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Abstracts

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Alphabetized by first author's last name

GRUPOS DE ANASTOMOSIS DE *Rhizoctonia Solani* EN PAPA EN COAHUILA Y NUEVO LEON, MEXICO. Z. ALONSO C., F. D. HERNANDEZ C., G. FRIAS T. Y A. SANCHEZ A. UNIVERSIDAD AUTONOMA AGRARIA ANTONIO NARRO, BUENAVISTA, SALTILLO, COAHUILA, MEXICO.

Con la finalidad de reconocer los grupos de anastomosis (AG) de *R. solani* en la región papera de Coahuila y Nuevo Leon se muestrearon 69 lotes de papa aislandose 181 cepas por punta de hifa, se realizaron tinciones de nucleos y se midio el diametro de hifas. La determinación de los GA fue por confrontación en portaobjeto esteril con los 10 GA de referencia (The American Type Culture Collection). Los resultados muestran que 8 aislamientos son binucleados y 173 multinucleados correspondiendo estos ultimos a la especie de *R. solani*. Las confrontaciones realizadas indican que 3 aislamientos pertenecen al AG-2, 112 son AG-3, 5 son AG-4, 3 son AG-5 y un aislamiento no manifestó anastomosis hifal con ninguno de los 10 GA de referencia.

EFFECTO DE PLASTICOS EN MELON SOBRE *Alternaria Cucumerina*, *Cladosporium Cucumerinum* Y *Fusarium Oxysporum* F. sp. *Melonis* EN COAHUILA, MEXICO. M.E. AVILA M., F. D. HERNANDEZ C. G.A. FRIAS T., P. CANO R. Y J. HERNANDEZ D. UNIVERSIDAD AUTONOMA AGRARIA ANTONIO NARRO, DEPTO. DE PARASITOLOGIA, BUENAVISTA, SALTILLO, COAHUILA. C.P. 25315.

Se midio el efecto de los plásticos en melón sobre la incidencia, severidad y área bajo la curva de progreso de la enfermedad (ABCPE) de *A. cucumerina* y *F. o. f* sp. *melonis*. Los tuneles de polietileno con acolchados incrementaron la incidencia de *A. cucumerina* en plantas ya infectadas de invernadero contrastando con el tunel de polietileno perforado con acolchado transparente. En *C. cucumerinum* se observo un aislamiento físico a este hongo por los tuneles en comparación con los tratamientos descubiertos con ABCPE mas bajos. En *F. o. f* sp. *melonis* los tuneles de polietileno y los tuneles de polietileno con acolchado transparente incrementaron el ABCPE de los síntomas de esta enfermedad en comparación con los tratamientos descubiertos.

VINE DECLINE OF CANTALOUPE CAUSED BY *MACROPHOMINA PHASEOLINA*: EPIDEMIOLOGY AND CONTROL. B. D. Bruton and E. V. Wann. USDA, ARS, Lane, OK 74555.

Macrophomina phaseolina can cause yield losses in cantaloupe approaching 100% in some years. Contrary to reports of *M. phaseolina* on other hosts,

drought stress and high temperature are not prerequisite for early infection of cantaloupe roots. High soil moisture favored root infection prior to flowering, but this influence was reversed after fruit set. High matric potentials during the early period of root growth increased the percentage of plants developing vine decline 60-85 days later. The percentage of plants that ultimately developed vine decline was negatively correlated ($P \leq 0.01$) with the number of days necessary for infection to occur on 5% of the plants. Soil fumigation, solarization, and rotation are of little value as control measures. Genetic resistance (tolerance) has been demonstrated in some hybrid cultivars. Progenies from selfed hybrids segregated for disease tolerance, which is the first indication of genetic resistance to vine decline.

Análisis *in vitro* de la sensibilidad de *Mycosphaerella fijiensis* a los fungicidas fenarimol, tridemorph y propiconazole. O. Castro, A. Wang y L. F. Campos. Lab. de Fitopatología, Univ. de Costa Rica, San José, Costa Rica.

Se evaluó la sensibilidad de *M. fijiensis* a tres fungicidas inhibidores de la síntesis del ergosterol mediante la determinación del porcentaje de reducción en la longitud del tubo germinativo de ascósporas provenientes tanto de una área comercial como de una no comercial (sin aplicación de fungicidas). Los resultados indican que los tres fungicidas evaluados fueron eficaces, observándose un comportamiento similar entre el fenarimol y el propiconazole pero diferente del tridemorph. Al efectuar un análisis de Duncan para los datos de área bajo la curva del porcentaje de reducción del tubo germinativo, se encontró que no hubo diferencias significativas entre área comercial y testigo para el tridemorph y el fenarimol, pero sí para el propiconazole, evidenciando que una exposición continua del patógeno a este último fungicida ha generado una reducción en la sensibilidad del mismo al producto.

PATHOTYPING OF LETTUCE DOWNY MILDEW IN FLORIDA. L. E. Datnoff, R. T. Nagata, and R. N. Raid. University of Florida - EREC, P. O. Box 8003, Belle Glade, FL 33430.

Isolates of *Bremia lactucae*, the cause of lettuce downy mildew, were obtained from California (CA) infected lettuce coming into Florida (FL) for fresh market sale and naturally infected lettuce fields in FL. Using an established lettuce tester set containing the 13 Dm resistant genes, isolates of *B. lactucae* were grouped into distinct pathotypes based on presence, absence or infrequent sporulation. Of all the isolates of *B. lactucae* tested, sporulation was absent on Dm1, Dm11 and Dm15. These isolates usually produced infrequent or sparse sporulation on seedlings of lines containing Dm4, Dm10 and Dm16. Based on this information, 72% of the isolates obtained from CA infected lettuce coming into FL were pathotype IV. Fifty percent of the isolates from FL field-grown infected lettuce were determined to be pathotype IV and 28% were pathotype III. These data suggest that infected lettuce arriving from CA to FL may be an important source of primary inoculum for epidemics of downy mildew in FL.

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BIOCONTROL OF *SCLEROTIUM ROLFSSII* WITH A STRAIN OF *BURKHOLDERIA CEPACIA*. R. Echavez-Badel, M. Alameda and E. C. Schroder. Departments of Crop Protection and Agronomy and Soils, University of Puerto Rico, Mayagüez Campus, Mayagüez, Puerto Rico 00681-5000.

In vitro and greenhouse tests were conducted in order to control *Sclerotium rolfsii* causing the southern blight of bean (*Phaseolus vulgaris* L) with the strain UPR 5C of *Burkholderia cepacia*. In vitro results indicate that UPR 5C inhibited the fungus radial growth. Treatments of bean seeds with the bacterial strain protected seedlings in soil infested with *S. rolfsii*. Significant differences ($P=0.05$) for disease severity between UPR 5C and the control (fungus alone) was obtained. However, there was no significant differences for disease severity between seeds treated with UPR 5C and those treated with the fungicide Captan. This research was supported by contract G-93-06 of the Science and Technology Board, Economic Development Administration, Government of Puerto Rico.

USO DE UN SISTEMA DE PRONOSTICO EN EL CONTROL QUIMICO DE *Phytophthora infestans* (MONT) DE BARY EN EL NORTE DE MEXICO. Flores, A. UAAAN, Buenavista, Saltillo, Coah., México.

En Coahuila y Nuevo León, México se realizan 23 aplicaciones de fungicidas en promedio por ciclo de cultivo, llegando en ocasiones a 40; principalmente de Mancozeb y Metalaxil. Esto incrementa costos del cultivo y daña el medio ambiente, por ello se evaluó el sistema de pronóstico denominado "Wallin", para predecir la aparición de la enfermedad y reducir el número de aspersiones. El trabajo se ubicó en lotes comerciales de papa, variedad Alpha con riego para aspersión. El Higrotermógrafo se colocó dentro del cultivo a 20 cm de altura. En 1988 y 1991 se acertó en el pronóstico de la enfermedad; no ocurrió así en 1989 y 1990 debido a factores no contemplados por el sistema (granizadas y mal uso del sistema de riego). Sin embargo, en los cuatro años se logró reducir en un 45% el número de aplicaciones, al evitarse todas aquellas programadas previas a la aparición del Tizón Tardío.

EFFECTO DE LA HUMEDAD DEL SUELO EN LA RESISTENCIA DE LA PAPA AL TIZON TARDIO Y DEL FRIJOL A LA MUSTIA HILACHOSA Y ANTRACNOSIS. Frías, G.A.; Soto, H.; Otero R, e Isidro, F. U.A.A.N., Saltillo, Coah., México.

La resistencia de variedades de papa al tizón tardío (*Phytophthora infestans*) y de Frijol a la Mustia Hilachosa (*Rhizoctonia solani*) y Antracnosis (*Colletotrichum lindemutianum*) fue evaluada inoculando hojas desprendidas de plantas cultivadas en macetas con suelo a saturación (Exceso), capacidad de campo (CC) y por abajo de CC (Seco). En los tres patosistemas la resistencia de la planta fue afectada por el nivel de humedad del suelo. Plantas de la variedad de papa Alpha, fueron significativamente más resistentes al tizón tardío cuando se cultivaron en suelo "seco" en comparación con plantas cultivadas en exceso. Las variedades de frijol Michelite y Mex. 222 fueron más resistentes a *R. solani* cuando se cultivaron a CC que cuando se cultivaron en suelo con exceso de humedad. La resistencia de Michelite y To a *Colletotrichum lindemutianum* también fue afectada por la humedad del suelo.

DIFFERENTIAL SENSITIVITY TO TETRACYCLINE AND AMPHOTERICIN OF EUROPEAN SUGAR BEET LATENT ROSETTE BACTERIA IN *PIESMA QUADRATUM* VECTORS. Monica Frosch, Hessisches Landesamt, Frankfurt, Germany & K. Maramorosch, Rutgers University, New Brunswick, NJ 08903, U.S.A.

European sugar beet latent rosette disease is caused by bacteria, transmitted by the vector *Piesma quadratum*. The bacteria in the phloem of diseased plants are sensitive to penicillin and, to a lesser degree, to tetracycline. The vectors, adversely affected by the rickettsia-like bacteria, often die before the end of the intrinsic

incubation period. This apparently accounts for the limited spread of the disease in central Europe, where vectors seldom survive more than three weeks, while unexposed *P. quadratum* live for several months. When tetracycline hydrochloride was fed to *P. quadratum* vectors the bugs survived more than 45 days, while vectors fed amphotericin B methyl ester aspartate (AME), as well as infected but untreated controls died within 2-3 weeks.

DETERMINACION DE RESISTENCIA DE *Botrytis cinerea* A BENOMYL EN COAHUILA MEXICO. L.J. MENDOZA M., F.D. HERNANDEZ C. Y M. CEPEDA S. UNIVERSIDAD AUTONOMA AGRARIA ANTONIO NARRO, - DEPTO. DE PARASITOLOGIA, BUENAVISTA, SALTILLO, COAHUILA, MEXICO. C.P. 25315

Se realizaron aislamientos monospóricos de hojas y botones de rosas de invernadero, localizados en el sur del estado de Coahuila. Los cuales fueron transferidos a medios de cultivo PDA (papa dextrosa agar) sin benomyl y con concentraciones del mismo desde .5 hasta 4500 ppm. Encontrando que el 2 de los aislamientos tiene una concentración inhibidora 50 (CI₅₀) menor a 50 ppm, 4 en un rango entre las 50 y 100 ppm y 6 presentaron una CI₅₀ entre las 100 y 300 ppm. La CI₉₀ varia desde 3000 hasta 7500 ppm de benomyl. Se considera a una cepa resistente cuando el patógeno presenta crecimiento a 0.5 ppm de benomyl.

HELPING RURAL FARMERS MASTER PLANT DISEASE. Stephen Sherwood and Myriam Paredes. International Agriculture Program, Cornell University, Ithaca, NY 14853 and Plant Protection Department, Zamorano, A.P. 93, Tegucigalpa, Honduras 11207, respectively.

Due to the invisibility of pathogens and limited access to information, rural Honduran farmers do not understand the cause of biotic plant diseases. Without such knowledge, management practices are useful, useless, and even harmful. Zamorano's Hillside IPM program developed and tested a course on plant disease management for small production farmers. We conducted 10 courses in Honduras between January and August of 1994 with 114 farmers and extensionists participating. Farmers were eager to understand plant disease. Given appropriate training, they mastered abstract concepts related to plant-pathogen interactions. Participants learned to identify common disease problems by pathogen type and explain disease life cycles. With this ability, farmers designed management strategies that will enable them to improve their production systems.

Use of Virus Inclusion Bodies for Preliminary Detection of Severe Types of Citrus Tristeza Virus. Mani Skaria, Miao Hongqin, and Nora Solis-Gracia, Texas A&M University-Kingsville Citrus Center, P.O. Box 1150, Weslaco, TX 78599.

Citrus tristeza virus (CTV) has several biological types which differ in symptom expression based on the host and environmental conditions. Detection of tristeza in traditionally CTV-free areas often creates demand for rapid diagnosis of biological characteristics of the virus isolate(s). Antibody-based assays are available for rapid identification of CTV types, however, limitations due to the unavailability of test ingredients would require alternative procedures. The use of inclusion bodies (IBs) as a diagnostic tool for CTV is well documented but with limited information on its use for strain differentiation. We used IBs for preliminary identification of severe CTV. Out of 84 petiole sections scanned from a Mexican lime infected with a severe CTV, 40 sections showed inclusion bodies. From two mild CTV infected plants, only 2/49 or 2/22 sections, respectively showed inclusion bodies. Twenty-one other mild CTVs from field samples showed none or a maximum of 2 inclusion bodies out of 20-46 sections / plant. We compared the development of inclusion bodies in Mexican lime and sour orange plants inoculated with mild or severe CTV. Also, we compared the inclusion body numbers with ELISA optical density. Four weeks after inoculation, only the severe strain showed presence of inclusion bodies. IBs are thus ideal for rapid preliminary diagnosis of severe CTV strain(s).

GENETIC ENGINEERING OF VIRUS RESISTANCE IN PEPPER: TRADITIONAL BREEDING COMPLEMENTED BY BIOTECHNOLOGY. B. Villalón, 2415 E. Hwy 83, Weslaco, Tx 78596.

Peppers are susceptible to about 50 virus diseases. Several genotypes possessing heritable resistance to local isolates of tobacco etch virus, pepper mottle virus, cucumber mosaic virus, potato virus Y, tobacco mosaic virus, and tobacco ringspot virus were identified. Stocks were hybridized with 15 commercial cultivars. 1,000 pepper breeding lines are evaluated per year

for resistance to diseases, insects, and tropical environmental stresses. Nine new cultivars have been released. Screening for resistance to *Phytophthora capsici* is also done. A plant tissue culture regeneration system was developed for several genotypes, and plant transformation via *Agrobacterium tumefaciens* has been incorporated. Transient GUS expression was observed using histochemistry on treated cotyledon explants exhibiting kanamycin resistance.

Desarrollo de una metodología adecuada de cultivo de *Mycosphaerella fijiensis* para estudios de resistencia cruzada entre fungicidas inhibidores de la síntesis del ergosterol. A. Wang, O. Castro y L.F. Campos. Lab. de Fitopatología, Univ. de Costa Rica, San José, C.R.

La alta variabilidad del crecimiento *in vitro* de *M. fijiensis* impide obtener estimaciones confiables de la sensibilidad del hongo a fungicidas inhibidores de la síntesis del ergosterol. Por esta razón se hizo necesario desarrollar una metodología para superar este inconveniente. Luego de obtener un licuado de micelio proveniente de colonias monospóricas, éste se puso a crecer sobre diferentes medios de cultivo, a los que se les agregó los fungicidas a evaluar. Las metodologías evaluadas fueron: agar-V8 modificado + disco de papel celofán, los medios líquidos de V8 modificado, Czapek y V8 filtrado + material vegetal licuado de la hoja candela y por último, agar V8 modificado + disco de papel filtro. Esta última metodología

fue la mejor debido a que se redujeron los problemas de contaminación y mostró una menor variabilidad en el crecimiento del hongo para un nivel dado de fungicida.

DISTRIBUTION AND CHARACTERIZATION OF FUSARIUM OXYSPORUM F. SP. MELONIS FROM SOIL SAMPLES COLLECTED IN MELON FIELDS IN NEW YORK. T. L. Zuniga, T. A. Zitter, and T. R. Gordon, Departments of Plant Pathology, Cornell University, Ithaca, NY 14853, and University of California, Berkeley, CA 94720.

Soil samples were collected in 1993 from eastern (E), central (C), and western (W) NY fields currently or previously cropped to melons to assess both the occurrence of races 1 and 2, and the genetic composition of populations of *Fusarium oxysporum* f. sp. *melonis* (FOM). Races were identified by inoculation to melon differentials. Isolates were assigned to vegetative compatibility groups (VCG) using the eight VCG-testers available for FOM. Race 1 (28 isolates) was readily recovered from soil and from all areas whether currently in melons (1993) or previously cropped (1991, 1992), thus extending its known distribution within the state. Race 2 (18 isolates) was recovered from E and W areas. Each of 10 isolates of race 1 selected from the 3 areas belonged to VCG 0134, the same VCG associated with race 1 isolates from Maryland. Six of 10 race 2 isolates (E and W areas) belonged to VCG 0131, the same VCG as race 2 isolates from Maryland.