

# CITRUS CENTER

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WESLACO, TEXAS 78596

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## NEWSLETTER

Vol. 20 No.1

### AERIAL SURVEY FOR CITRUS BLACKFLY

I recently attended a Grove Care Managers and Growers Meeting sponsored by Texas Citrus Mutual. The main topic of discussion was the current outbreak of citrus blackfly (CBF). Aerial infra-red photographs of CBF infested orchards in the western part of the Valley were of particular interest. These aerial photographs were acquired by the USDA-ARS-KSARC Remote Sensing Unit, James Everitt project leader, which is located in Weslaco. Rene Davis is the pilot and J.P. Ramos is the aerial camera operator. All the citrus growing area west of Highway 281 and north of Highway 83 was included, with photos taken from the Unit's Cessna 404 airplane flying at an altitude of 17,500 ft. Each photo frame covered an area of ca. 2.5 X 2.5 square miles; these were scanned and down loaded onto a CD disc for later inspection.

The photos revealed areas in orchards with foliage blackened by sooty mold fungus growing on the honeydew secreted by actively feeding CBF. Since other homopterous insects (brown soft scale, aphids etc.) also secrete honeydew with the resultant fungal problem—Rene and Fred Gomez, also from the Remote Sensing Unit, did a follow up ground survey of photographed orchards. CBF was confirmed in 40 orchards (both grapefruit and orange), with infestations at times localized on only a

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Arrows show orchards with citrus blackfly infestations

### “WATER, WATER EVERYWHERE,

NOR ANY DROP TO DRINK” from the “Rhyme of the Ancient Mariner” by T.S. Eliot. The Ancient Mariner was stranded somewhere in the middle of the ocean, hence his lament. While our situation has not come to that, water to drink may be about all we have in another few months unless the miracle of a tremendously wet storm in the watershed comes to pass. Since the storm season doesn't start until June, irrigation supplies should be pretty well depleted by then—unless some uncommon spring rains occur with regularity.

So, what's a citrus grower to do? Some are leasing row crop land to get its water, leaving the rented field idle for the year. Others are purchasing water from the few districts which have more water than the needs of their producers. Still others are putting in both deep and shallow wells—but water quality is a concern with most ground water in the Valley. Some are looking again at drip and microsprayer irrigation—though few are able to commit the funds for such systems, especially given the disincentives in some districts for low volume conservation.

I'm reminded of the summer of 1998 when several irrigation districts shut down their pumps in June or July for lack of water—and didn't start up again until September. Many growers asked then about using saltier than desired ground water—my response then was that at least it was wet, so use it and worry about the salt problem later. After all, if the orchard is going to decline anyway, what does it matter if it declines from drought this year or from salt buildup next year?

And if you resort to praying for a miracle, the Ancient Mariner concludes “He prayeth best who loveth best all things both great and small, for the dear God Who madeth us, He made and loveth all”.

**Julian W. Sauls, Ph.D.**

Professor & Extension Horticulturist

few trees to whole orchards having CBF and blackened trees. Generally, all life stages of CBF were identified—egg spirals, nymphs, pupae and adults. Follow up surveys of these and many of the other photographed orchards will be made—not only to identify CBF, but to check for parasites so effective in its biocontrol viz., *Amitus hesperidum* and *Encarsia opulenta*. Meanwhile, Rene and J. P. plan to fly and photograph the mid and eastern Valley citrus area for identification of other CBF infested orchards. This aerial survey is vital to the success of our campaign against CBF, and Rene and J.P. should commended for their help.

Earlier I had reported that Fred Karle, Agro Distribution Sales Rep., had found *E. opulenta* in several western Valley orchards (Citrus Center Newsletter, Aug. 2001). These are being collected and re-distributed into other CBF infested orchards. To date, no *A. hesperidum* have been found, but further surveys may reveal the presence of this important parasite. Also, Dr. Ru Nguyen, Entomologist with the Florida Dept. of Agriculture's Division of Plant Industry, has been contacted and will have some *A. hesperidum* available for shipment to Texas in the near future. Updates on the current CBF outbreak will be forthcoming in future Newsletters. Also, a revision of the Citrus Blackfly Bulletin (including color photographs of the parasites) is now available and can be picked up at the Citrus Center library.

**J. Victor French**

## JOSE GARZA RETIRES

After nearly 29 years as a farmworker at the center, Jose Garza retired at the beginning of the year. The center marked the occasion with a luncheon for him, and presented him with a watch; Dr Amador and Dr da Graca both expressed their sincere appreciation for his dedicated service to the center.

## EMPLOYEE OF THE YEAR

The Employee of the Year award for 2001 has been given to Cira Cortez. In addition to her excellent work in the nursery and grounds, she independently established flower beds around the center which were positively commented on by several visitors, and she spoiled her co-workers with regular gastronomic treats.

Congratulations Cira, and thank you.

## FUNCTIONAL FOOD/PHYSIOLOGY LAB ACTIVITIES - 2001

The lab had a busy, yet very successful, year in 2001 in all its activities. Perhaps one of the most newsworthy achievements was the awarding of three substantial grants, two federal and one state. The first federal grant, entitled "Exploring biological activities of citrus limonoids: A multidisciplinary approach" received \$1.1 million, and was rated second in the nation in the Functional Food group. This project involves understanding the role citrus limonoids in human health. The second federal award was for \$300,000 for "A collaborative initiative to attract under-represented students towards agriculture and food science", and was rated first in this category in the nation. The state grant of \$250,000 was funded by an advanced technology program entitled "Biological activities of citrus flavonoids" and will study the potential of citrus flavonoids in cancer prevention.

The teaching program "Phytochemicals in Fruits and Vegetables to Improve Human Health" was selected by Texas A & M to be showcased in Washington DC at the Food for Health display at the Science on the Capitol Hill event in March. It attracted 49 students from 9 centers around the state. Dr Patil was nominated for an outstanding teacher award by Javellina Association of TAMUK, and received the Outstanding Teaching Award by the Dept. of Agronomy & Resource Sciences.

Four major peer-reviewed publications appeared during the year. Two relate to the potential of citrus pectin to prevent chronic human diseases (published in *J Agric Food Chem* 49:3051-3057, and *J Sci Food Agric* 82:469-477) another to the possible prevention of breast cancer by citrus limonoids (*Nutrition & Cancer* 40:180-184), while the fourth was related directly to citriculture, on possible causes of sheeponing in grapefruit (*HortScience* 36:710-713). In addition, the labs research data was presented at several national and international meetings.

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Mireya Lorely  
Rodriguez Gonzalez

## CONIDIA IN GREASY SPOT DISEASE – SOME PRELIMINARY INFORMATION

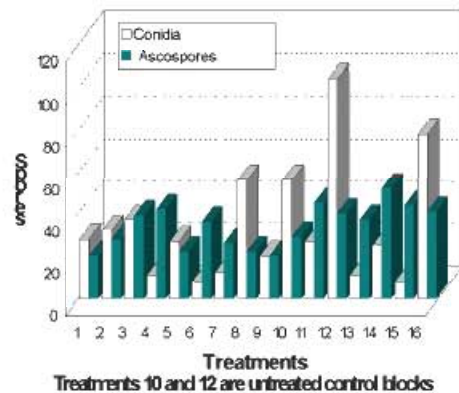
Citrus greasy spot disease is a serious problem that affects both the quantity and quality of citrus, especially grapefruit. The disease is caused by fungus the *Mycosphaerella citri*, which infects both leaves and fruit, and is commonly found in citrus producing areas that have high temperatures and relative humidity. Disease symptoms include: yellow mottling on the upper side and brown to black blisters on the lower side of infected leaves. Severe infection leads to heavy defoliation, causing up to 25% and 45% yield loss in sweet orange and grapefruit, respectively. Fallen, decomposing leaves infected with *M. citri* produce fruiting bodies called ascocarps. Both rainfall and irrigation aid ascocarp rupture, releasing ascospores into the air. The ascospores are two-celled, straight or slightly curved, usually 2-3 by 6-12 micrometer in size. The disease cycles are initiated by these spores which land on the under surface of young leaves when the relative humidity is nearly 100%. Scientific information from various sources indicates that ascospores are the major source of infection. However, another type of spore called conidia, which are produced without a sexual phase, have also been implicated in the initiation of greasy spot disease.

We have been studying the release of spores of this fungus for some time. Recently, some detailed studies were conducted in connection with a field study involving the efficacy of several fungicides on greasy spot disease in a grapefruit orchard. This study, involving 16 treatments is being conducted in a three acre block of 'Rio Red' grapefruit. In one of

the comparative studies, we used a fluorescence microscopy technique to accurately identify and count the spores found on young leaves. We modified a standard procedure to process many samples fast and inexpensively. The spores were lifted from the surface area of leaves with an ultra clear tape and the morphology of the ascospores, conidia, and the conidiophores were used for precise identification. The samples were treated with a fluorescence stain and the number of spores present were counted under a microscope. We found that the samples contained other types of spores and fungal bodies.

The graph (BELOW) is a direct comparison of the number of conidia and ascospores in each treatment.

Conidia see Page 4  
**Conidia and ascospores compared**



## WHERE HAVE GRAPEFRUIT PRICES BEEN?

Before I talk about grapefruit prices, let me mention the recent Strategic Thinking sessions organized by Melinda Goodman from Texas Sweet Marketing Inc. These were two day-long sessions held on January 16th and the 23rd of last month. The attendance for this type of meeting was fantastic. The strong attendance says a lot about the quality of the folks in the Texas citrus industry. Just a quick re-cap, the first day's session was introduced by Melinda with an overview of fresh produce retailing trends. Clay Everhard got everyone excited with new citrus varieties, including an orange that had a bright orange peel and a deep red flesh. Veronica Davis, President of Vanguard Marketing Strategies, gave an overview of retail category management, which will almost certainly play a big role in the future of successful Texas Citrus marketing. The day ended with Melinda collecting a list of items folks thought were worthy of discussing. The second day was spent brainstorming around the list of topics from the first day. The next phase will involve building action plans out of the major issues. Oh, and before I forget...

Will Rogers, I believe, said something like: "Only old dogs can't learn something new." At the first day's ses-

See Grapefruit Page 4

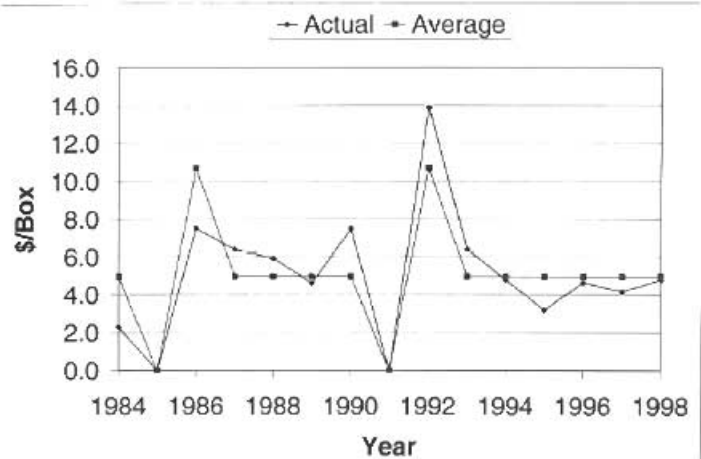


Figure 1. Actual and average Texas grapefruit prices between 1984-1998 with statistical adjustments

sion I was invited by Melinda to give an overview of why strategic planning was important. By way of introducing the need as a competitiveness issue, I first wanted to describe the cost-price squeeze the industry is in. To do this I showed a graph of a trend line showing grapefruit prices over 1984-1998 on a slow rise. Tom Aderhold, had his hand up quicker than anyone else, and the long and short of it is: crow ain't all that bad. Between 1984-1998 prices have been flat at \$4.97/box at the packing house door. Figure 1, shows the actual prices with inflation removed. The line indicated as the average line was calculated from a statistical equation that allowed for the 1985, 1986, 1991, and 1992 years to move off the average due to the effect of the two freezes.

**Gary McBryde**

Agricultural Economist, Texas A&M Kingsville

### VISITORS TO THE CENTER

Recent visitors to the Citrus Center have included: Dr Alberto Mendoza (Center for Genomic Biotechnology, Reynosa, Mexico), Drs Mario Rocha-Pena & Jose Isabel Lopez Arroyo (INIFAP, Mexico), Mr Peter Bruno (BASF), Mr Alan Dalrymple and Mr Tad Westermann (Uniroyal), Mr Nigel Grech (Biagro Western, California), Mr Larry Barberry (Enviro Products), and three South Africans (Mr B.Wessels, Mr J.Kriel and Mr I.Nel).

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The productive research would not have been possible without the efforts of the technical and student help. One student graduated last year, and joined Baylor College of Medicine, was able to publish two papers on pectin and a post doctoral research associate was able to publish another paper. In addition, there are also three PhD, one MS and two BS students. One of the latter is Ms Mireya Lorely Rodriguez Gonzalez, a student of chemistry from Monterrey Tech in Mexico who completed a 6-month internship at the center, and graduated in December. She was top student in her undergraduate class and contributed significantly to the limonoid studies in Weslaco.

**Bhimu Patil**

Conidia from Page 3

Each value in the graph is the average of 10 samples read under a microscope.

Several comparisons, including this study show that the number of conidia was substantially high. The untreated controls (treatments 10 and 12) had high numbers of conidia. We have not yet established that the conidia are involved in disease cycle under our conditions. However, it is clear that a high number of conidia are being produced. If conidia play a major role in initiating new infections in Texas, the disease management strategy will have to be modified. To our knowledge this is first extensive study of such nature, but more information is required.

**Mani Skaria and Hongqin Miao**

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