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WOOLLY WHITEFLY ON CITRUS

Infestations of woolly whitefly, *Aleurothrixus floccosus* (Maskell), are on the increase in some mid-Valley citrus orchards. First observed on guava in 1951 by Herb Dean (well known Entomologist at the Texas A&M Experiment Station, Weslaco), it subsequently spread and became a long standing pest on Texas citrus. The name is descriptive since the under surfaces of leaves are usually covered with woolly white wax filaments produced by feeding and developing immature whiteflies. They also secrete copious amounts of honeydew, an excellent medium for black sooty mold, *Capnodium* spp. In several of the whitefly-infested orchards that were inspected not only was the foliage heavily blackened with sooty mold, but leaves were absolutely 'sticky' with droplets of honeydew.

Woolly whitefly eggs are yellowish-brown and laid in a circle or 'nest' of white waxy filaments. The female adult has a yellow abdomen with white tent-like wings and is commonly found at rest in the center of the circle. Newly emerged first stage nymphs are light green, but later stages become brown and covered by the curly wool-like waxy filaments. The life cycle from egg to adult takes ca. 30 to 45 days depending on climatic conditions and there can be several generations each season.

Three wasp parasite species attack woolly whitefly in Texas: *Eretmocerus* sp., *Amitus* sp., and *Encarsia* sp. Generally, they maintain this pest under effective biological control except when disrupted by climatic changes like a long standing drought or over zealous repeated applications of certain pesticides. Labeled for chemical control of whiteflies on citrus as a foliar spray are: Esteem EC© (pyriproxyfen); Ethion 4M© (phosphorodithioate); Provado 1.6F© (imidacloprid); Lorsban 4E© (chloropyrifos); and Supracide 2E ©(methidathion). Temik 15G© (aldicarb) is also labeled for whitefly control, but only as a spring time soil application in citrus orchards. More information will be forthcoming on woolly whitefly and re-establishment of the control of this pest in Valley citrus orchards.

Woolly whitefly on citrus leaves

J. Victor French

LATEST COLLABORATIVE WORK WITH UTPA

Many collaborative projects had been conducted in the past involving the faculty at the Citrus Center and the University of Texas PanAmerican (UTPA) in Edinburg. The latest collaborative project that I would like to note here is between Dr. Chris Little, assistant professor in the Biology Department and Mani Skaria. Drs. Little and Skaria are jointly guiding Mr. Steven J. Schneider, a biology teacher at MedHigh in Mercedes, TX. Mr. Schneider is pursuing a M.Ed degree at UTPA. He is doing independent research work on developing a computer- based assay for quantifying the disease severity of citrus greasy spot disease. Greasy spot is caused by a fungus, *Mycosphaerella citri* and it is an important disease that reduces fruit yield. This work is expected to standardize the rating of infected leaves. This information is very useful for cultural and chemical management of greasy spot.

Mani Skaria

DR PETE TIMMER VISITS CENTER

Dr Pete Timmer, plant pathologist at the University of Florida's Citrus Research & Education Center, visited the center at the end of July. Many growers in the Valley will remember Pete who worked at the center in from 1970 until 1978 before he moved to Florida. While he was in Texas, he made significant contributions to understanding many of the citrus pathogens which affect our trees, including greasy spot, *Phytophthora* and citrus ringspot (psorosis). He has become one of the world's most renowned citrus pathologists with expertise in both the laboratory and the field, and continues to advance our understanding of diseases and their control.

Pete Timmer (left) with Victor French (right)

Some of the more settled members of the center's staff remembered him and were delighted to renew old friendships. Other newer folk had the pleasure of meeting him and receiving counsel, especially regarding greasy spot spore release. His contributions are so impressive that new students at the center considered it an auspicious opportunity meeting him. As many will know, Pete is also an avid bird watcher, and he spent some of his time observing birds in the Valley during his visit.

J. Victor French, Mani Skaria & John da Graca

ANOTHER STUDENT GRADUATES IN BIOTECHNOLOGY

Veronica Ancona, a native of Mexico, arrived at Texas A&M University-Kingsville about two years ago to pursue her Master's degree under the advisement of Dr. Shad Nelson. Since her interest was in biotechnology, Dr. Nelson and Dr. Louzada decided to work together to better serve her needs in her goal of specializing in molecular biology. Veronica is very goal oriented and a hard and determined worker with a clear vision of where she wants to go. She excelled in her research to find new genes from citrus that are triggered by low temperatures. She isolated seven full length and three partial genes, which after complete characterization may bring new hints on how citrus responds to low temperatures. Veronica graduated on August 5th and left immediately to pursue her PhD in protein research at Queen's University in Kingston, Ontario, Canada. We know that she will succeed in her new endeavor and wish her the best.

Veronica Ancona

Shad Nelson & Eliezer Louzada

TWO GRADUATE STUDENTS IN THE FUNCTIONAL FOODS LAB SUCCESSFULLY DEFEND THEIR THESES

Two of Dr Bhimu Patil's graduate students who conducted much of their research at the Citrus Center recently successfully defended their theses. They are amongst eight interdisciplinary students who have graduated from Patil's lab within the last 5 years.

Kranthi Mandadi completed his master's degree through Texas A & M-Kingsville working on interdisciplinary research at the Citrus Center under the direction of Dr. Bhimu Patil, and later conducting animal studies under Dr. Farzad Deyhim in the Human Sciences Department in Kingsville. His study focused on isolating bioactive compounds present in citrus, namely limonoids and flavonoids, and evaluating whether their consumption would affect bone homeostasis in osteoporotic rats**.** The rats were fed these compounds, as well as a crude grapefruit extract, for 60 days, and then analyzed for bone density and strength. Those fed with limonin, naringin and the crude extract showed a significant increase in tibial density; femoral strength was also higher in rats fed on limonin and the crude extract. Limonin and naringin were found to increase bone formation and lower bone resorption. The results suggest a positive correlation between consumption of citrus fruit and maintaining bone health. Kranthi, who received several poster awards, has been accepted for the PhD program in Molecular Biology/Biochemistry at Texas A&M in College Station.

Kranthi Mandadi

Shibu M. Poulose, who obtained his MS in crop science from the University of Agricultural Sciences, Bangalore, India, registered for the cooperative PhD program in horticulture between Texas A&M University and Texas A & M University-Kingsville in 2001. He conducted research on isolating and characterizing citrus limonoids at the Vegetable and Fruit Improvement Center in College Station and at the Citrus Center in Weslaco. He developed bulk purification methods for limonoids and some flavonoids, and tested these compounds for their anticancer effects in human neuroblastoma and colon cancer cells in the Biochemistry Department in College Station. This work was published in several news articles and was featured on the cover of the "Journal of Nutrition". During a stay at the USDA-ARS lab in Laramie, Wyoming, he tested these compounds for their effects on human drug metabolizing enzymes as well as for their antioxidant activities. He received nine national, state and regional awards during his graduate degree career. He plans to further his research at UT South Western Medical Center, Dallas TX.

Shibu M. Poulose

Everyone at the Citrus Center and at the Vegetable and Fruit Improvement Center wish both Kranthi and Shibu highly successful careers.

Bhimu Patil
Director, Vegetable & Fruit Improvement Center

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