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Abstracts

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Alphabetized by first author's last name

CHARACTERIZATION OF POTYVIRUSES FROM PASSIFLORA BY HOST RANGE, MOLECULAR HYBRIDIZATION AND SEQUENCE HOMOLOGY. D. Benschel, S.S. Pappu, C.L. Niblett, R. Provvidenti¹, and Francia Varon de Agudelo², Plant Pathology Department, University of Florida, Gainesville, FL 32611-0680, ¹Cornell University, N.Y.S.A.E.S., Geneva, NY 14456, ²ICA, CNI, AA233, Palmira, Colombia.

Potyvirus were isolated from *Passiflora edulis* and *Passiflora ligularis* from Colombia and Thailand. These viruses were compared to known potyvirus of *Passiflora* from Australia and South Africa, and two strains of Soybean Mosaic Virus (SMV) by host range comparison, dot blot hybridization, and nucleotide sequence homology in the coat protein gene and the 3' untranslated region (3'UTR). Limited host range studies indicated that the two isolates from Colombia were very similar to SMV and the virus from Thailand was distinctly different. This was confirmed by dot blot hybridization using the 3'UTR as a virus specific probe and by nucleotide sequence analysis.

OBSERVATIONS ON THE SPREAD OF CITRUS VARIEGATED CHLOROSIS AND DECLINIO/BLIGHT IN SAO PAULO STATE, BRAZIL. M. Julia G. Beretta, K. S. Derrick², R. F. Lee² and F. F. Laranjeira¹, ¹Instituto Biológico, C.P. 7119, 01051, São Paulo, Brazil and ²University of Florida, CREC, Lake Alfred, FL 33850.

Citrus variegated chlorosis (CVC) first appeared in 1987 and is now widespread in São Paulo and Minas Gerais States, Brazil. Declinio/blight is widespread and has been present in Brazil for many years. *Xylella fastidiosa* has been associated with CVC while the causal agent of declinio is unknown. Surveys were conducted to observe the rate of spread of CVC from May 1991 to January 1992 in a commercial orchard with 13,391 trees. The incidence of CVC affected trees increased from 14.4% to 32.2% within nine months. Another orchard with 1253 trees planted in 1981 was regularly surveyed for presence of declinio from 1986 to 1992. The incidence of affected trees increased exponentially from 0% to 52.5% in 65 months. The incidence of both diseases increased rapidly over the survey period, indicating the involvement of an infectious agent.

SELECTION FOR RESISTANCE TO BEAN GOLDEN MOSAIC VIRUS IN CARIBBEAN DRY BEAN GENOTYPES. M. W. Blair, J. S. Beaver and F. Saladin, Dept. of Agronomy, University of Puerto Rico, Mayagüez, Puerto Rico 00681-5000.

Bean golden mosaic virus (BGMV), type II, is the most serious viral disease of beans in the Caribbean basin and is vectored by the ubiquitous sweetpotato whitefly (*Bemisia tabaci* Genn.). A total of 90 varieties, landraces and breeding lines from programs at CIAT, ICTA (Guatemala) and INIA (Mexico), were tested in four field trials in Puerto Rico and Dominican Republic. Five components of resistance were measured. Field resistance (percentage infection) was highly correlated with attenuated symptom expression and low disease spread (tolremicity) but less correlated with yield tolerance and vector feeding and oviposition preference. The most resistant genotypes were A429, DOR483 and Turbo III. Abnormal symptom reactions were noted in DOR303 and Pompadour G. Early-flowering provided avoidance. High rank correlation between locations indicated similar virus strains. Considerable variability for BGMV resistance existed.

XYLOFAGOUS MACROMYCETES ON PINE WOOD IN VENEZUELA. A PRELIMINARY LIST. Bracamonte, L. and O. Holmquist. Laboratorio Nacional de Productos Forestales, Mérida, Venezuela.

Venezuela has now some 400.000 has. of pine plantation some of them 20 years old, increasing annually in some 40.000 has., *Pinus caribaea* chiefly, with the goal of becoming an exporter of this commodity. There is a good deal of necessity to investigate the biological decay of this wood and different lines of research have been started some years ago, among this the wood decay fungi. So far 29 species of macromycetes have been identified and keys for cultural studies assigned, according to M. Nobles, 1962. Some of this species are common on coniferous woods of the temperate areas of the world and never before reported in Venezuela, specially those collected in our highlands. The species are: *Poria proxima*, *P. latemarginata*, *P. cocos*, *P. simani*, *P. albolutescens*, *P. versipora*, *P. qossyplum*, *P. fissiliformis*, *P. illudens*, *P. humilis*, *P. rixosa*, *Perenniporia medulla-panis*, *Irpex lacteus*, *Coriollus squalens*, *Coriollus tephroleucus*, *Gloeoporus fumosus*, *Tyromyces balsameus*, *T. semisupinus*, *T. albellus*, *Fomitopsis palustris*, *Pycnoporus sanguineus*, *Ganoderma applanatum*, *G. lucidum*, *Schizophyllum commune*, *Lentinus crinitus*, *Trametes elegans*, *Gloeophyllum striatum*, *Scenidium hydnoideum*, *Hyphoderma tenue*.

CHARACTERISTICS OF MACROPHOMINA PHASEOLINA ISOLATES FROM PUERTO RICO AND THE DOMINICAN REPUBLIC. R. Campo-Arana, R. Echávez-Bade, E.C. Schröder and A. Sánchez-Paniagua. Departments of Crop Protection and Agronomy & Soils, University of Puerto Rico, Mayagüez, Puerto Rico 00681-5000.

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Ashy stem blight caused by *Macrophomina phaseolina* is prevalent in warmer bean growing areas with drought periods in the Caribbean. Four *M. phaseolina* isolates PRMp1, PRMp2 (Puerto Rico), RDMp1, RDMp2 (DOM.REP.), were obtained from the soil-borne fungi collection of the Univ. of P.R., Mayagüez. Micellium morphological characteristics were similar between PR isolates, but these were different compared to RD isolates. Mean values of PRMp2² microesclerotia size were significantly different from those of RD isolates. The protein patterns were similar between RD isolates, but distinct from the most virulent PRMp2 isolate. The dominican isolate DRMp2 was the most pathogenic and attacks beans even in soil with high moisture. Apparently RDMp2 could be another race of *M. phaseolina*.

RACES OF THE SUGARCANE COMMON RUST PATHOGEN, *Puccinia MELANOCEPHALA*, IN FLORIDA. J. C. Comstock¹, J. M. Shine, Jr.², J. L. Dean³, and M. S. Irely⁴. ¹USDA-ARS, Canal Point, FL 33438, ²Florida Sugar Cane League, Canal Point, FL, ³USDA-retired, Lake Worth, FL 33461, and ⁴United States Sugar Corp., Clewiston, FL 33440.

Six sugarcane cultivars were inoculated with 5 isolates of *Puccinia melanocephala* twice a week over the last 3.5 months of a 5.5 month experiment conducted in a photoperiod house to control rust on non-inoculated plants. The experiment consisted of 12 replications of factorially structured treatments in single-plant plots. Un-inoculated plants were included in the design as though they were a sixth isolate. The experiment was repeated a second year. Data consisted of visual rust severity ratings, estimates of infected leaf area, growth rates as assessed by periodic plant height measurements and fresh plant weights at the end of the experiment. Cultivars responded differentially to rust isolates. Analysis of variance of plant weights indicated significance for cultivars, isolates, and cultivar-by-isolate interaction. We concluded that the 5 isolates, collected over a 6 year period, included more than one race of *P. melanocephala*.

DIDYMOsphAERIA TAIWANENSI PATÓGENO ASOCIADO AL CHAMUSCADO DE LA HOJA DE CAÑA DE AZÚCAR

Conrado Dabofin, Omar Tortolero, Adalberto Carrasco. Universidad de Los Andes - Trujillo - Venezuela.

En siembras comerciales de caña de azúcar del Edo. Trujillo - Venezuela, de las variedades PR 61632 y PR 692176, se detectó una nueva enfermedad que produce en las hojas, manchas alargadas y angostas, amarillentas al principio, pero que pronto se colorean de rojo púrpura. Las hojas enfermas se marchitan y mueren de la punta hacia abajo.

Las diminutas fructificaciones negras del hongo se desarrollan en las porciones muertas de la hoja. Los peritecios son redondeados, de color marrón de 135 nm de ancho, con aseas de 63 nm de largo por 9,5 de ancho y ascosporas de 16 nm de largo por 4 nm de ancho, subdivisión de la ascospora 9,4 nm de largo por 6 nm de ancho y Paráfisis hialina de 89 nm de largo. Las características y medidas de las estructuras del patógeno se corresponden con las del hongo *Didymosphaeria taiwanensi*, el cual se reporta por primera vez en Venezuela y solo se ha detectado en Taiwan.

INFLUENCE OF FUNGICIDES ON RICE BLAST, YIELDS AND MILLING QUALITY IN FLORIDA. L. E. Datnoff, Univ. of Florida-IFAS, Everglades Research and Education Center, P. O. Box 8003, Belle Glade 33430

Rice, *Oryza sativa*, is a relatively new crop in Florida, and little information is available on managing rice blast caused by *Pycularia grisea* Sacc. (= *P. oryzae* Cavara). The purpose of this study was to evaluate several fungicides and the time of their application for blast control, and the subsequent effect on grain yield and quality. Treatments, replicated four times, consisted of fungicides applied at panicle differentiation, boot, and heading growth stages. Fungicide sprays were applied at 2.1 x 10⁵ Pa with a CO₂ backpack sprayer equipped with three Cone-Jet nozzle tips on a hand-held boom. Blast incidence was determined by examining 25 rice heads per experimental unit, and calculating the percentage of those heads exhibiting neck rot symptoms. At all rates tested, Mertect alone and Benlate alone or in combination with Tilt or Rovral significantly reduced blast incidence. Reductions ranged from 32% to 77% over the control. Grain yields were increased by 260 to 784 kg/ha over those in the control. Increase in the percentage of whole kernels milled ranged from 7.5 to 10.6. This translated into milling yield increases of 424 to 708 kg/ha.

ESTUDIO Y CLASIFICACION DE HONGOS ASOCIADOS AL NEMATODO NODULADOR, MELOIDOGINE INCOGNITA EN ALGUNOS SUELOS AGRICOLAS DE PUERTO RICO. Dávila, M; N. Acosta, C. Betancourt y J. Negrón. Colegio Regional de la Montaña, U.P.R. Utuado, P.R.

Se realizaron estudios de laboratorio para determinar la microflora asociada al nemátodo nodulador, *Meloidogine incognita* en suelos agrícolas de Puerto Rico. De 74 hongos aislados, 10 mostraron actividad quitinolítica. Estos fueron *Trichoderma harzianum*, *Gliocladium roseum*, *Trichoderma* spp. *Paeclomyces thiacinus*, P.

marquandi (Tipo I, II, III), *Diheterospora chlamydosporia*, *Acremonium fusidiodes*, *Myrothecium verucaria*, *Mroridium*, *Chaetomium globosum*, *Metarrhizium anisopliae*, *Penicillium melinii*, *P.purpurogenum*, *P.simplicissimum*, *P.thomi Scopulariopsis* sp., y *Aspergillus fumigatus*. Los hongos que mostraron mayor parasitismo de los huevos de *M. incognita* (sobre 80% a los 8 días de observación) fueron: *Groseum*, *Tharzianum*, *P.simplicissimum* y *P.marquandi*. *Trichoderma* sp., *Mroridium*, *P.thomi*, *C.globosum* y *Scopulariopsis* sp. mostraron niveles bajos o ningún parasitismo sobre los huevos (menos del 5%). Las demás especies manifestaron niveles de parasitismo intermedios en los huevos del nemátodo (15-72%). *Groseum*, *Tharzianum*, *P.simplicissimum*, *A.fumigatus* y *D.chlamydosporia* parasitaron el mayor número de huevos (sobre 50%) a los dos días de observación. Los hongos *P.marquandi* (Tipo I, II, III), *P.simplicissimum*, *P.melinii* y *P.purpurogenum* fueron encontrados por primera vez parasitando huevos de *M. incognita*. Hubo una asociación entre la actividad quitinolítica de los hongos y su habilidad de parasitar los huevos de *M. incognita* en la mayoría de los casos.

BIOLOGICAL AND SEROLOGICAL DIVERSITY AMONG SPIROVIRUSES
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The very flexible, filamentous virus particles associated with citrus ringspot and citrus psorosis appear to represent a new group of plant viruses (Phytopathology 78:1298-1301, IOCV 11:386-390). Since the particles appear as spirals when viewed with an electron microscope, we propose this new virus group be named spiroviruses. Based on serology, electron microscopy and the presence of a presumed 48 kd capsid protein, spiroviruses have been associated with citrus ringspot and citrus psorosis in Florida, Spain, Argentina (Plant Disease 75:613-616) and Israel (Phytophylactica 24:99). Spiroviruses have an extensive experimental herbaceous host range, but known natural infections are restricted to citrus. There is considerable variation in the symptoms induced by different virus isolates, and serological studies using polyclonal and monoclonal antibodies indicate considerable serological diversity among isolates.

TANK-MIX COMBINATIONS OF SYSTEMIC AND NON-SYSTEMIC FUNGICIDES PROVIDED EXCELLENT CONTROL OF ASCOCHYTA BLIGHT ON CHRYSANTHEMUM PLANTS. Arthur W. Engelhard, Univ. of Florida, 5007 60th St. E., Bradenton, Florida 34203 USA

Tank-mix combinations of a systemic and a non-systemic fungicide, each used at one-half the label rate, provided excellent *Ascochyta* blight control on 2 cultivars of chrysanthemum plants grown outdoors and sprayed weekly. The systems, iprodione 26019 50W or propiconazole 1.14 EC, were each tank-mixed with either captan 50W or chlorothalonil 2787 F or mancozeb 200 DF and compared to the standard treatments containing benomyl 50 DF plus either captan 50W or chlorothalonil 2787 F or mancozeb 200 DF. All the above treatments provided significantly equal disease control. However, when thiram 75W or ziram granuflo 76% were used as the non-systemic fungicides in the tank-mix combinations, disease control was reduced. Phytotoxicity as leaf necrosis or chlorosis was not observed on any treatments but plants of one cultivar were shorter when sprayed with tank-mixes containing propiconazole.

CLONING AND EXPRESSION IN *E. coli* OF A PUTATIVE NON-STRUCTURAL GENE OF CITRUS TRISTEZA VIRUS. V. Febres, H.R. Pappu, E.J. Anderson, C.L. Niblett, R.F. Lee*. Plant Pathology Department, University of Florida, Gainesville, FL 32611, *CREC, Lake Alfred, FL 33850, USA.

Using the polymerase chain reaction (PCR) and specific primers, a putative non-structural gene coding for a protein of approximately 29 kD and upstream of the coat protein gene was amplified from citrus tissue infected with the Florida isolate T36 of citrus tristeza virus (CTV). This product was cloned into the *E. coli* expression vector pETH-3b, under the control of the bacteriophage T7 RNA polymerase promoter. The cloned gene was expressed in *E. coli* strain BL21(DE3) after induction. SDS-Polyacrylamide gel electrophoresis showed a protein of the expected size (29 kD) in cells harboring the cloned gene. This protein is being used for production of polyclonal and monoclonal antibodies to ascertain its function in the CTV genome.

EVALUACION "IN VITRO" DE HONGOS DEL SUELO COMO AGENTES DE CONTROL BIOLÓGICO ANTE SCLEROTIUM ROLFSSII SACC EN EL EDO ZULIA. García, Eymar y López, Leila. LU.Z. Facultad de Agronomía, Apdo. 526, Maracaibo, Estado Zulia.

Se efectuaron pruebas antagónicas "in vitro" de hongos aislados de Rizoheath de un cultivo de tomate (*Lycopersicon esculentum* L.), ubicado en la zona hortícola de Carrasquero, Edo. Zulia, como paso previo a estudios sobre control biológico del agente causante de la pudrición basal del tomate, el hongo *Sclerotium rolfsii*. Se utilizó la técnica de platos de dilución para determinar los hongos presentes en el suelo. Del análisis realizado se lograron aislar 4 hongos del género *Penicillium*

llamándose CZ1, CZ2, CZ3 y CZ4, 9 hongos del género *Aspergillus* llamándose XY1, XY2, XY9, y 2 hongos del género *Trichoderma*, llamándose LM1 y LM2. En pruebas de confrontación realizadas en placas de petri se apreciaron antagonismos efectivos en los hongos CZ1, LM1, CZ2, XY4, XY5, XY7, XY8 y LM2 de tipo Hiperparasítico, competitivo y antibiótico, presentándose estos 3 tipos de mecanismos en las cepas LM1 y LM2. Los resultados fueron evaluados luego de 2 semanas de incubación a luz continua en medio de cultivo Papa-Dextrosa-Agar.

CONFRONTACION "IN VITRO" EN TRES HONGOS DEL SUELO Y MACROPHOMINA PHASEOLINA (TASSI) GOID, AGENTE CAUSAL DE LA PUDRICION CARBONOSA DEL FRIJOL EN LA PLANICIE DE MARACAIBO, ESTADO ZULIA. García Medina, Eymar y Aponte, Orlando. L.U.Z. Facultad de Agronomía. U.C.L.A. Postgrado Fitopatología Bqto Vzla.

Se evaluaron efectos antagónicos "in vitro" de hongos aislados del rizoma de un cultivo de frijol (*Vigna unguiculata* L), ubicado en la Granja Ana María Campos, de la Universidad del Zulia, como prueba preliminar de estudios sobre biocontroladores de *Macrophomina phaseolina*, productor de la pudrición carbonosa del frijol, en la planicie de Maracaibo. Se usó la técnica de platos de dilución a fin de determinar hongos habitantes del suelo, logrando aislarse cuatro hongos del género *Aspergillus* denominados A1, A2, A3 y A4, y un hongo del género *Penicillium* nombrado P1. En las pruebas de confrontación realizadas a nivel de Laboratorio se observaron efectos antagónicos efectivos de los hongos A2, A3 y A4 con mecanismos de hiperparasitismo, competencia y/o antibiosis. Los hongos denominados A1 y P1 fueron inefectivos "in vitro". Los resultados se evaluaron durante dos semanas de incubación en medio Papa-Dextrosa-Agar a luz continua y a 24°C.

DETECCION DEL VIRUS DEL BANDEADO AMARILLO DEL SORGO INFECTANDO SORGO FORRAJERO EN VENEZUELA. M. J. Garrido y M. Alfaro. UCV, Facultad de Agronomía, Apartado 4579, Maracay 2101 y FONAIAP-CENIAP, Apartado 4653, Maracay 2101.

En una siembra de sorgo forrajero (sorgo x pasto sudan) cv Stampede en Maracay, fueron observadas plantas que presentaban en las hojas bandas o estrías cloróticas o amarillentas. La enfermedad fue transmitida mecánicamente a plantas de sorgo 'Atlas' y maíz 'Iochief'. Los síntomas aparecían 10-15 días después de la inoculación, lográndose 3-10% de transmisión. En preparaciones parcialmente purificadas se observaron partículas isométricas de 25-26 nm de diámetro. Savia de plantas infectadas con el virus fue probada a través de doble difusión en agar con antisueros contra el MSTpV, MMV, PMV, MCMV, MRFV y SYBV, y se observó una reacción positiva sólo con el SYBV (sorghum yellow banding virus). Fueron inoculados con el virus 32 cultivares de sorgo y 15 especies de dicotiledoneas, resultando con síntomas solamente los cultivares de sorgo Stampede, Himeca-101, Zaraza-1, Monagas-1, Guárico-2, Caribe, Wac-5005 y PW-861-DR.

SPATIAL DISTRIBUTION OF A CANKER DISEASE OF LAURACEAE IN A LOWLAND MOIST TROPICAL FOREST. Gregory S. Gilbert¹, Stephen P. Hubbell², and Robin B. Foster^{1&3}, ¹Smithsonian Tropical Research Institute, Aptdo. 2072, Balboa, Panamá, ²Dept. Ecology, Evolution, and Behavior, Princeton Univ., Princeton, NJ 08544, USA, and ³Field Museum of Natural History, Chicago, IL 60605, USA.

The spatial distribution of a canker disease associated with a declining natural population of *Ocotea whitei* was studied in all 10 species of trees in the family Lauraceae that occur in a 20-ha plot in the lowland moist tropical forest of Barro Colorado Island, Panamá. The cankers occurred on *Ocotea* (4 spp.), *Nectandra* (4 spp.), and *Phoebe cinnamomifolia*, but not on *Beilschmiedia pendula*. The proportion of stems showing cankers varied widely across species, with more than 70% of stems greater than 1cm diameter symptomatic in *O. whitei*. Cankers were more common on small than large trees. Small individuals (1cm ≤ dbh < 4cm) of *O. whitei* distant (>13m) from a reproductive-sized conspecific are more likely to be healthy than those close to a conspecific adult. This pattern does not appear with respect to distance from heterospecific adults (*B. pendula*). Several fungi have been isolated from cankers, and proof-of-pathogenicity tests are underway.

SPATIAL AND TEMPORAL SPREAD OF CITRUS TRISTEZA VIRUS IN EASTERN SPAIN MONITORED BY MONOCLONAL ANTIBODY DETECTION. Gottwald, T. R., Cambra, M., and Moreno, P. USDA/ARS, 2120 Camden Rd., Orlando, Florida, USA and IVIA, Apdo. Oficial, 46113, Moncada, Valencia, Spain.

Citrus tristeza virus (CTV) was monitored by monoclonal antibody probes via ELISA in six symptomless orange and grapefruit orchards near Valencia, Spain for up to 12 years. Temporal models were fitted to each of the data sets by non-linear regression analysis. Overall the Gompertz model was the most appropriate based on correlation of observed vs predicted values. The Gompertz rate parameter k was 0.205 to 0.413 for orange and 0.078 for grapefruit in areas of high CTV incidence and 0.077 to 0.093 for orange orchards in areas with lower CTV incidence. Ordinary runs analysis indicated very little within- or across-row association of CTV positive trees. Morisita's index of dispersion for different quadrat sizes, indicated a tendency for aggregations of diseased trees to increase in size over time. Spatial autocorrelation analysis indicated associations among trees 8 to 24 trees apart, suggesting possible patterns of viruliferous vector movement.

LA PUDRICION BACTERIAL DEL TALLO DE LA YUCA (Manihot esculenta Crantz) EN VENEZUELA. Y. Guevara, A. Rondón, E. Arnal, Z. Suárez, R. Solorzano y R. Navas. FONAIAP-CENIAP. MARACAIBO-VENEZUELA.

Se estableció que el agente causal de la pudrición bacteriana del tallo de la yuca es la *Erwinia carotovora* subesp. *carotovora*. La enfermedad se encuentra ampliamente distribuida en el país. La sintomatología observada fue pudrición de tallos y ramas, donde el tejido interno toma un color marrón oscuro a rojizo. En plantas jóvenes se halló marchitez del cogollo y maceración de los tejidos. En las raíces chancros superficiales y pudrición interna. Los daños se encontraron asociados con el ataque de insectos: *Chilonoma clarkei* Ansel, Lepidoptera: Pyralidae; *Dasiope (=Lonchaea) sp.* Diptera: Lonchaeidae y *Anastrepha manihoti* Lima, Diptera: Trypetidae. La evaluación de la incidencia de la enfermedad en materiales sembrados en el Campo Experimental del CENIAP, mostró que los cultivares M VEN-57, M VEN-151 y M VEN-7 fueron los más resistentes, mientras que M VEN-77, Proletaria y M VEN-180 resultaron los de mayor susceptibilidad al momento de la cosecha.

CITRUS TRISTEZA VIRUS AND CITRUS APHID SURVEY IN BELIZE. C. M. Herron and H. H. Sabal, Citrus Growers Association, Box 7, Mile 9 Stann Creek Valley Road, Dangriga, Belize, Central America.

Citrus is the second largest agricultural export earner in Belize, at the moment a rapid expansion program of commercial plantings is taking place. In March/June of 1992 a survey was conducted for citrus tristeza virus (CTV) and citrus aphids. Using DAS ELISA with polyclonal antibodies to detect all known CTV strains and DASI ELISA with MCA 13 monoclonal antibody to detect decline inducing CTV strains. A one per cent random sample of the citrus population was taken in the form of ten tree composite samples, over all citrus growing areas. In total, 2,531 composite samples were tested. CTV was found in 692 samples. *Toxoptera citricidus*, the efficient aphid vector of CTV was not found in any of the 19 citrus aphid samples collected.

CARIBBEAN PINE SUDDEN WILT. A NEW AND DESTRUCTIVE DISEASE IN VENEZUELAN PLANTATIONS. O. Holmquist. School of Forestry, Universidad de Los Andes, Mérida, Venezuela.

In the 340.000 has. of *Pinus caribaea* growing now in the eastern Llanos north of the Orinoco River of Venezuela a new disease is reported for the first time on this host and the Spanish name of "Síndrome de Muerte Súbita del Pino Caribe" has been given to it. The disease is caused by *Botryodiplodia theobromae* Pat., a worldwide ubiquitous polyvalent fungus that appears infecting almost the 100% of the individual apparently healthy plants becoming virulent when they get stressed, killing it in few days. The disease was first studied by the outstanding Venezuelan phytopathologist José Agustín González in the past decade but not much attention was paid to his studies until an outbreak of the disease in 1989 killed almost one thousand hectares in just one location. Many predisposing factors have been identified and its effects studied in particular sites with no one appearing as the main factor for all sites. The fungus is also the cause of the rapidly invading blue stain of the lumber becoming the most important problem in the sawmill. The fungus causes important reductions in the physical and mechanical properties of the wood and the pulp and paper produced with it. Control of the disease in the field appears viable by silviculturally diminishing the effects of the predisposing factors but the rapid invasion of the timber appears to be hard to avoid demanding labor consuming chemical treatments, just after felling.

CULTURE OF A *XYLELLA FASTIDIOSA* FROM CITRUS TREES AFFECTED WITH CITRUS VARIEGATED CHLOROSIS IN BRAZIL. R. F. Lee¹, M. Julia G. Beretta², K. S. Derrick¹, M. E. Hooker¹, C. L. Davis¹, and R. H. Bransky¹, ¹University of Florida, CREC, Lake Alfred, FL 33850, ²Instituto Biológico, C.P. 7119, 01051, São Paulo, Brazil, and ³University of Florida, AREC, Ft. Pierce, FL 34954.

Citrus variegated chlorosis (CVC) is a destructive disease of citrus in Brazil which was first recognized in 1987. A *Xylella fastidiosa* has been associated with the disease by electron microscopy, by serological assays using antisera to other strains of *X. fastidiosa*, and the disease shows remission of symptoms upon treatment with tetracycline antibiotics. *X. fastidiosa* has now been cultured from CVC affected plants by using PW media (Phytopathology 70: 425) supplemented by L-histidine. Growth *in vitro* and serological tests suggests that the CVC isolate of *X. fastidiosa* may be unique from previously characterized *X. fastidiosa* isolates.

A Single Mutation in the Tobacco Mosaic Virus 126/183 kDa Proteins Eliminates Symptom Production

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Tobacco mosaic tobamovirus (TMV) strain U1 causes mosaic symptoms in systemically infected leaves of tobacco. A TMV mutant that produced a symptomless systemic infection of tobacco was isolated from a wild type TMV U1 population following nitrous acid mutagenesis. To localize the mutation(s) responsible for the symptomless phenotype, cDNA of mutant V-36 was synthesized, substituted into a wild type TMV cDNA clone and *in vitro* transcripts were screened on Xanthi tobacco. A single nucleotide change that resulted in an amino acid substitution in both the 126 and 183 kDa proteins was responsible for the change in virulence. V-36 virus accumulation as determined by infectivity assay was reduced in both inoculated and systemically infected leaves of tobacco, relative to wild type TMV.

CLONING, SEQUENCING AND EXPRESSION IN E. COLI OF COAT PROTEIN GENES OF CITRUS TRISTEZA CLOSTEROVIRUS ISOLATES FROM INDIA. K.L. Manjunath, H.R. Pappu, C.L. Niblett and R.F. Lee* Plant Pathology Department, University of Florida, Gainesville, FL 32611, *CREC, Lake Alfred, FL 33850, USA.

Three severe isolates of citrus tristeza closterovirus (CTV) collected from India including one (B227) that causes stem pitting in mandarins (*Citrus reticulata* Blanco) and rough lemon (*C. jambhiri* Lush.) were used in the study. The CTV coat protein (CP) gene was selectively amplified from infected tissue extracts, cloned and sequenced. There was more than 90% homology among the nucleotide and deduced amino acid sequences of all the three isolates, but when compared to T36, a severe isolate from Florida, seven amino acid residues were found unique to the Indian isolates. The coding region of the CP gene of isolate B227 was expressed in *E. coli* BL21(DE3), using pETH3a vector. The fusion protein was purified by affinity chromatography and its identity was confirmed by Western blot and ELISA using CTV-specific polyclonal and monoclonal antibodies.

SOLVING THE MISINFORMATION ABOUT HOJA BLANCA IN CHINA, Karl Maramorosch, Entomology Department, Cook College, Rutgers Univ., New Brunswick, N.J. 08903.

In 1965 Bibliography of Agriculture 29, pos. 11133 listed a paper by F. M. Wang, Y.L. Chen & K.C. Pai: "A preliminary investigation of the transmission and hosts of the hoja blanca disease of rice. (in Chinese). Plant Protection (Beijing) 2: 9-10, 1964." The listing was followed by the sentence: "Hoja blanca disease in China". Efforts to obtain a copy of this article failed because the issue of the journal vanished from the library. An extensive search in libraries in the United States, western and eastern Europe and Asia failed to find the article during the following 26 years. The puzzle was solved in 1992 when the article was finally found in Shanghai. The rice disease was not hoja blanca but the bacterial disease rice stripe and the authors described mechanical transmission carried out in China. In 1965 the title had been erroneously translated using the Spanish words hoja blanca for the chlorosis caused by *Xanthomonas* sp.

Modification of a Dot-immunobinding Assay for Improved Detection of Citrus Tristeza Virus and Differentiation of Mild and Severe Isolates. S. K. Marquardt, CERES 2000, INC., P.O. Box 2927, Winter Haven, FL 33883; and A. F. Lee, University of Florida, CREC, Lake Alfred, FL 33850

A dot-immunobinding assay (DIBA) for Citrus Tristeza Virus (CTV) (Rocha-Pena et al, J. Virology Methods 34:297-309) has been modified for broad spectrum detection and to allow differentiation of CTV strains using a specific polyclonal IgG. By preabsorption with extracts of mild isolates, Florida severe CTV isolates (CTV/si) can be distinguished. All isolates evaluated to date have been classified appropriately into mild or severe as verified by biological indexing, including some severe isolates which are not detected using MCA-13 monoclonal antibody (Permar et al, Phytopathology 80:224-228). It appears that CTV/si have common epitope(s) which are not present in Florida mild isolates.

AVANCES EN EL ESTUDIO DE *APHANOCLOADIUM album* HONGO PARASITO DEL AGENTE CAUSAL DE LA ROYA DEL CAFETO (*HEMILEIA vastatrix*) Margarita Márquez de S., Conrado Daboin, Clemencia Guedez. Universidad de Los Andes - Trujillo - Venezuela.

En el Edo. Trujillo, situado al Occidente de Venezuela se encontró un hongo parasitando el agente causal de la roya del café. Este enemigo natural de la roya, presenta un micelio blanco parecido al de *Verticillium lecani* e invade los uredos del fitopatógeno.

Aphanocladium album fue cultivado en diferentes regímenes de luz y temperatura. El mejor crecimiento de las colonias se obtuvo en Agar Extracto de levadura y oscuridad continua. Su crecimiento en medio de arroz fue excelente.

La producción de conidios en Agar Papa Dextrosa y Arroz fue de 25×10^6 y 20×10^6 c/ml respectivamente, bajo las mismas condiciones de luz y temperatura.

Se determinó su inocuidad sobre las plantas de café, así como su efectividad como controlador *in vitro*. Estos dos aspectos y su excelente crecimiento y producción de conidios en medio de arroz indican que *Aphanocladium album* puede representar un eficiente controlador biológico de la roya del café.

DIEZ AÑOS DE INVESTIGACION SOBRE MICROFLORA DE GRANOS ALMACENADOS EN VENEZUELA. C. Mazzani. Universidad Central de Venezuela, Facultad de Agronomía, Sección Microbiología. Apdo 4579, Maracay 2101.

Hasta 1981 no se había prestado atención en Venezuela al problema que significa la presencia de hongos en los granos almacenados para el consumo. Desde esa fecha, ha sido sistemáticamente caracterizada y cuantificada por primera vez la microflora en granos de arroz, cacao, maíz, sorgo y soya, almacenados o recolectados en el campo. Cerca de 50 especies de hongos referibles a 22 géneros han sido debidamente descritas e identificadas, la gran mayoría de ellas por vez primera en Venezuela. En todos los casos se determinó la incidencia por muestra de hongos en general y de cada especie la cual fue, en líneas generales, muy elevada. También han sido conducidos ensayos en el campo para evaluar la resistencia de genotipos de maíz y soya a hongos de la semilla, cuyos resultados muestran la posibilidad real de su aplicación para el control. En relación al control químico, ha sido ensayado en el laboratorio el propionato de amonio en granos de sorgo, siendo efectivo contra algunas especies.

EVALUATION OF RHIZOBACTERIA FOR CONTROL OF RHIZOCTONIA SOLANI (THANATOPHORUS CUCUMERIS) ISOLATED FROM COMMON BEANS IN PUERTO RICO. C.A. Montoya, R. Echávez-Badel, E.C. Schroder and J.S. Beaver. Crop Protection and Agronomy & Soils Departments. University of Puerto Rico, Mayaguez, Puerto Rico 00681-5000.

Nine rhizobacteria from the University of Puerto Rico collection were tested for their *in vitro* inhibition of a *Rhizoctonia solani* (*Thanatophorus cucumeris*) isolate (Rs) recently obtained from a bean (*Phaseolus vulgaris*) growing area affected with web blight in Puerto Rico. Three bacteria were found to inhibit the fungus growth. Furthermore, the most effective and more consistent antagonist was *Pseudomonas* sp. UPR-5C strain under *in vitro* conditions. Greenhouse experiments were carried out to test the antagonistic effect of UPR-5C towards the Rs isolate. Bean seeds cv. Arroyo Loro treated with a bacterial suspension were planted in soil previously infested with Rs. Significant differences in disease severity between control and bean seedlings protected with UPR-5C were obtained. The germination of the bacterial suspension treated seeds was superior to that of the non-treated control (95% vs 0%).

MONITOREO Y RECONOCIMIENTO DEL VIRUS DE LA TRISTEZA DE LOS CITRICOS EN NICARAGUA Y PLAN DE ACCION A EJECUTARSE Narváez, Gioconda Ministerio de Agricultura y Ganadería Dirección General de Tecnología Agropecuaria, Centro Nacional de Protección Vegetal. Managua, Nicaragua

Las plantaciones cítricas en Nicaragua están recibiendo actualmente un fuerte impulso económico por parte del CEE-ALA con el objeto de financiar el incremento de áreas sembradas, aumentar la producción y poder exportar este frutal al mercado internacional. La mayoría de las variedades cítricas cultivadas a nivel nacional son susceptibles al VTC. Esta enfermedad se encuentra distribuida en dos fincas del Dpto. de Managua, dos de Carato y dos de Anaco, zonas donde el clima es uniforme con seis meses secos y seis lluviosos, ubicados en la faja del pacífico y central de Nicaragua respectivamente. Las variedades de cítricos que han expresado resultados positivos en los análisis de VTC son el limón Tahiti, naranja criolla, mandarina y naranja valencia. No se ha reportado hasta la fecha, la presencia del áfido *Toxoptera citricidus*. Se propone un plan de actividades a realizarse para conocer más sobre la enfermedad, distribución, agentes causales y manejo de la misma.

PERDIDAS OCASIONADAS POR MANCHADO DEL GRANO CON DIFERENTES GRADOS DE SEVERIDAD EN LA VARIEDAD ARAURE-1.

Herman Nass, Humberto A. Rodríguez y Luis Alarcón. (FOMALAP-FOMIARCA-ACARIGUA). APARTADO POSTAL. 102 - VENEZUELA.

Se aplicaron 4 dosis de nitrógeno 120, 150, 180 y 210 kg, en fracciones de 1/3 del total a los 25, 40 y 60 días de la siembra, para medir las pérdidas causadas por el manchado del grano, se evaluaron 200 espigas por tratamientos y repeticiones tomadas al azar. Los granos de las espigas se separaron clasificándolos según la severidad del manchado aplicando la Escala Internacional Estandar para el manchado del grano 1 = sano y 9 = con más del 70% del grano manchado. Los resultados indican que existe diferencias estadísticas en el promedio de los pesos cuando el grado de severidad es nueve (9) independientemente de la dosis de nitrógeno, los mayores porcentajes de pérdidas se produjeron a mayor dosis de nitrógeno 210 kg/ha y 180 kg/ha con un 25% y 22,59% de pérdidas respectivamente.

STRESS-RELATED COMPOUNDS IN BLIGHT-DISEASED CITRUS XYLEM FLUID ASSOCIATED WITH *FUSARIUM SOLANI* NAPHTHAZARIN TOXINS.
S. Nemeč, USDA, ARS, USHRL, 2120 Camden Rd., Orlando, FL 32803

Naphthazarin toxins of *F. solani* were detected by ELISA in xylem fluid of 78%-100% of scaffold roots on blight-diseased citrus in Florida. Xylem fluid, with a high toxin content ($>15 \mu\text{g}\cdot\text{L}^{-1}$), contained high protein levels. Levels of 13 of 16 total amino acids were significantly higher, and all increased about 2.2 to 3.2-fold in fluid containing about $100 \mu\text{g}\cdot\text{L}^{-1}$ toxin compared to fluid with no detectable toxin. Asparagine, glutamic acid, proline, glycine, and arginine were the most abundant. Total phenolic content was about 7-fold greater in fluid containing $4 \mu\text{g}\cdot\text{L}^{-1}$ or more toxin than in fluid with less than $200 \text{ng}\cdot\text{ml}^{-1}$ toxin. Xylem fluid contained uronic acids, a major component of gum vessel plugs; and EC (micronutrients) ranged between 110-740 in fluid containing $0-100 \mu\text{g}\cdot\text{L}^{-1}$ toxin. These toxins appear to induce a wide range of stress metabolites in xylem fluid in which they are present.

GENOMIC AMPLIFICATION, SENSITIVE DETECTION AND CLONING OF CITRUS TRISTEZA CLOSTEROVIRUS FROM TISSUE EXTRACTS.
H.R. Pappu, E.J. Anderson, S.S. Pappu, C.L. Niblett, and R.F. Lee*, Plant Pathology Department, University of Florida, Gainesville, FL 32611, *CREC, Lake Alfred, FL 33850.

A rapid and sensitive one-tube enzymatic amplification procedure was developed for the detection of citrus tristeza virus (CTV) in crude tissue extracts. It involved the extraction of total nucleic acids from 1cm^2 of infected tissue, followed by reverse transcription and subsequent amplification of specific regions of the viral genome in the same reaction, prior to their cloning. All the CTV isolates used in this study gave the expected sized products following amplification. Nucleic acid hybridization and sequencing confirmed the identity of the amplified, and cloned products respectively. The technique is found to be more sensitive than ELISA and Western blot methods in detecting CTV. This approach facilitates rapid cloning of specific regions of a given isolate and may be applied for the detection of biologically diverse isolates of CTV.

MUTATIONAL ANALYSIS OF CITRUS TRISTEZA VIRUS COAT PROTEIN: MOLECULAR CHARACTERIZATION OF THE EPITOPE THAT IS LARGELY COMMON TO SEVERE ISOLATES OF THE VIRUS.
H.R. Pappu, S.S. Pappu, C.L. Niblett, and R.F. Lee*. Plant Pathology Department, University of Florida, Gainesville, FL 32611, *CREC, Lake Alfred, FL 33850, USA.

A majority of the severe isolates of citrus tristeza virus (CTV) can be identified by their reactivity to the monoclonal antibody, MCA-13 (Permar et al., *Phytopathology* 80: 224-228, 1990). Coat protein (CP) genes of several biologically and geographically diverse isolates that are either MCA-13 reactive or non-reactive were cloned and sequenced. A series of mutant CPs was constructed through site-directed mutagenesis. The reactivity of the *in vitro* expressed mutant CPs with MCA-13 was evaluated by Western blot. A Phe→Tyr mutation at position 124 of the CP abolished the MCA-13 reactivity of a severe isolate, while a Tyr→Phe mutation conferred the MCA-13 reactivity on a mild isolate of CTV. Thus, a single amino acid at position 124 of the CP may constitute the MCA-13 reactive epitope.

AMPLIFICATION, CLONING AND SEQUENCING OF 3' TERMINAL REGION OF DASHEEN MOSAIC POTYVIRUS GENOME.
S.S. Pappu, H.R. Pappu, E.P. Rybicki*, and C.L. Niblett, Plant Pathology Department, University of Florida, Gainesville, FL 32611, USA, *Microbiology Department, University of Cape Town, Rondebosch, 7700, South Africa.

Dasheen mosaic virus (DMV) is an aphid transmitted potyvirus that infects members of the family *Araceae* causing severe mosaic, leaf distortion and crop loss. As part of the genome characterization of this virus, the coat protein (CP) gene and the 3' untranslated region (3'UTR) of a Florida isolate of DMV were amplified from crude tissue extracts. Degenerate primers derived from conserved regions of the potyviral genome were used in the amplification reaction. The amplified products were cloned into pUC118 phagemid vector and sequenced. Nucleotide sequence comparisons with other potyviruses indicated DMV to be a distinct potyvirus. Independent phylogenetic reconstructions using the sequences of the 3'UTR and of the CP placed DMV in the passionfruit woodiness virus subgroup.

NUOVO VECTORE DEL VIRUS DEL MOSAICO SUREÑO DE LA CARAOTA - RAZA B (SOUTHERN BEAN MOSAIC VIRUS - STRAIN B, SEMV-B). Y. Patiño R., M. J. Garrido y V. Savini. Universidad Central de Venezuela, Facultad de Agronomía, Apartado 4579, Maracay 2101.

Un aislamiento del SEMV-B fue transmitido en condiciones de laboratorio mediante el coleóptero *Diphaulaca aulica* Olivier (Chrysomelidae, Alticinae) a plantas de caraota (*Phaseolus vulgaris* L.) 'Tacarigua'. Los insectos se les permitió un período de acceso a la adquisición del virus de 24 horas y posteriormente fueron colocados en forma individual sobre plantas sanas de 8 días de edad, las cuales eran sustituidas cada 24 horas, hasta un período de 10 días. *D. aulica* fue capaz de transmitir el SEMV-B en un 75%, en forma intermitente, durante el lapso que duró el experimento. Estos resultados fueron confirmados mediante sintomatología y pruebas serológicas de doble difusión en agar. Aparentemente, este representa el primer señalamiento de *D. aulica* como vector del SEMV-B.

DIAGNOSTICO DE ENFERMEDADES POSTCOSECHA DE ORIGEN FUNGOSO EN MANGO (*Mangifera indica* L.) PARA EXPORTACION. PINO P. y SANABRIÁ DE ALBARRACIN N. FACULTAD DE AGRONOMIA, U.C.V. - MARACAY.

Con la finalidad de realizar el diagnóstico de las enfermedades postcosecha de origen fungoso en mango (*Mangifera indica* L.) para exportación, se procedió a efectuar el aislamiento por el método de plato agar (utilizando medio de cultivo papa-dextrosa-agar) en frutos de mango provenientes de la empresa Empacadora y Exportadora DANAGRO en Turmero Edo. Aragua. Este aislamiento se realizó en la Clínica de Enfermedades en Plantas en la Sección de Fitopatología del Departamento de Botánica de la Facultad de Agronomía U.C.V. y posteriormente se procedió a la inoculación del hongo en frutos sanos para así comprobar la patogenicidad del mismo y luego proceder a su descripción e identificación. Se describieron 3 hongos que resultaron patogénicos los cuales fueron identificados a nivel de especie como: *Pestalotia monocheta* Desm., *Penicillium frequentans* Westling y *Colletotrichum gloeosporioides* Penz., causante de la mancha marrón, pudrición basal y antracnosis respectivamente.

INFLUENCE OF IPRADIONE AND CHLOROTHALONIL FOLIAR APPLICATIONS ON ALTERNARIA LEAF BLIGHT DEVELOPMENT AND YIELD OF CARROT. R. N. Raid, M. L. Sommerfeld*, and R. T. Nagata. Everglades Research and Education Center, Belle Glade, FL 33430 and A. Duda & Sons, Inc., Belle Glade, FL 33430.

Five fungicide treatments, consisting of chlorothalonil (1.26 kg/ha) and iprodione (0.84 kg/ha) alone, in alternation, or in combination (0.63 and 0.42 kg/ha, respectively), were examined for efficacy in controlling alternaria leaf blight of carrot, incited by *Alternaria dauci* (Kuhn) Groves & Skolko. Fungicidal sprays were initiated 33 days following planting and were applied according to either a 7-day or 14-day schedule. Environmental conditions during the field experiment were extremely conducive for disease development and inoculum levels were high. All fungicide treatments provided for significant levels of blight control and subsequently significantly higher yields than the untreated check. The efficacy of chlorothalonil was improved significantly by reducing the application interval from 14 to 7 days. Iprodione, whether alone, in combination, or alternation with chlorothalonil, provided for the highest marketable yields. Correlation of yield with area under the disease progress curve was highly significant ($P \leq 0.001$) with a coefficient (r) of -0.97.

RELACION DEL *Fusarium decemcellulare* CON ARTRÓPODOS ALGALIALES EN AGALLAS DEL MANGO. A. Rondón, E. Arnal, F. Ramos y R. Solorzano. FONAIAP-CENIAP, Maracay, Venezuela.

Plantas de mango (*Mangifera indica* L.) con síntomas de agallas, halladas en Aragua, Carabobo y Cojedes, fueron examinadas en el Dpto. Protección Vegetal CENIAP. De las malformaciones se aisló constantemente el hongo *F. decemcellulare* Brick y se colectaron los artrópodos: estados inmaduros y adultos de hormigas (Hymenoptera: Formicidae); larvas de Lepidópteros; ninfas y adultos de escama blanca: *Aulacaspis tubercularis* Newstead (Homoptera: Diaspididae); estados inmaduros y adultos de Saprothecococcidae (Homoptera) y ácaros (Eriophyidae) además de sapró-

fitos no identificados. Del complejo de artrópodos encontrados, los más frecuentes fueron hormigas, las cuales sembradas en medios agarificados (PDA, A.A.) reprodujeron en alta proporción el patógeno señalado. Este hecho abre la posibilidad de un estudio detallado que permita un mejor conocimiento de la relación hongo-artrópodo en Venezuela. Se presentan cuadros y figuras que ilustran esta problemática.

A New and Efficient Method for Extracting / Counting Citrus Nematode. *Mani Skaria* and *Nora Solis-Gracia*, Texas A&I University Citrus Center, Weslaco, TX 78596.

A new method is described that simplifies and expedites the extraction and counting of the citrus nematode, *Tylenchulus semipenetrans* from citrus feeder roots. The standard procedures of maceration-filtration for nematode extraction and counting by eel-worm counter are very time consuming. We instead used a soft tooth brush to extract the egg, larvae, and adults from the roots. Roots were held in place by a forceps and brushed 5 times from end to end on both sides. For counting, we used a 96-well, flat-bottomed ELISA plate. Wells were numbered and divided into 4 section by needle scratch. Nematodes in 100 microliters of extract was counted using an inverted microscope. ELISA plate also serves as convenient storage device for holding samples.

FILM MULCHING OF YOUNG ORCHARD TREES FOR MANAGEMENT OF SOILBORNE PESTS AND WATER CONSERVATION IN SEMI-ARID PRODUCTION AREAS. *J. J. Stapleton* and *R. A. Duncan*, Statewide IPM Project, Kearney Agricultural Center, Univ. of California, Parlier, CA 93648.

Orchard trees, including *Prunus armeniaca* (apricot), *P. dulcis* (almond), *P. persica* (peach), *Malus domestica* (apple), and *Carya illinoensis* (pecan) were experimentally established with clear or black polyethylene mulch at several locations in California's San Joaquin Valley during 1987-1992. Soilborne populations of pathogenic fungi including *Verticillium dahliae*, *Sclerotium rolfsii*, and *Pythium* spp. often were reduced through the solarization process, as were those of the nematodes *Paratrichodorus minor*, *Pratylenchus hexincisus*, and *Tylenchulus semipenetrans*. Verticillium wilt was controlled by mulching almond and apricot trees, and severity of *Prunus* root galling by *Meloidogyne incognita* was reduced. Weed growth was prevented in most cases. Tree growth parameters often were improved in mulch treatments, and irrigation water requirements were reduced. This mulching practice can be of value in establishing or replanting woody perennials.

Rotylenchulus reniformis Linford & Oliveira, grave amenaza en plantaciones de parchita en Venezuela. Datos preliminares. *Suárez Z., González, M. S., Rondón A., Tellechea. V., y Navas R.* FONAIAP-CENIAP. Dpto. Protección Vegetal. Apdo. 4653. Maracay 2101, Venezuela.

Para contribuir al conocimiento de los factores que limitan el desarrollo y auge de la parchita (*Passiflora edulis* f. esp. *flavicarpa*) en Venezuela, se realizó un diagnóstico en las zonas productoras (Aragua, Carabobo, Miranda y Yaracuy) y se inspeccionaron viveros en Carabobo. Los síntomas observados fueron: Amarillamiento y flacidez del follaje, muerte regresiva desde los bejucos hasta el secamiento de las plantas. Los análisis nematológicos y micológicos revelaron una alta ocurrencia del nematodo *Rotylenchulus reniformis*. Otros géneros presentes fueron: *Aphelenchoides*, *Meloidogyne*, *Helicotylenchus* y hongos de los géneros *Fusarium*, *Pythium* y *Phytophthora*, siendo variable la incidencia de estos organismos. Este constituye el primer señalamiento de daños en el cultivo asociados con *R. reniformis* en Venezuela.

FIRST REPORT OF CITRUS TRISTEZA VIRUS IN BERMUDA.

*T. L. Thompson*¹, *K. D. Monkman*¹, *R. F. Lee*² and *N. L. Berger*², ¹Dept. of Agriculture, Fisheries & Parks, Hamilton HM CX, Bermuda, ²University of Florida, CREC, Lake Alfred, FL 33850.

Citrus is an important dooryard crop in Bermuda, located 1040 Km east southeast of Cape Hatteras, NC. In March 1992 a survey was conducted for CTV using DAS-ELISA with polyclonal antibodies to detect all citrus tristeza virus (CTV) strains and DAS-ELISA with MCA-13 monoclonal antibody to detect decline inducing CTV strains. By testing composite samples from 113 sites representing 520 trees, CTV was found at 23 sites. When each tree present at these 23 sites (231 trees total) was tested; 90% were positive for CTV by DAS-ELISA and 30% were positive for decline-inducing CTV strains. Additional surveys were conducted of trees used as budwood sources. Of about 250 trees tested; 12% were positive for CTV and about 5% were positive for decline-inducing CTV strains. Most of the trees containing decline-inducing CTV were lemons. Previous surveys have not indicated the presence of CTV. *Toxoptera citricidus*, the efficient aphid vector of CTV, was not found.

SOME NEW RECORDS OF PHYTOPHTHORA CROWN AND ROOT ROTS IN THE PHILIPPINES AND IN WORLD LITERATURE. *P.H. Tsao*¹, *L.C. Gruber*², *L.A. Portales*², *A.M. Gochangco*², *P.B. Luzaran*², *A.B. de los Santos*², and *H. Pag*², ¹University of California, Riverside 92521 and ²Philippine-German Biological Plant Protection Project, Bureau of Plant Industry, Manila, Philippines 1004.

In two surveys conducted in 1989 and 1990/91 in the Philippines, numerous incidences of crown and root rots of various woody plants, especially fruit trees in nurseries, were detected by isolation of *Phytophthora* spp. from diseased tissues. The following are 16 new records in the Philippines or in the world pathology literature (9 marked W): *P. capsici* on black pepper (*Piper nigrum*); *P. citrophthora* on rambutan (*Nephelium lappaceum*) (W) and santol (*Sandoricum koetjape*) (W); *P. heveae* on santol (W); *P. palmivora* on avocado (*Persea americana*), camansi (*Artocarpus camansi*) (W), durian (*Duriozibethinus*), jackfruit (*Artocarpus heterophyllus*), lanzones (*Lansium domesticum*) (W), longan (*Euphoria longana*) (W), mango (*Mangifera indica*), mangosteen (*Garcinia mangostana*) (W), neem (*Azadirachta indica*) (W), soursop (*Annona muricata*), and tamarind (*Tamarindus indica*) (W); and *P. parasitica* (*P. nicotianae*) on black pepper.

EVALUATION OF SUGARCANE CLONES FOR DISEASE RESISTANCE IN TEXAS. *Benigno Villalón*, Texas Agricultural Experiment Station, 2415 East Highway 83, Weslaco, Texas 78596.

Sugar has been a major commodity since 1972 and has made a significant contribution to the agricultural development of the Rio Grande Valley of Texas. Disease problems caused by viruses, fungal, bacterial and other pathogenic organisms interfere with efficient production of sugar. Losses in yield and quality continue to be incurred due to damage by pathogens and these losses are added to costs of expensive remedial control measures to eliminate the total impact due to pests. Sugarcane pathology at Weslaco was initiated in 1974. The following diseases have been observed in Valley cane fields: sugarcane mosaic virus, smut, ratoon stunting disease, rust, brown spot, red rot of midrib, leaf sheath rot, red rot of leaf sheath, red stripe, and pokkah boeng. Current research objectives encompass the breadth of approaches to control cane diseases: evaluation of clones for genetic resistance to important diseases such as smut, ratoon stunting disease and mosaic.