

CITRUS CENTER

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WESLACO, TEXAS 78596

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NEWSLETTER

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DR AMADOR RECEIVES TCM SPECIAL AWARD

Dr Jose Amador, Center Director of the Citrus Center and the Experiment Station in Weslaco, was recognized at the Texas Produce Convention in San Antonio in August for his contributions to the citrus industry of Texas. He was awarded the TCM Special Award for 2004.

Dr Amador began his career at the center in 1965 as an extension plant pathologist. His work brought him into contact with all crops growing in south Texas, including citrus. In 1991 he was appointed Center Director of both centers in Weslaco, and has dedicated himself to increase cooperation between the two agencies to better serve the growers.

The award was presented to him by Charlie Rankin, longtime radio broadcaster, who reviewed his career with several historical photos dating back to Jose's early years growing up in Cuba. Several members of the Amador family, including his wife Silvia were present at the awards function.

The Center joins everyone else in congratulating Jose for this well deserved achievement.

John daGraca



Dr. Amador (right) with Tommy Garcia, TCM Chairman

MAXIMIZING WATER USE EFFICIENCY THROUGH INTEGRATED ON-FARM APPLICATION AND DISTRICT DELIVERY SYSTEMS

The Texas Water Development Board on September 22, 2004 approved the funding of \$10 million to two long-term water conservation demonstration projects. This is the first time the Texas Water Development Board has provided funds to any long-term project. They are an 8-year demonstration project in the High Plains region, and a 10-year project in the Lower Rio Grande Valley. A collaborative proposal between the Harlingen Irrigation District, Cameron County; the Delta Lake Irrigation District, Hidalgo and Willacy Counties; Texas A&M University-Kingsville; and Texas Cooperative Extension Service was funded at \$3.8 million to study 'on-farm' water conservation strategies. The aim of this demonstration project is to improve water delivery systems from the irrigation district to the farmer by integrating state-of-the-art irrigation water distribution network control and management with on-farm irrigation technology. On-farm projects include maximizing the efficiency of all major irrigation technologies, such as flood furrow, sprinkler and drip irrigation. Field demonstration sites will showcase how to implement the beneficial findings from the projects to irrigation districts and farmers.

The Rio Grande 2001 Regional Water Plan and the 2002 State Water Plan projected significant water shortages in South Texas over the next 50 years. Reduced water flow from the Rio Grande River and increasing demand for municipal water use due to rapid population growth in the Lower Rio Grande Valley will require farmers to adapt to lower use irrigation systems and improved water management. Wayne Halbert, General Manager of the Harlingen Irrigation District stated that "this demonstration project will provide the tools our farmers, ranchers and irrigation

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districts need to make cost effective decisions in their various water conservation initiatives.”

The on-farm projects will be performed on newly planted and mature citrus orchards and evaluate long-term water conserving irrigation practices on crop growth, production, and economic feasibility. Citrus growers can anticipate direct involvement in observing low water use system technology that can demonstrate water savings with increased fruit productivity and quality over many consecutive years. Other crops of importance to the Rio Grande Valley will also be evaluated. Field projects will be in coordination with (but not limited to): Rio Farms, Inc.; Rio Queen Citrus, Inc.; Texas Citrus Mutual; Texas State Soil and Water Conservation Board; US Department of Agriculture; and Natural Resource Conservation Service-Texas State Office. Project Directors: Wayne Halbert, Harlingen Irrigation District Manager; Troy Allen, Delta Lake Irrigation District Manager; Dr. Shad Nelson, TAMU-Kingsville; Dr. Guy Fipps and Dr. Juan Enciso, TAMU, College Station.

For more information regarding this legislative action read the following press release at:

http://www.twdb.state.tx.us/publications/press_releases/2004PressReleases/092204agWtrConsDemo.asp

Shad D. Nelson, Ph.D.
 Assistant Professor of Agronomy
 Texas A&M University-Kingsville

DIAPREPES ROOT WEEVIL UPDATE

The *Diaprepes* root weevil (DRW) was first detected in two orchards near McAllen, TX in November, 2000. Since discovery of this serious pest of citrus and some 300 other host plant species—a rigorous quarantine, eradication and detection (trapping) program has been in place in both orchards and 18 surrounding residential (dooryard) sites within the quarantined area. This program is under the administration of the Texas Department of Agriculture. Chemical sprays (applied spring and late summer) for DRW eradication in orchards include—Sevin 80S (carbaryl), Micromite 25W (diflubenzuron) and FC 435 Petroleum oil. Capture 2EC (bifenthrin) is also applied twice yearly to the soil under the tree canopy to kill DRW larvae (neonates). Residential site trees and ornamentals are sprayed with Sevin 80 WDS up to 7 times per season, and two applications of Talstar F (bifenthrin) are made to lawn and soil under shrubs each season.

Surveys for DRW adults are on-going using special ‘Tedders’ traps placed in both orchards (16 traps per site) and in the 18 residential dooryards (6 traps per site) within the quarantine area. Delimiting surveys for DRW outside the quarantine area are also made in two nearby orchards and 22 dooryards. Traps are monitored

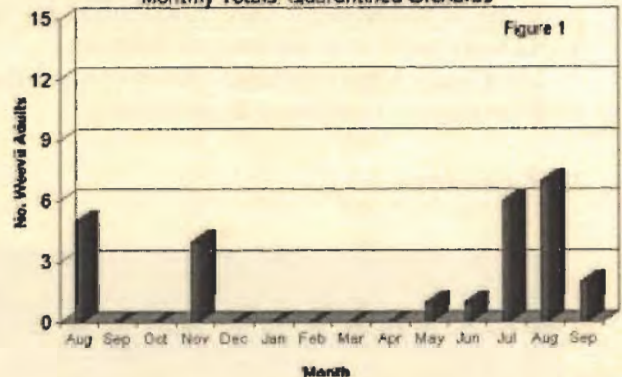
weekly, with all DRW catches recorded as well as two commonly occurring native weevil species—*Compsus* golden headed weevil and *Epicaerus* Mexican root weevil.

Monthly totals of DRW adults trapped (Aug. 1, 2003 to Oct. 1, 2004 period) in the two quarantine orchards and the 18 dooryard sites are summarized in Fig. 1 and 2. In the quarantined orchards, a peak of 7 DRW were caught during Aug., 2004, with no DRW trap catches recorded from Dec., 2003 thru Apr., 2004 (Fig. 1). In the 18 quarantined dooryards DRW were caught every month during the trapping period, with a peak of 14 in Aug., 2003, and 13 DRW trapped in June, 2004 (Fig. 2). To date, no DRW have been caught in the delimiting orchards or dooryard sites outside the quarantined area. The two native weevil species, *Compsus* and *Epicaerus*, have been consistently trapped in all quarantined and delimiting orchards and dooryard sites—with a peak of 163 *Epicaerus* adults recorded in one of the delimiting orchards during June, 2003 (data not shown graphically).

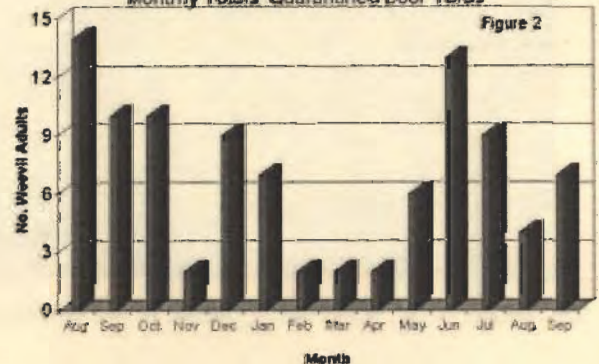
While the chemical spray program has failed to eradicate DRW in the two orchards and 18 residential sites, it is encouraging that DRW have been prevented from moving outside the quarantined area. However, it is imperative that the current quarantine, eradication and trapping program be continued, and possibly even intensified, under the auspice of the Texas Department of Agriculture.

J. Victor French

Diaprepes Root Weevil Trapping 2003-2004
 Monthly Totals: Quarantined Orchards



Diaprepes Root Weevil Trapping 2003-2004
 Monthly Totals: Quarantined Door Yards



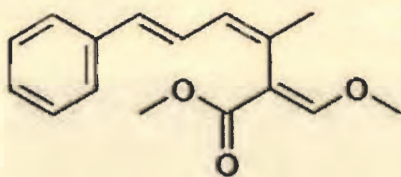
STROBILURIN FUNGICIDES

Strobilurins are fungicides used in the control of many diseases of vegetables, fruit and field crops. The name strobilurin comes from the commonly called "pine cone cap" mushroom with the scientific name, *Strobilurus tenacellus*, a wood decaying fungus. The antifungal chemical (from this mushroom) is called Strobilurin A, first characterized in 1977 by Anke and Steglich. Nine years later, the BASF company developed the first synthetic derivative of this chemical for plant disease control. The antifungal activity of this compound is caused by its ability to inhibit respiration of fungi. For example, azoxystrobin, the active ingredient in fungicide Abound® inhibits both spore germination and mycelial growth. This is achieved by inhibiting mitochondrial respiration in the fungal cell (preventing energy production) by binding to electron-carrying enzymes (cytochromes) and blocking the transfer of electrons between them. Mitochondria in fungal cells produce energy (ATP) for the cell through respiration. Without ATP, fungal cells cannot survive and die.

Abound®, Gem®, and Headline® are strobilurin fungicides that are effective in the control of citrus diseases such as greasy spot and melanose.



Strobilurus tenacellus
growing on pine cones



Chemical structure of
Strobilurin A

Mani Skaria

"POTENTIAL HEALTH BENEFITS OF CITRUS" SYMPOSIUM

Researchers from around the world recently met in Philadelphia for a symposium on "Potential Health Benefits of Citrus" organized by Bhimu Patil and Ed Miller under the umbrella of the American Chemical Society's Division of Agriculture and Food Chemistry. Its goal was to present scientific evidence showing that oranges, grapefruit and tangerines have the potential to fight the nation's top-killing diseases such as cancer, obesity and heart disease. Topics covered included isolation of bioactive compounds and their potential benefits, along with whole citrus fruit, in cholesterol metabolism, weight loss, colon and oral cancer. Toxicity of these bioactive compounds was also discussed.

Drs Patil and Miller also arranged a **Global Level Citrus Health Benefits Initiative** at which industry representatives from Florida, California, and Texas shared information with the scientists. Ray Prewett and Luci Garcia from Texas and their colleagues from Florida (Doug Bournique, James Griffiths, Bill Stinson, Carla McGill) and California (Bryn Punt and Christine Bencom) helped put together a team to implement discussions to continue supporting the research.

One grapefruit a day keeps the doctors away: Recent studies have shown that citrus fruits contain compounds that may help prevent colon cancer, the second leading cause of cancer death in the US. Bhimu Patil's graduate student, Jairam Vanamala, fed animals freeze-dried grapefruit, irradiated grapefruit pulp and isolated bioactive compounds, and found a reduced number of colon cancer lesions. Jairam conducted animal studies in Dr. Turner's lab in College Station. In a similar study in Japan, nobiletin, a chemopreventative compound found in citrus fruit, also helped prevent colon cancer in animals.

New evidence also shows that grapefruit consumption can cause significant weight loss. Scripps Clinic scientist Ken Fujioka conducted a 12-week study on 100 obese men and women and concluded that eating half a grapefruit before meals resulted in an average weight loss of 3.6 lb, with some participants losing more than 10 lb. Dr. Fujioka speculates that the unique chemical properties of grapefruit reduce insulin levels and encourage weight loss.

Researchers at the University of Hawaii found that grapefruit can also reduce the risk of cancer caused by smoking. A controlled study of 49 smokers showed that drinking 6 oz. of grapefruit juice three times daily slowed the activity of a liver enzyme called CYP1A2, which helps activate the cancer-causing substances found in tobacco smoke. Whole fruit has a greater impact on disease prevention than fruit juice due to the fiber content.

Bhimu Patil

BHIMU PATIL RECEIVES NATIONAL AWARD

Bhimu Patil was honored at the recent meeting of the Agricultural and Food Chemistry Division of the American Chemical Society in Philadelphia, PA by being presented with the 2004 Outstanding Young Scientist Award. This award, which is sponsored by WILD Flowers Inc., is given to scientists who make significant technical contributions in foods for health and food chemistry early in their careers.

Bhimu has previously received several other awards including the Research & Excellence Award (Texas A & M College of Agriculture and Life Sciences), Paul Harris Fellowship (Rotary Foundation), Young Scientist Award (Association of Agricultural Scientists of Indian Awards), and Outstanding Teaching Award (Agronomy & Resource Sciences Dept. TAMUK).

Congratulations.



Bhimu Patil (right) receives his award from Dr. Keith Cadwallar, Chairman of the Division of Agriculture and Food Chemistry

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