throughout the year.

Citrus Center employees and students have a deep appreciation for the support that we have received from the growers during 2018-19 fiscal year. We are committed to grower-centered research efforts with an aim of sustainable production for Texas citrus industry. These efforts are facilitated and enriched by our collaboration with the growers.

A great big THANK YOU goes out to our growers and our sponsors for the magazine. We could not do it without you.

A handwritten signature in black ink that reads "K. Madhura Babu".

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Our special thanks to all our sponsors and to all who submitted photos and information. This publication would not have been possible without the cooperation of everyone.

Graphic Design and Editorial Production by Alex Blinder, Rod Santa Ana, RGV1.com



Dr. Shad Nelson
Dean

A Message from Dr. Shad Nelson, Dean of the Dick & Mary Lewis Kleberg College of Agriculture & Natural Resources (AGNR)

"We deliver excellent programs in agriculture and natural resources founded upon experiential learning that develop critical thinking and leadership skills. Through applied research, outreach and service, we improve the well-being of stakeholders."

Texas A&M University-Kingsville is home to the only agriculture-central college south of College Station, and is committed to serving the citrus producers of South Texas. The Kleberg College of Agriculture and Natural Resources prides itself on its long history of applied research and student training through hands-on, experiential learning techniques. This approach to learning is accomplished in tandem with the collaborations established with stakeholders and producers that provide access to their private lands as a training ground for student exploration and skills development. Long-standing academic programs of excellence provide the grounds for unique training opportunities to students that become critical thinkers and develop leadership skills training due to a combination of indoor campus facilities coupled with an outdoor laboratory environment.

After 18 years of working with faculty and citrus growers across South Texas, I know just how unique a place the TAMUK Citrus Center is and its importance at fulfilling our college mission. The great opportunity that both undergraduate and graduate students have to perform top-notch research in an outdoor laboratory among faculty committed at making impacts to preserve a precious commodity like Rio Red grapefruit is exciting to see in action. Producers...your engagement with us truly makes TAMUK, the Citrus Center and the Valley a wonderful place. Cheers to all those engaged in this great cause of preserving Valley citrus and agriculture!

A handwritten signature in purple ink, appearing to read 'Shad Nelson', written in a cursive, flowing style.



TEXAS CITRUS MUTUAL

A Message From Dale Murden, Texas Citrus Mutual President



My grandfather taught me that no two years are ever alike in agriculture. Never have those words rang any truer than our last two seasons.

If you can, remember back to the 2017-2018 season for a minute. Quality, grade and size were exceptional for most growers. The industry packed over 13 million cartons and picked almost 267,000 total tons of fruit. The industry average pack-outs for total fruit was at 64% fresh fruit in a box.

Now let's jump into the 2018-2019 season and we found a rather harsh growing season. Extreme heat and drought, followed by June flooding then back to high heat and drought. The surprise for most was the size of the overall crop at 342,360 total tons, or an increase of almost 76,000 tons! And industry packed out over 17 million total cartons, or a 4 million carton increase!

That was the good news...unfortunately the bad news was that our pack-outs suffered greatly, due mainly to smaller sizes overall. For the first time in at least the last twenty years, industry sent more fruit to the juice plant than we were able to ship out fresh.

All however is not lost! Let's now get up to what our current 2019-2020 crop looks like. Most reports indicate that once again we are back to good sizes and quality, so here is hoping for a repeat of that 17-18 season once again.

I am happy to be attending the 4th Annual Texas A&M Kingsville Citrus Center Appreciation event. Industry has come to look forward to this annual get together, and it gives us all a chance to show our appreciation to the scientists for all they do to help the industry. The impact these individuals make, and are making on our industry cannot be overstated.

I was pleased to be a part of a legislative effort this session to restore some funding to the center that was lost a few sessions ago. I had the opportunity to spend time with new President, Dr. Mark Hussey, in Austin while we fought for you our scientists and growers. I am very pleased that Dr. Hussey is as passionate about agriculture as I am and look forward to many years ahead.

So thank you all once again for hosting a great event and helping keep the Texas Citrus Industry a viable part of the Texas economy.

Appreciation Dinner



Don Grossman



Earl Neuhaus



Fred Karle

Citrus Legend plaques presented to Earl Neuhaus, Don Grossman and Dr. Victor French by Drs. Nelson and da Graça. The fourth awardee, Fred Karle, was not able to attend, and received his plaque later at Texas Citrus Mutual.



Victor French



In February, the Citrus Center hosted the fourth Citrus Winter Festival, in cooperation with the Texas Pest & Disease Management Corporation. Despite the cloudy, cool and damp weather, homeowners visited the event to learn about citrus health, tree care, pests and diseases. In addition to the Citrus Center having booths of our various activities, the Texas Department of Agriculture was present to inform homeowners of their regulations to ensure that the commercial citrus is not negatively impacted by residential citrus. A local TDA-certified nursery was present to take tree orders.

In addition to tasting different varieties, and winning gift fruit packages, the public saw a demonstration of how to plant a new tree.

The newly crowned Queen Citronella, from the City of Mission Citrus Fiesta, Victoria Silva, also attended the Festival. The LRGV now has its own Queen Victoria!

Citrus Center Winter Festival





Faculty and Student Awards



Dr. Mamoudou Sétamou received the Senior Research Award at the annual College Awards Banquet



Dr. Madhurababu Kunta, President of the Subtropical Agriculture & Environments with the Graduate Student Poster winners: Left to Right 3rd place - Cecilia Villegas (TAMUK Citrus Center), 1st place Cristina Raya (IPN, Reynosa), 2nd place Victoria Mora (TAMUK Citrus Center)



Dr. Catherine Simpson received the Junior Research Award at the annual College Awards Banquet



Charles Schwartz, President of the Texas A&M University System Board of Regents, presents the Emeritus Professor plaque to Dr. Mani Skaria, with TAMUK President Dr. Tallant looking on (December 2018)

New Students



Pramod Gudipally — Dr. Kunta



Tirumala Danda — Dr. Kunta



Olivia Segura — Dr. Louzada



Miriam Calderon — Dr. Ancona



Sonia Munoz — Dr. Setamou



Jennifer Parra — Dr. Kunta



Raelene Mendez — Dr. Ancona



Yovanna Soto — Dr. Setamou

Recent Graduates



Kari Skalitsky – MS May 2019
“Strengthening the Mexican fruit fly, *Anastrepha ludens* (Loew) (Diptera: Tephritidae), eradication program with the use of attract-and-kill devices”
Chair – Dr. Setamou



Blanca Garza – MS May 2019
“Quantifying citrus tree health and disease management progression using true color UAS images.”
Chair – Dr. Simpson



Bhargavi Kundura – MS May 2019 Coursework masters.
Chair – Dr. Setamou



Matthew Rodriguez – MS December 2018
Coursework masters.
Dr. Greta Schuster (chair) and Dr. Ancona (co-chair)



Stephanie Bernal-Jimenez – May 2019
“Development of recombinase technology to produce consumer-friendly transgenic citrus plants.”
Chair – Dr. Louzada



Shima Chaudhary - PhD December 2018. “Incidence, distribution and epidemiology of *Phytophthora* diseases of citrus in South Texas and their interaction with Huanglongbing” Chair – Dr. Kevin Crosby (Chair) and Dr. da Graca (co-chair)



Erika Ramos MS 2019 “Susceptibility of commercial cotton *Gossypium hirsutum* to bacterial blight *Xanthomonas campestris* pv. *malvacearum* (XCM). Dr. Schuster(chair)/ Dr. Ancona (co-chair)



NagaRajitha Kavuri August 2019 “Optimization of recombinase mediated marker excision in citrus protoplasts”
Chair – Dr. Louzada



Julissa Rodriguez – MS December 2018. “Sunburn in citrus: Assessing physiological impacts and mitigating treatments”
Chair – Dr. Simpson



Emma Perez – MS August 2019
“Citrus canker in Texas and its current situation”
Chair – Dr. da Graca

George (Jim) Thomas III – MS August 2019 “Impact of grove floor management and irrigation practices on citrus root distribution”
Chair – Dr. Simpson

Legend Bios



Dr. Julian Sauls

Dr. Julian Sauls was born in Mississippi, but the family later moved to Louisiana where he graduated from high school, and then obtained his BS and MS degrees from Louisiana State University. He then went to the University of Florida where he obtained his PhD in horticulture. For the next 2 years he worked in Honduras and Mexico, and then joined the Texas Extension Service in Fort Worth in 1973. In 1975, he moved back to Florida to work for the Florida Extension Service, later returning to Texas Extension as Horticulture Specialist in Weslaco.

During his time in Extension, he developed and coordinated the extension citrus education program in cooperation with county extension personnel, citrus growers, industry representatives and research scientists. In 1997 he created an extension website for citrus and subtropical fruit, which included a section devoted to the Texas Citrus Fiesta Youth Show. He also wrote a monthly newsletter.

Julian was an active member of the Rio Grande Valley Horticulture Society, and was honored with the Arthur T. Potts Award by the Society in 2006. He retired from the Texas Extension Service in 2011. Since then he has concentrated on his citrus orchards in La Feria, and has served as Secretary and President of the Edinburg Citrus Association Board. He serves as a member of the Technical Advisory Committee of the Texas Pest & Disease Management Corporation, and maintains close connections with faculty at the Citrus Center. Julian and his wife Sandy have their home in Weslaco, where they raised their son and daughter.



Jim Hoffmann

Jim Hoffmann was born in 1939 in the Lower Rio Grande Valley, the son of JC and Velma Hoffmann of Sharyland TX. After he graduated from high school in Edinburg he attended Texas A&M University, and served in the reserve for 6 months. In 1964, he was hired by Tide Products, working in the fertilizer division. After Tide was purchased by Wilbur-Ellis, he continued to work there for 34 years, retiring in 1998.

In 1964, he married Millie, and inherited two sons, Mike and Chris, and now have five grandchildren. Since retiring, Jim has devoted his time to the citrus industry, following the family tradition. He is a long serving member of the Edinburg Citrus Association Board of Directors, serving as President and Secretary. He is also a member of the TAMUK Citrus Center Advisory Committee, of which he has also been Chairman, serves on the Hidalgo Irrigation District 13 Board, and the Texas Citrus Producers Board. He has generously opened his orchards to Citrus Center scientists for cooperative research. In 2018, he received the TCM Special Award.



Dr. Catherine Simpson

UAVs To Monitor Tree Health and Diseases

Catherine Simpson, Blanca Garza, Veronica Ancona, Humberto Perotto, Madhurababu Kunta and Juan Enciso

In recent years Unmanned Aerial Vehicles (drones, UAVs) have become an increasingly valuable tool in crop production. They allow for timely and less labor intensive evaluation of crops and any issues related to production. These UAVs range from large fixed wing models to small commercially available rotary wing models (Figure 1). Cameras can also vary, with more expensive cameras that measure non-visible spectra to common, inexpensive red-green-blue (RGB) cameras. These cameras have different capabilities from detecting diseases or stress to measuring greenness or photosynthetic activity of plants. Many

users are detecting diseases through visible symptom expression in the field, or through the use of infrared, thermal, and visible-near infrared cameras mounted on these UAVs. There have been significant breakthroughs in this avenue of research, particularly in the identification of citrus diseases such as citrus greening (HLB). Several researchers have found that they can identify HLB positive trees with over 90% certainty. This is important in timely application of chemical and nutritional therapies as well as in monitoring the spread of the disease. Because this is a developing field, researchers must explore the capabilities of these technologies



Figure 1. Phantom Pro 4 UAV mounted with RGB camera

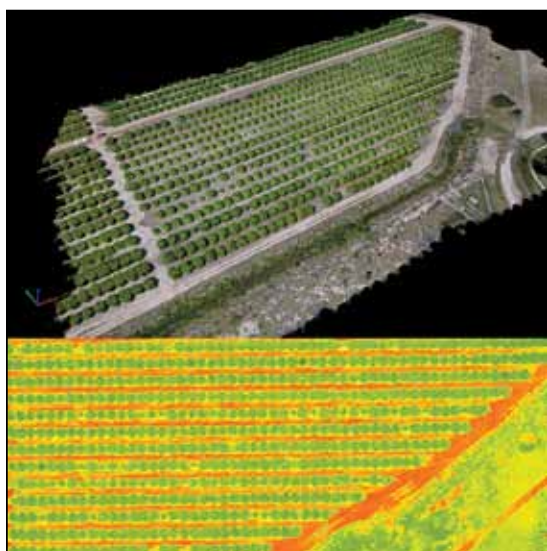


Figure 2. Above: Orthomosaic of images captured by the UAV. Below: Triangular greenness index of the same field.

and determine if they correlate well with field-collected data. In a recent research project, we used commonly available RGB cameras to capture images of a citrus grove infected with HLB and Phytophthora foot rot. We then compared data extracted from these images to data we collected on tree nutritional and disease status to determine if these parameters could be correlated with UAV image data (Figure 2). We found that 61% of the differences between diseases found in the images could be explained by Na, Fe, Ca, and K concentrations in the leaf tissues as well as foot rot infection

rating. This is important because it means that disease impacted trees can be monitored with relatively inexpensive UAV equipment. This technology can also be used to explain subtle differences in tree health that may be caused by multiple diseases. These findings provide preliminary insights into how we can use UAVs as a tool for monitoring tree health as well as quantifying disease impacts on groves. More research is needed to fully explain how diseases are measured and explained using this method, but it holds great promise for the future.



Dr. Veronica Ancona

Slow decline of citrus: Nematode control

David A. Laughlin & Veronica Ancona
Texas A&M University –
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Dr. David Laughlin

The citrus nematode, *Tylenchulus semipenetrans*, Cobb, causes a disease known as citrus slow decline. Slow decline causes leaf chlorosis, dieback and small fruit and can lead to reduced growth and tree vigor. Depending on the level of infection, most studies estimate that yield loss due to *T. semipenetrans* is between 10-30%. The citrus nematode was first reported in the Rio Grande Valley in 1950. Subsequent surveys in the 1970's determined it was present in 90% of the orchards and was responsible for significant economic losses. Although mature trees may tolerate relatively high populations of nematodes before showing visible symptoms, citrus production declines slowly since trees may not respond efficiently to fertilization and water applications.

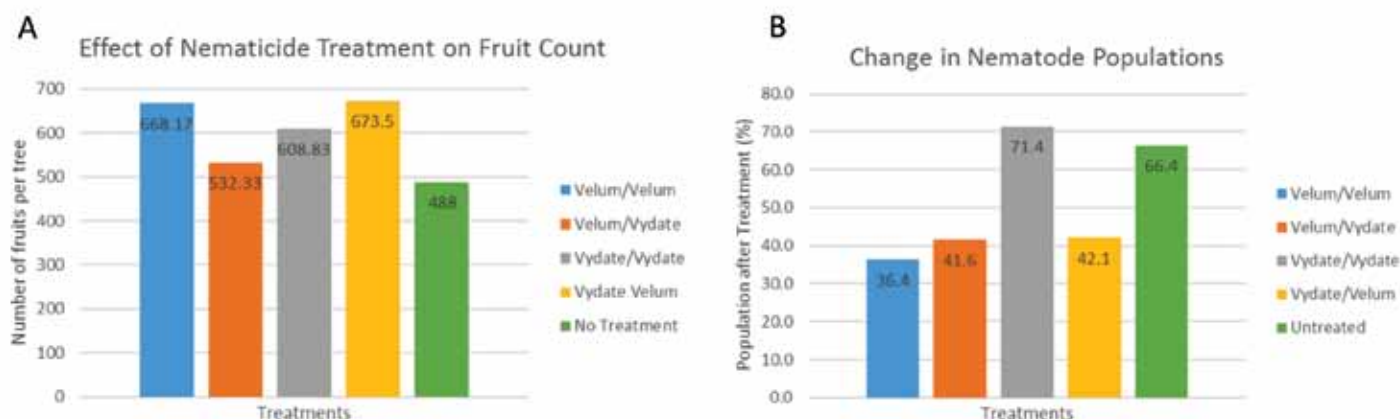


Fig 1. Effect of nematicide application on a Rio Red grapefruit orchard. A) Fruit number and B) nematode populations after one year application of nematicides after the spring and fall flush in different combinations.

Management

Application of nematicides to reduce nematode population densities in the citrus rhizosphere is recommended. We have tested the systemic nematicides Velum® Prime (Bayer) and Vydate® L (Dupont™) to evaluate the effect of the chemicals on populations of the citrus nematode and on fruit yield. A mature Rio Red grapefruit orchard was treated with either nematicide following the spring and fall flush cycles according

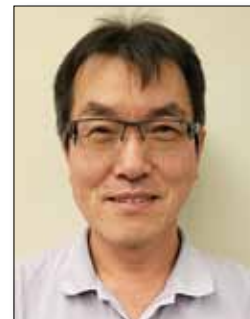
to manufacturer's recommended application rates. Overall, yield was higher in the treated trees versus the untreated trees (Fig. 1A). Also, nematode populations declined in 2018 with a greater percentage of reduction in treated trees. Subsequent applications during a second year indicate a continued reduction in nematode populations in the trees treated with either chemical (Fig. 1B).



Dr. Madhurababu Kunta

Sorting out exotic citrus diseases from endemic diseases

Madhurababu Kunta, Marissa Gonzalez, John da Graça, and Jong-Won Park



Dr. Jong-Won Park

The Citrus Center, USDA-APHIS and the Texas Citrus Pest & Disease Management Corporation continue surveying citrus for exotic diseases and testing samples in the lab. Some symptoms of local diseases can resemble the exotic diseases. Below are some examples. It is advisable to correctly identify the pathogen, and the lab will conduct appropriate assays.

Citrus black spot (CBS) – like symptoms



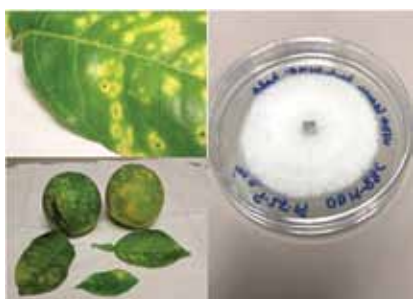
- Diagnostic quantitative PCR assay performed following USDA APHIS protocol
- Samples tested negative for CBS
- Fungal cultures isolated by plating the lesions on PDA and fungal DNA was isolated

Citrus black spot symptoms



- DNA sequencing and fungal culture morphology confirm the presence of *Alternaria* and *Colletotrichum* species
- We speculate that spray damage is leading to secondary infections of the fungal pathogens

Citrus leprosis virus – like symptoms



- Diagnostic quantitative PCR assay performed following USDA APHIS protocol
- Samples tested negative for CBS
- Fungal cultures isolated by plating the lesions on PDA and fungal DNA was isolated
- DNA sequencing and fungal culture morphology confirm the presence of *Alternaria* and *Colletotrichum* species
- We speculate that spray damage is leading to secondary infections of the fungal pathogens

Citrus leprosis virus symptoms



Citrus bacterial spot –like symptoms



- The samples were negative for citrus canker and Citrus leprosis virus
- Lesions plated on PDA and fungal DNA was isolated

Citrus bacterial spot symptoms



- Fungal culture morphology is characteristic of *Colletotrichum* species
- We speculate that spray damage is leading to secondary infections of the fungal pathogens



Dr. Mamoudou Sétamou

Fatal Attraction: A Novel Solution to the Problem of Asian Citrus Psyllid on Residential Citrus

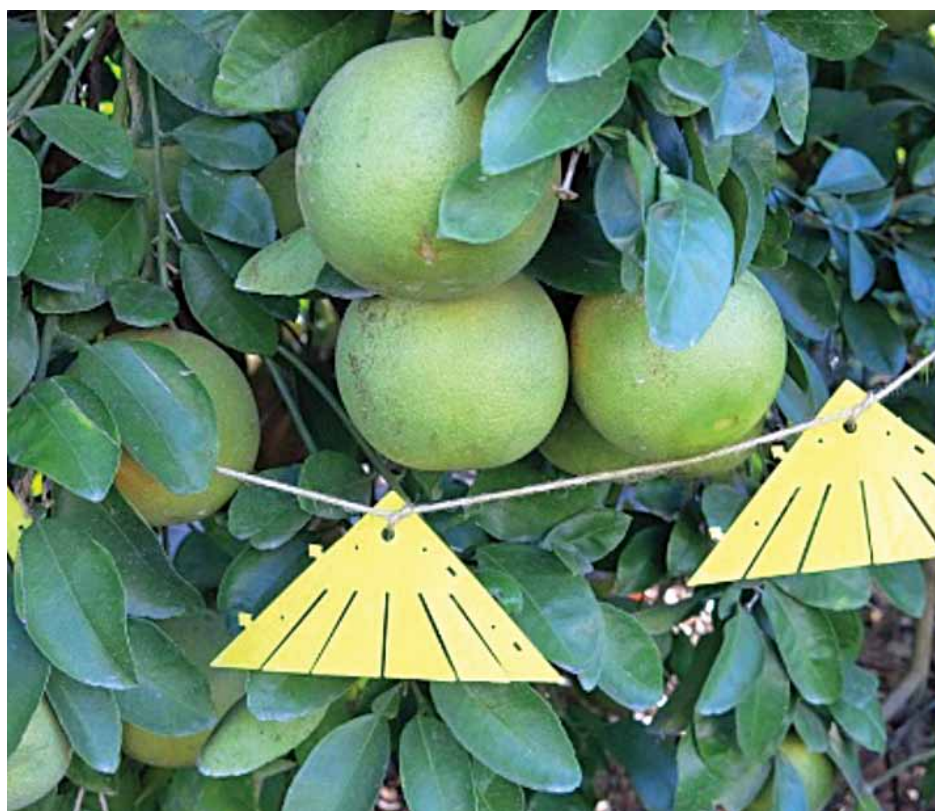
Andrew Chow & Mamoudou Sétamou



Dr. Andrew Chow

This fall or winter, you may see yellow plastic triangles hanging in the RV & mobile home parks. These devices were conceived as a novel control system for Asian citrus psyllid (ACP), the vector of citrus greening disease or huanglongbing (HLB), presently the most serious threat faced by the U.S. citrus industry.

Area-wide management programs (AW-MP) rely on insecticide sprays for ACP control in citrus groves, but there is a pressing problem with the presence of ACP and HLB in urban neighborhoods, often near commercial groves. Citrus varieties are widely planted as backyard trees. ACP adults are highly mobile and can easily fly from residential areas to infest and infect citrus trees with HLB in commercial groves. Thus, ACP control on residential citrus is essential for reducing the spread of HLB to commercial citrus.



Residential insecticide-spray programs for ACP were unsustainable due to high treatment costs, property-access issues, and public opposition. An “attract-and-kill” (AK) device for adult psyllids was the solution developed and field-tested by a collaboration of scientists at the Citrus Center, USDA, and Alpha Scents, Inc. The device consists of a weather-resistant, plastic yellow-green triangle treated with a contact insecticide. The color mimics that of young citrus shoots, the preferred egg-laying and feeding sites for psyllids. Adult psyllids are quickly killed upon contact with the insecticide on the triangles. Strings of these devices can be

easily deployed around the canopy of citrus trees. Under South Texas conditions, these devices remain highly lethal to adult psyllids for up to 8 weeks, and 20 devices per tree provided significant psyllid suppression on infested lemon trees from winter to early summer.

The Citrus Center is presently evaluating cost-effective deployment strategies for the AK device at the scale of entire residential blocks in RV & MH parks. Since treating every citrus tree in an entire neighborhood is costly, it is important to determine whether effective psyllid suppression can be achieved

by strategically deploying AK devices primarily and at higher numbers on lemon, lime, and other citrus cultivars preferred by ACP. Park managers and residents that volunteered their trees for these studies have expressed high approval of this AK device for ACP control. This AK device could eventually be an effective control option for ACP, complement area-wide management programs in both urban areas and elsewhere, such as abandoned citrus groves, protected natural areas where conventional insecticide control is problematic, and even along grove borders where psyllids congregate.



Dr. Eliezer S. Louzada

Laboratory of Breeding and Molecular Biology

Eliezer Louzada
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Texas Red, the new grapefruit from Texas, was first found in 2004 in a Rio Red grapefruit grove at the Citrus Center's South Research Farm. The fruit's rind is dark red instead of a blush or yellow, like the Rio Red; the flesh is sweet with no bitter taste and there is no tingling at the lips as you eat them. The trees produce large numbers of fruit clusters with usually oval to round-shaped fruit and are very productive (Photo on the left below)



**Texas Red
 has been patented**

US Patent No:
 US 2019 239 407 P1

The variety has undergone shoot-tip grafting at the University of California-Riverside to remove all pathogens



Creation of Disease Resistance Citrus

My lab has been developing citrus varieties with potential for broad spectrum disease resistance by genetically making the citrus plant more efficient in the use of calcium.



Creation of Drought Tolerant Citrus

My lab has been developing citrus varieties with potential for high drought tolerance using genetic approaches. Drought is an important trait affecting all crops worldwide.

Budwood Program Highlights 2018-19

Mark Van Ness & John da Graça

Texas A&M University –Kingsville Citrus Center, 312 N. International Blvd., Weslaco, TX 78599.



TEXAS A&M
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Aerial view of the complex of screenhouses



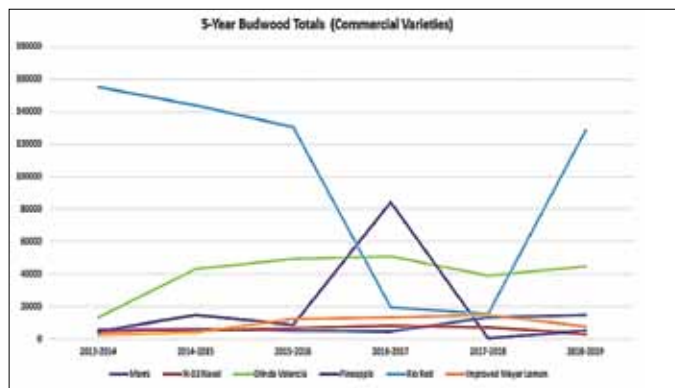
New scion trees in Phase II



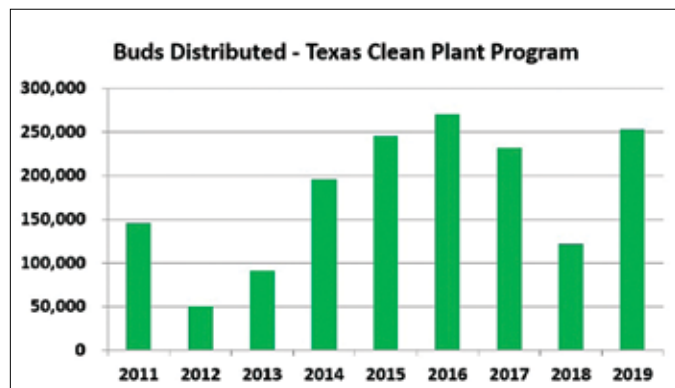
The budwood program team



Canker decontamination at the entrance to screenhouses



Budwood order variety trends 2013-19



Budwood annual sale totals (2011-19)

Events



Summer intern students, sponsored by NIFA-Hispanic Serving Institution Educational Grants Program and UTRGV USDA-STEP2 Program



Dr. Tallant, President of TAMUK, receiving a retirement gift from the Citrus Center



Dr. da Graça training county Extension agents on recognizing citrus types and diseases.



Mr. Robert Saldaña (Entomology lab) training Texas Department of Agriculture nursery inspectors on citrus pests.



73rd Annual Meeting of the Subtropical Agriculture and Environments Society (SAES) on February 8, 2019 at South Texas College, Mid Valley Campus, Weslaco



Dr. Michelle Garcia (Dept. Animal Science, TAMUK), SAES President-Elect assuming responsibilities from Dr. Kunta.



Mr. Brad Cowan, Texas A&M Agrilife Extension Agent-Agriculture for Hidalgo County (Retired) receiving Potts Award from SAES President, Dr. Kunta.



FFA student from Harlingen ISD visiting the budwood nursery



Dr. David Laughlin, post-doc in Dr. Ancona's lab, explaining some of his disease research work to a group of visiting high school agriculture teachers.

Salted Chocolate Dipped Mandarin Slices

Source: www.deliciouslyyum.com
Compiled By: Sonia R. Muñoz



Ingredients:

5 Mandarin Oranges
1/2 c semi-sweet chocolate or dark chocolate chips
Sea salt or coarse salt
1 tsp shortening (opt)

Directions:

- 1) Line a baking sheet with wax paper and set aside. Peel the Mandarin Oranges.
- 2) In a microwave safe bowl, or a double boiler, melt chocolate chips and add shortening, if desired. Adding shortening is optional it helps make the chocolate super smooth and easier to work with.
- 3) Dip each slice halfway into the melted chocolate and place on prepared baking sheet. Sprinkle with salt and repeat until all slices are evenly coated and sprinkled with salt. Refrigerate for 10 minutes or until chocolate has hardened

Zesty Citrus Cake

Recipe: Taste of Home Cookbook
Compiled By: Sonia R. Muñoz

Ingredients:

1 pkg/Box Yellow cake mix
1/2 c sour cream
1/2 butter, melted
5 tbsp lemon juice
1/4 c orange juice
3 large eggs
1 tbsp grated orange zest
2 tsp grated lemon zest
Frosting:
1 c butter, softened
1/2 c butter-flavored shortening
1tbsp grated orange zest
2tsp grated lemon zest
5c confectioner's sugar
3tbsp lemon juice
1tbsp orange juice
1 c toasted sliced almonds, (opt)
Candied orange slices (opt)
Candied lemon slices (opt)



Prep: 30 min and Bake: 15 min + cooling

Directions:

- 1) Preheat oven to 350 degrees. Line bottoms of two greased 9-in. round baking pans with parchment paper; grease paper
- 2) In a large bowl, combine the first eight ingredients; beat on low speed 30 seconds. Beat on medium 2 minutes. Transfer to prepared pans
- 3) Bake 15-20 minutes or until a toothpick inserted in center comes out clean. Cool in pans 10 minutes before removing to wire racks; remove paper. Cool completely.
- 4) For frosting, in a large bowl, beat butter, shortening, and citrus zests until blended. Gradually beat in confectioner's sugar and juices until smooth. Beat until fluffy.
- 5) Spread frosting between layers and over top of sides of cake. If desired, gently press almonds into frosting on sides of cake and top with orange and lemons slices.

Chili and Lime Popcorn

Source: www.killingtyme.net
Compiled By: Sonia R. Muñoz



Ingredients

1/4 c of popcorn kernels
4 tbsp. of coconut oil divided
1 tsp of chili powder
Juice and zest of 1 lime
Kosher salt to taste

Directions:

- 1) Pop the popcorn as per the direction on the packaging. Use 2 tablespoons of coconut oil
- 2) In a small saucepan, heat 2 tablespoons of coconut oil on medium-low
- 3) Add the chili powder, and stir well to combine
- 4) Add the juice of one lime leaving just a bit of juice in the lime to spritz the popcorn when served
- 5) Stir to combine
- 6) Bring to a low simmer, remove from heat, and stir
- 7) When the popcorn is ready, drizzle the coconut oil over the popcorn
- 8) Cover and toss to coat
- 9) Finish the popcorn off with a spritz of lime juice and sprinkle with lime zest



Texas A&M University Kingsville Citrus Center

Advisory Board

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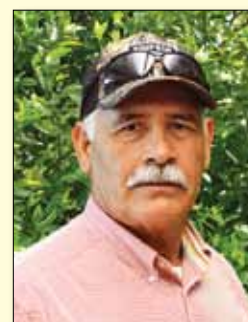
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