TEXAS A&M UNIVERSITY-KINGSVILLE

CITRUS CENTER

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ASIAN PSYLLID FOUND ON TEXAS CITRUS

The Asian citrus psyllid, *Diaphorina citri*, (Homoptera: Psyllidae), first found in Florida in 1998, has now been identified on Texas citrus. Mr. Craig Kahlke, Research Associate and Budwood Coordinator, observed some Citrus Center nursery trees with what was thought be brown soft scale infestations. However, upon closer examination it was apparent that we were dealing with an insect pest species not previously seen on Valley citrus. It was confirmed as the citrus psyllid by Dr. da Graca who had observed the pest in China and Brazil, and also by Dr. Susan Halbert, citrus psyllid expert at the Florida Dept. of Agriculture's Division of Plant Industry in Gainesville who was sent specimens for ID. Psyllid infestations were subsequently identified on an orange jessamine hedge (*Murraya paniculata*) at the Center and on young citrus trees (grapefruit, orange, mandarin, and lemon varieties) at 4 other mid-Valley nursery sites.

The adult psyllid is 2-3 mm (ca. 1/10 inch) long, with a mottled brown body and wings which are held tent-like over the abdomen. Adults congregate on the under surfaces of leaves and have a tendency to hold their body at a peculiar 30 degree angle. When disturbed they quickly jump and fly away hence are sometimes referred to as 'jumping plant lice.' The nymphs are flat, yellowish orange, 1-2 mm long, with distinct red 'eye spots' and short black antennae. Developing wing pads are obvious on the later stage psyllid nymphs. Almond-shaped eggs are laid by the female psyllid on new shoots and hatch in 2-4 days. There are 5 nymphal stages, with the life cycle completed in 2-6 weeks—depending on food and temperature. Up to 16 generations have been recorded in a single season in Florida.

Like aphids, psyllids target new flush foliage and with their sucking-type mouthparts with draw large quantities of sap. They also secrete copious amounts of honeydew on which black sooty fungus grows. The psyllid is a feared pest, not because of feeding injury it causes, but because it is an efficient vector of the bacterial pathogen (Liberibacter sp.) that causes the very serious citrus greening disease or 'huanglongbing' in Asia and Africa. The disease is not known to occur in Brazil, Florida or Texas.

Both chemical and biological control methods will be utilized to manage psyllids on Valley citrus. Contact spray insecticides like Lorsban 4E® (chlorpyrifos) and Sevin 80S® (carbaryl) give good kill of all life stages. Studies will also be initiated with Micromite 25W® (diflubenzuron), an insect growth regulator applied as a foliar spray, and Admire 2F® (imidacloprid), a soil-applied systemic pesticide— these control psyllid nymphal stages. Recently, paper work was submitted to USDA-APHIS PPQ and TX Dept. of Agriculture requesting a permit to import *Tamarixia radiata* (Waterston), a wasp parasite of Asian psyllid. Originating from Taiwan and Vietnam, *T. radiata* is a highly effective ecto (external) parasite and is currently under release and study by: Drs. Marjorie A. Hoy and A. Jeyaprakash, of the University of Florida's Dept. of Entomology and Nematology at Gainesville; and Dr. Ru Nguyen of the Florida Dept. of Agriculture's Division of Plant Industry, Gainesville. As usual, Dr. Nguyen has been most helpful, not only in helping to confirm Asian psyllid identification on Texas citrus, but also willingness to provide *T. radiata* parasites from insectary cultures he maintains at Gainesville. More information will be forthcoming on this latest pest of Texas citrus.

J. Victor French, Craig Kahlke and John da Graca

Flush foliage with Asian psyllid nymphs tended by ants. Psyllid adults shown on leaf (lower left).

CITRUS PROSPECTS

Texas citrus growers are still trying to understand the reasons for the low returns last season, especially since Texas production of grapefruit and oranges was up substantially while total U.S. production was down. The approximate changes from the previous season were 21.5 and 33.8 percent increases in Texas grapefruit and orange production, respectively, with U.S. supply down 10.6 and 4.7 percent, respectively. We weren't alone, however, as the estimated on-tree value of Florida's citrus production was the lowest since the mid-80's. And California Citrus Mutual frequently reported less-than-breakeven prices.

Proceeding under the fallacious logic that it can't get any worse, what's the prognosis for the current season? In spite of the economic slowdown, things are looking somewhat better. California Valencias are still in the market, but there is some concern about California navels. Fruit set was down, so production is projected to be down about 11 percent. Sizes will be large, with a limited startup in late October.

Prices for grapefruit and oranges in late summer have been quite good, according to Economic Research Service, USDA. Those prices, of course, reflect California-Arizona grapefruit and Valencias. Thus, it would appear that buyers (and consumers) are willing to pay more for grapefruit—and our crop is ready to go. One reason for higher prices has been the overall lower production of a number of competing fruits, which effect will carry over into the fall and winter with lower volumes of both apples and pears projected.

Within our industry, exterior fruit quality is much improved and fruit size appears to be normal, with no shortage of larger sizes like last season. Too, production levels should be lower than last season's record highs, so harvesting and marketing should be more orderly. Promotional efforts currently underway by TexaSweet and others should make a difference.

So, it's looking cautiously optimistic for the new season, provided that the overall economy doesn't crater on us.

Julian W. Sauls, Ph.D.
Professor & Extension Horticulturist

VISITORS TO THE CENTER

Recent visitors to the Center have been Dr. Daniel Leskover (TAES, Uvalde), Jose Franco Leemhuis (Esc.Tec.Ing.Agron.,Cartagena,Spain) and two South African plant pathologists, Dr. Chery Lennox and Dr. Mike Morris. Joe Mitchell, BASF Field Development Representative and Kevin Hagedorn, BASF Sales Representative visited Dr. French.

LONG SERVICE RECOGNIZED

Three long-serving members of the Citrus Center Advisory Committee recently stepped down. Between them, they served a collective 76 years service! Donald Bentsen first joined the committee in 1966, Bailey Dunlap became a member in 1975 and Ken Martin was appointed in 1985. During their years of service they have seen many changes, including the release of the Rio Red grapefruit, the freezes of '83 and '89, and the initiation of the budwood program.

All three were honored at a recent committee meeting, but only Bailey Dunlap was able to attend to receive a plaque recognizing his contributions.

John da Graca

NEW QUARTER-TIME FACULTY APPOINTMENTS AT THE CENTER

In 1997, when Bhimu Patil and Eliezer Louzada were appointed to the Citrus Center, they were both given 75% research/25% teaching appointments. The two 25% research times not filled have remained unused by the center since then. Now, two faculty in Kingsville have each been given 25% research appointments at the center. This expands the center's expertise available for citrus research.

One of the faculty is Dr Gary McBryde, agricultural economist professor in Kingsville, who is already well known in the Valley, having served as Interim Assistant Director 1998-99. The other is Dr Shad Nelson, who has just been appointed to the Agronomy position; he has a strong background in soil science, as well as in horticulture and agronomy; he has recently been working for USDA in California. Both McBryde and Nelson will be developing research programs on citrus in the future.

John da Graca

SOME ECONOMIC THOUGHTS ON FREEZE PROTECTION

The recent cool mornings, besides kicking harvest into full gear, remind us that not every day in the Valley is hotter than the brake hubs on a run-a-way train. In fact, despite our run of warm winters, there can be some down right cold spells that blow in on the back of some late December or January blue northers.

I haven't had the time yet to pencil out the costs of different types of freeze protection and the associated yield savings. Yield savings could come in the form of actual level of protection in terms of trees saved or savings in lower yield reductions. Because, what I was first interested in was in estimating a supply relation between Texas grapefruit prices and the quantity supplied. My interest was really in starting to get a better understanding of Texas grapefruit price behavior for marketing purposes. Collecting the data on the average Texas grapefruit price paid at the packing house door and quantity produced (Figure 1), nonetheless, shows some interesting price behavior. And this is what triggered my thoughts on what the possibility would be for economic benefits from freeze protection. But before I get to the thoughts on freeze protection, let me show you some other interesting price behaviors.

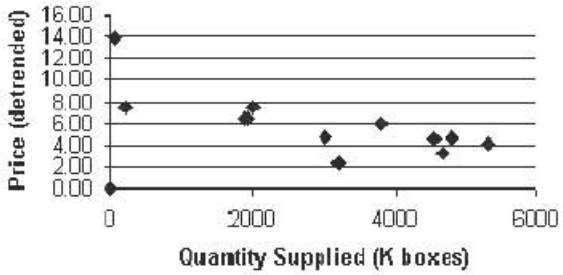

Figure 1. Detrended (inflation removed) average packing house price per box for Texas grapefruit between 1984 and 1998 and the associated production.

Examining the behavior of prices in response to quantity supplied over the time interval between and including years 1984 to 1998 gives a picture that is shocking to an economists unfamiliar with orchards. The feature that just leaps out is what appears to be a total suspension, no stronger still, violation in the law of supply! For example, if I were to draw a trend line through the data points in Figure 1, it would start out at a price of $11 per box at 0 boxes supplied and drop to maybe $3 per box at a supply of approximately 6 million boxes. Now, the naïve interpretation of this is that citrus growers are willing to grow more grapefruit as the price they receive gets lower and lower. Well, rather than believe that, there are other factors to consider. The first is what economists call supply inelasticity, that means that the level of supply just does not respond to prices very quickly. The phrase inelastic comes from observing that in a short time interval (1-3 years) a big price change or stretch results in little if any supply change or no stretch, so we say supply is inelastic. And this is caused simply from the fact that it takes a sapling tree several years to get going. Now if supply was perfectly inelastic and everything else was constant then the trend line we drew would be flat. It wasn't so what is going on?

If you guessed freezes you got probably 90 percent of what is causing prices to vary off of a flat trend line centered at about $4.5 per box over our time interval. To see this look at the trend in prices over time (Figure 2).

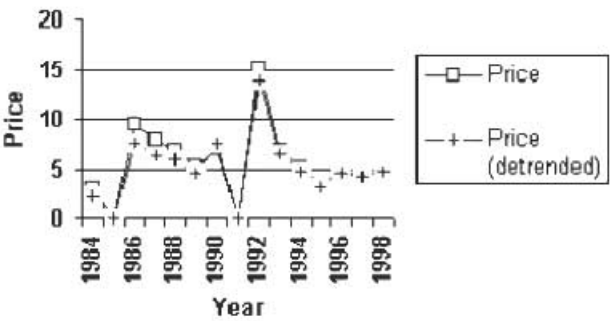

Figure 2. Nominal prices (with inflation) and detrended (inflation removed) average packing house price per box for Texas grapefruit from 1984 to 1998.

Notice that prices go to zero in the two years following freezes of 1984 and 1990. Really prices do not go to zero it is just that there was so little supply that the official grapefruit statistics do not report prices. But the really interesting price behavior is in 1986, 1987 and 1991, 1992 as the crop starts to recover. In those years, the prices due to shortages that are more than half the recent normal season production of 6 million boxes jumps up to around $7.50 (in today's prices) and in 1991 when production was only 65,000 boxes it soared to almost $14. These values give us some feel the value of protecting a crop from freezes if others or unable to do so. Or alternately, if everyone only protected a small portion. Well, as I said I haven't penciled out the costs of protection, but maybe before December though just to look at it. Also, what is causing the other 10 percent of the variation in prices of the trend line? Any one care to guess land prices? I'll see what I can learn for the next newsletter.

Gary McBryde

STUDENT INTERNS FROM LATIN AMERICA

Two students from Latin America recently arrived at the Center to spend internships to learn about citriculture. Marcelo Zanetti, who recently completed his Ing.Agron. undergraduate degree at the Universidade Federal de Sao Carlos, Sao Paulo State, Brazil, is in Weslaco for one month, spending time in each department. After visiting California, he will return to Brazil to begin graduate studies. He already has some citrus research experience, having worked at the Centro de Citricultura in Cordeiropolis in Brazil.

Frankys de Osa is a student at College EARTH in Costa Rica, and he is spending a 4-month internship here as part of his undergraduate degree. He comes from a citrus background; his father operates a citrus nursery in Veracruz in Mexico.

Both students have a particular interest in the Budwood program, and are spending most of their time with Craig Kahlke.

John da Graca and Jose Amador

Marcelo Zanetti - left
Frankys de Osa - right

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TRAINING LOCAL UNDERGRADUATE STUDENTS IN BIOTECHNOLOGY

The Hispanic community is the fastest growing segment of the US population, and is projected to comprise 25% of the total by 2030. However, the level of education achievement and employment in science careers by this community is very low compared to non-Hispanics; in 1997, only 3.5% of the of scientists employed nationally were Hispanic.

The biotechnology lab of the Citrus Center, in collaboration with the University of Texas at Brownsville (UTB) has recently began a USDA-funded program to facilitate the channeling of undergraduate students from the Valley to science careers. Internships are being provided over the next three years to several senior UTB undergraduate students, some of whom hopefully will be attracted to graduate studies later. During the summer, the first two students, Sandra Fiero and Gabriela Garcia, completed there internship, and three more, Jacqueline Segura, Adriana Robbins, and Alisande Cardenas, are currently being trained this fall.

Eliezer Louzada

Alisande Cardenas

Jacqueline Segura &Adriana Robbins

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