TEXAS A&M UNIVERSITY-KINGSVILLE

CITRUS CENTER

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Season's Greetings

CITRUS VINE CONTROL

After two plus years of working on this problem, I must admit that I still do not have many answers. Old man's beard and morning glory can be pretty well controlled (after initial pulling) with tank mixes of Roundup, Hyvar X and Solicam. MSMA in the mix burns them back, but it is not systemic. Though it is not labeled in Texas, 2,4-D works very well, and I have not noted any phytotoxicity from its use.

Milkweed vine control is getting better with the above program, but still has a way to go. Combinations that include MSMA or 2,4-D are promising. The company which makes DeVine, a biological control agent using a very host specific fungus, Phytophthora, has not formulated the product in the last two seasons, so we still have not been able to incorporate it into the program.

Possum grape control is still somewhere in the future. I have hit it (after hand pulling and a couple of weeks for regrowth) with maximum rates of various combinations of Roundup, Hyvar X, MSMA and 2,4-D, but the best I can claim is that I made it sick. Still, one supposes that if you can make it sick, repeated treatment over a couple of seasons just might take it down all the way. I suspect that the new species of *Cissus* that Dr.Victor French encountered will be just as difficult to control.

In any case, I will continue working with these materials and hope for the best, since nothing else (that is labeled) has done as well. There may be some experimental products in the pipeline that will do a better job, but we'll have to wait and see.

Julian Sauls, Ph.D.
Professor & Extension Horticulturist

INTERNATIONAL CITRUS VIROLOGISTS VISIT VALLEY AND MEXICO

In November, a group of 18 citrus virologists from seven countries took part in the pre-conference tour of the International Organization of Citrus Virologists (IOCV), before traveling on to Monterrey, Mexico for the conference itself. They were welcomed in Weslaco with an evening reception sponsored by the President of TAMUK, Dr Rumaldo Juarez. After a morning of talks by various local scientists from the Citrus Center, the Experiment Station, USDA-ARS and USDA-APHIS on several aspects of Texas citriculture, the visitors enjoyed a field tour, and the following day visited a citrus packingshed, juice plant, nursery and the USDA-APHIS facility at Moore Field. They then traveled by bus to Monterrey, with a stop at the Centro de Biotecnologia Genomica in Reynosa.

In Monterrey, a total of 87 delegates from 22 countries took part in the 16th IOCV conference. Drs Erik Mirkov, Mani Skaria, Eliezer Louzada and John da Graca all participated, as authors and co-authors of nine papers and posters. Of significance to the Texas citrus industry were papers dealing with the further understanding of tristeza virus, more details on the new sudden death disease in Brazil, diagnosis of greening disease in Brazil, and the molecular detection of leprosis virus and its movement through Central America. Efforts in several laboratories offer some future prospects of controlling tristeza virus, but there is no clarity yet on whether a variant of the virus is involved in sudden death. Greening in Brazil is being spread by the Asian psylla; of interest was the fact that in addition to the Asian form of the disease, a new species of pathogen is predominant. The false spider mite-borne leprosis virus is now present in several Central American countries, but progress has been

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made at molecular detection. At the end of the meeting, John da Graca assumed the Chairmanship of the organization for the next 3 years, and Dr Nuria Duran-Vila of Spain was elected as Chairman-elect.

John da Graca

John da Graca (center) with several IOCV past-charimen (L-R, Drs Lee, Garnsey, Roistacher, Bove, Moreno, and Navarro)

RESEARCH INTERNSHIPS, A SUCCESSFUL WAY OF CHANNEL UNDERGRADUATE STUDENTS TO GRADUATE STUDIES

Four years ago the biotechnology laboratory of the TAMUK Citrus Center initiated a program to provide hands-on research internships for undergraduate students from the University of Texas at Brownsville (UTB) and later for students from the University of Texas Pan-American (UTPA), in an attempt to attract them to graduate studies. The main reason behind this program is the fact that the Hispanic population is the one least represented in science careers in the United States even though it is the ethic group with the highest population growth rate. It is expected that by 2030 the Hispanics will constitute 25% of the US population. So far we have provided internships for 27 students, 16 from UTB and 11 from UTPA. The results have been excellent. Of the students who graduated with their bachelor's degree, six from UTB and three from UTPA were attracted to graduate studies. Two of these students graduated with their master's degree this year, one is currently a laboratory coordinator at UTB, and the other is a Ph.D. student at Texas A&M in College Station. Three other students will graduate in May 2005 and intend to pursue graduate studies. One conclusion can be drawn from this program; if the opportunity is given to local Hispanic students, they will do their best and will continue their education. Many of the students that came to the internship didn't believe that they were able to do research, but after the experience they concluded that they have the ability. We are currently trying to obtain extra funds to expand the program and help more students.

Eliezer Louzada

Cassandra Bennett and Sandara Ozuma with just three months as undergraduate interns just cloned thier first gene

Jacqueline Segura, and Adriana Robbins looking at their differential display autoradiograph. They participated in the undergraduate internship in the spring of 2002. Adriana is currently a Ph.D. student and Jacqueline will start her master degree in June 2005

DR PATIL APPOINTED AS DIRECTOR OF THE VFIC

Dr Bhimu Patil has accepted the position of Director of the Vegetable & Fruit Improvement Center (VFIC), Texas A & M University in College Station, and will assume duties there at the beginning of January. He is no stranger to the VFIC as he has been serving concurrently as Associate Director. The current Director, Dr Leonard Pike, is stepping down.

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Dr Patil was a student of Dr Pike, and has been at the Citrus Center since September, 1997. During the past seven years he has established national and international recognition for his group's research on the roles citrus phytochemicals may play in benefiting human health. He has received major funding from several sources, established cooperative research programs with a number of leading institutions, published a number of papers in leading journals, graduated several students, given numerous invited lectures, and in doing so brought greater recognition to the Citrus Center. He obtained tenure at Texas A & M University-Kingsville in 2001 and was promoted to associate professor in 2002, and received several awards from the university and a number of professional societies for his work.

His citrus research programs will continue in College Station, and the Center will continue to support them, so although we are losing him from Weslaco, we will continue to be part of his research in this vitally important area.

We thank Bhimu for all he has done at the Center, and we are proud to have been associated with him. We wish him greater successes in his new position.

John da Graca

Bhimu Patil

ETHYLENE DE-GREENING OF CITRUS FRUIT

Ethylene is a flammable gas; it is an unsaturated hydrocarbon with two carbon and four hydrogen (CH_2=CH_2) atoms. It is found in coal gas, and can be produced by heating petroleum hydrocarbons. It is present in plants and functions as a natural growth regulator. Among the common plant growth regulators, ethylene is exceptional because it is a volatile gas. At maturity, many fruits release ethylene to promote fruit ripening. The ancient Egyptians and Chinese had used ethylene to ripen figs and pears. It had been used medically as an anesthetic.

In Texas, citrus fruit harvested from September to early January are subjected to ethylene treatment in special chambers called sweat rooms or ethylene de-greening rooms. These rooms are specially designed to hold many stacked bins of fruit. The temperature (82-85°F) and relative humidity (90-95%) levels are supposed to be regulated. Regular exchange of fresh air (at least one cycle/hr) is recommended to avoid carbon dioxide build-up. Ethylene gas (2-5 parts per million) is introduced into the room to induce fruit color change. Ethylene stimulates chlorophyll breakdown and synthesis of other pigments, fruit softening, and the conversion of starch to sugars.

Citrus fruits are normally embedded with fungal spores from the field, especially at the stem-end and stylar ends. The spores remain dormant; however, the ethylene treatment and the sweat room conditions would induce spore germination. This results in fruit with stem end rot, a fungal disease of citrus fruit. Many packinghouses in the Valley experience stem-end rot problem as a result of ethylene de-greening. Well-regulated, air quality parameters in sweat rooms are necessary to control stem end rot.

If the sweat rooms are not properly designed and monitored for air quality parameter; they can reach levels that are damaging to fruit. High carbon monoxide, carbon dioxide, and ethylene concentrations can initiate fruit rot. Moreover, ethylene oxide reacts with carbon dioxide to produce carbon monoxide. High levels of ethylene and carbon monoxide are injurious to human health.

Mani Skaria

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