ABSTRACTS
OF
PAPERS

Presented at Meetings of the
American Phytopathological Society
SPECIFICITY OF ELISA FOR IDENTIFICATION OF Xanthomonas campestris pv. phaseoli. L. Afnador and J. I. Victoria, Bean Program, CIAT, CIAT, Cali, Colombia.

Antisera were produced in rabbits against the glycoprotein fraction and whole cells of Xanthomonas campestris pv. phaseoli, strain xpc-5-S1 (X.c.pv.pch). Serological relationships were only demonstrated for selected isolates of X. c. pv. ph. but not for other species of Xanthomonas, Pseudomonas, Erwinia carotovora, Corynebacterium flaccumfaciens and Agrobacterium tumefaciens studied by double-diffusion (Ouchterlony) tests and indirect ELISA. A higher serological specificity was obtained with the indirect ELISA when glycoproteins rather than whole bacterial cells were used as immunogens, or when compared to the Ouchterlony test using both types of antisera. The maximum sensitivity of ELISA, prepared with antibodies to glycoproteins, was 5 x 10^5 cells/ml of antigen at 10 μg/ml of gamma globulin.

EVALUACION PRELIMINAR DEL IMPACTO ECONOMICO DE LOS COSTOS DE CONTROL DE SIGATOKA NEGRA EN DIFERENTES SISTEMAS DE PRODUCCION DE PLÁTANO. El CASO DE MEXICO. Aguirre, Juan Antonio; Koch, Cristián; Dao, Federico; Lemelle, Jean Pierre. Instituto Interamericano de Cooperación para la Agricultura, Apartado 52-2200, San José, Costa Rica.

Estudios preliminares relacionados con el impacto económico de los costos de control de Sigatoka Negra en unidades productivas de plátano señalan diferencias sustanciales en función del programa de control utilizado, forma de aplicación y sistema de producción. En el caso de MÉXICO, el 65% del plátano nacional se produce bajo condiciones de temporal. En la actualidad la Sigatoka Negra eleva los costos de producción en este sector productivo en un 168% lo que significaría ante una eventual crisis la posibilidad de desaparición de gran parte de éste debido a excesivo peso económico. Paralelamente el estudio presenta para las märjares brutos de utilidad para el sistema de producción bajo riesgo y temporal cuando se emplean diferentes tratamientos alternativos.

ACTIVIDAD PLATANERA Y SIGATOKA NEGRA EN COSTA RICA. UNA EVALUACION ECONOMICA DE LA PROBLEMATICA. Aguirre, Juan Antonio; Koch, Cristián; Dao, Federico. IIICA, Apartado 52-2200, San José, Costa Rica.

En la actualidad el cultivo de plátano en Costa Rica representa una actividad de relativa importancia económica a distribuir entre los agentes que participan en ella más de 200 millones de colones y asegurar entradas netas de divisas al país del orden de los 6-7 millones de dólares por año por concepto de exportación del producto, sin embargo, frente a la sigatoka negra esta actividad corte serios riesgos de desaparecer debido a dificultades estructurales que limitan la organización de una lucha preventiva eficaz, como la desarrollada en el mismo país por las compañías bananeras. El estudio plantea un conjunto de propuestas y medidas para el combate de la enfermedad en los distintos sistemas de producción de plátano tanto a nivel institucional como de investigación y extensión.

PRELIMINARY FIELD TEST TO EVALUATE 12 CULTIVARS AND HYBRIDS OF TOMATO RESISTANT TO RACES 1,2 OR 3 OF Fusarium oxysporum f. sp. lycopersici (Sacc.) Snyder & Hansen. David Angulo and Gustavo Román. Fundación Servicio para el Agricultor (FUSAI).

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Coffee pink disease is common in Colombian coffee plantations during the productive stage and rainy periods. Research on Corticium salmonicolor described the symptoms throughout the disease cycle, however the reproductive structures on coffee have not been described yet. The pink scab fungus stage on coffee branches was studied under the microscope. Structures similar to basidium and basidiospores were measured and photographed. The basidium were simple, clavate with four short sterigmata. Spores were small, globose or ellipsoid with a smooth colorless membrane. The basidiospores germinated in water and formed strong extensive mycelium in less than 24 hours. In one square centimeter of pink scab, it was possible to count about 150000 basidiospores with 90% germination. It is possible that the primary inoculum for new infections come from the detected basidiospores.

USE OF COFFEE PULP IN NURSERIES FOR IRON SPOT DISEASE CONTROL. 18905 SW 280 Street, Homestead, Florida 33031.

BREEDING FOR RESISTANCE TO PAPAYA RINGSPOT VIRUS. Robert A. Conover and Richard E. Litz, University of Florida Agricultural Research & Education Center 18905 SW 280 Street, Homestead, Florida 33031.

Florida's papaya (Carica papaya L.) industry for many years has been threatened by the widespread occurrence of papaya ringspot virus (PRV). Tolerance to PRV infection was identified several years ago in a dioecious papaya accession from Colombia. Since then, through controlled pollination and recurrent selection, PRV tolerance has been transferred to papayas that appear to be suitable for South Florida production. Tolerance is conferred by a complex of genes. Additional research is needed to develop cultivars resistant to PRV. To date, the only commercially available papaya cultivar resistant to PRV is the HCP variety 'Monroe'. There are no hybrids available to add to this resistance. Additionally, some PRV isolates induce systemic symptoms in inoculated bean 'Monroe' plants.


At Centagro, under laboratory and field conditions, biological studies were conducted on Corticium salmonicolor, the causal agent of coffee pink disease. Fungal growth and structure formation were measured on five culture media under controlled Pseudomonas inoculation. In the evaluation of potential fungicides, the best fungicidal activity and sclerotia formation was found on malt agar. The number of sclerotia was influenced by 3 hours daily light period. Also a typical zonation formation were measured on five culture media under controlled conditions. The growth and infection index, defoliation and dry weight. When pulp was inoculated with the Cochliobolus rectus isolate Xp-123, the infection index was 74.6% with Oxycarboxin and 64.8%, 69.4% and 56.4% with three other fungicides. The infection index was 54.6% with Oxycarboxin, 46.8% with two other fungicides and 26.4% with the experimental fungicide PH-50-98. There were highly significant differences between treatments with and without pulp. The beneficial effect of coffee pulp controlling iron spot disease on coffee seedlings was confirmed in the present work.


In vista de que las virosis constituyen un grave problema en las siembras de ají (Capsicum annum y C. Frutescens) y pimiento (C. annum) en Venezuela, se realizó un inventario de virus que atacan a estos cultivos. Se seleccionaron 100 muestras de material enfermo colectadas en diversas localidades del país. Los virus detectados fueron: Necrotovirus, Tobamovirus, Potyvirus y aRNA. Los virus detectados en el tabaco fueron: Tomatovirus, Saccharovirus, Amarylovirus y aRNA. Los virus detectados en la papa fueron: Tomato mosaic virus, Tobacco rickettsia virus, Cucumber mosaic virus, Bemovirus y aRNA. Los virus detectados en la manzana fueron: Apple latent virus, Cucumber mosaic virus, Bemovirus y aRNA. Los virus detectados en la papa fueron: Tomato mosaic virus, Tobacco rickettsia virus, Cucumber mosaic virus, Bemovirus y aRNA.
CHEMICAL SEED TREATMENT FOR PARTIAL BUNT OF WHEAT. S. Fuen-
entes, E. Torres, and C. Garcia. - CYMMYT, Apdo. 6-641, Mexico
D.F., and CIANO, Apdo. 515, Ciudad Obregón, Sonora, MÉXICO.
Partial bunt of wheat is caused by the fungus Tilletia indica.
The pathogen is soil borne and may be disseminated as telio-
spores in bunted kernels or on infested seed. Upon germina-
tion, each teliospore produces about 100 primary basidiospores.
Basidiospores are nonmotile and infect individual florets of
the wheat spike at anthesis. Infections result in partial
destruction of the endosperm and its replacement by a black,
fluffy mass of teliospores. Studies were conducted to identify
seed dressings that prevented teliospore germination. Fun-
gicide efficacy was evaluated by teliospore germination in vitro.
Bunted seed lots were treated with candidate materials at dif-
ferent rates. Teliospores were extracted from bunted kernels
and grown on soil extract agar 1 mo and 2 mo after seed
treatment. Pentachlorothenzene 75% (Tervazan) at 1 kg/ton
of seed and methylmercury guanadine 2.2% (Panogen 15)
at 750 ml/ton completely suppressed teliospore germination.

ELECTROPHORETIC DETECTION OF FROG SKIN-INFECTED Manihot
Cassava Pathology, CIAT, Cali, Colombia.
Frog Skin (FS), a cassava (Manihot esculenta Crantz) disease
of unknown etiology, can cause yield losses of up to 100% in
susceptible cultivars. A study was conducted to obtain preliminary
preparations, obtained from FS-afflicted 'M Col 33' cassava plants,
by polyacrylamide gel electrophoresis in the presence of sodium
dodecyl sulfate (SDS-PAGE), revealed a marked increase in the
concentration of a polypeptide protein (Mr 54 000 daltons) in
infected tissue, when compared to FS-free controls. This
phenomenon has been consistent in SDS-PAGE analyses of leaf and
root extracts of FS-afflicted 'M Col 33', 'Secundina', and 'Quicace-
ra' cassava plants, and of leaf extracts of 30 other different
cassava genotypes. The electrophoretic method is suitable for
the detection of FS-afflicted cassava plants grown both under
glasshouse and field conditions.

AN EQUATION TO PREDICT COFFEE RUST INFECTION RATE. J.C. Torre-
zo, L.K. Atkin, S.H. Osseguera, G.W. Chaves, C.A. Velasco, J.C. Lozano,
and Celina Torres G. Tropical Pastures Program, CIAT, A.A. 6713
Cali, Colombia.

Pseudomonas solanacearum BIOTROP 3 AS INDUCTOR OF HYPERSENSITIVE
REACTION. C.A. Granado and L. Sequerra. ICA, Palmira, Colombia,
and University of Wisconsin, Dept. of Plant Pathology, Madison,
Wisconsin, U. S. A.

Fifty strains of P. solanacearum BIOTROP 3, collected from differ-
ent countries including Australia (12), Brazil (11), Costa Rica (6),
Kenya (5), Philippines (11), People's Republic of China (5),
Sri Lanka (7) and Taiwan (2), and isolated from different solana-
ceous hosts (tomato, potato, pepper, tobacco, eggplant) and weeds,
showed that 42 of them (81%) were inducers of hypersensitive
reactions after infiltration on tobacco leaves, cv. Bottom
Special. The results indicate that the differentiation of races
of P. solanacearum should only be done in the leaf infiltration
technique (Phytopathology 60:833) is no convenient, and corroborates
previous work (Phytopathology 65: 731) based only on a few strains
of Biotrop 3 of the bacterium.

HYPERSENSITIVE REACTION INDUCED IN TOBACCO LEAVES BY Pseudo-
ICA, Apartado Aéreo 233, Palmira, Colombia, and University of
Wisconsin, Dept. of Plant Pathology, Madison, Wisconsin, U. S. A.

Forty two out of 50 strains of P. solanacearum BIOTROP 3 col-
lected in Australia (12), Brazil (11), Costa Rica (6), Kenya
(5), Philippines (11), People's Republic of China (5), Sri
Lanka (7) and Taiwan (2), and isolated from different crops
(tomato, potato, pepper, tobacco, eggplant) and weeds,
induced a hypersensitive reaction after infiltration into leav-
es of the tobacco cultivar Bottom Special. The results indic-

Ever since coffee rust was reported from Brazil in 1970 it has been spreading further north in the American continent. At the initial outbreak of the disease in Costa Rica, a study was very important to determine timing of fungicidal applications. Based on a two year study at four locations in Brazil an equation has been developed to predict coffee rust infection rate which could be applied to determine timing of fungicidal applications. If the same method, with some modifications to suit the local cultural patterns, is adopted by researchers of other countries, later, our results could be compared and a more stable prediction program can be established. Cooperation among the scientists as well as government and private financing organization is very important to make this possible. Sponsoring by ACP-Caribbean Division would help in executing this program on international basis.

ANTHRACNOSE (COLLETOTRICHEUM GLOEOSPORIOIDES) OF STYLOSANthes CAPITATA: IMPLICATIONS FOR FUTURE DISEASE EVALUATION OF INDIGENOUS TROPICAL PASTURE LEGUMES. Jillian M. Lenné, Tropical Pastures Program, CIAT, A.A. 6713, Cali, Colombia.

Anthracnose, caused by Colletotrichum gloeosporioides, is in the most widespread and damaging disease of Stylosanthes species. From 1978 to 1981, field screening of 121 accessions of Stylosanthes capitata at two sites in Colombia and at CIAT, Brazil showed that although 90% of accessions were resistant to anthracnose in Colombia, 84.3% were moderately to severely anthracnosed at CIAT, Brazil. This strongly suggests that the specialized pathogen isolates of C. gloeosporioides to S. capitata exist in Brazil, within the native habitat of this legume, and not in Colombia where S. capitata is an exotic species. Glasshouse studies with isolates of C. gloeosporioides from various countries have confirmed this relationship. Results strongly imply the need to screen indigenous tropical pasture legumes for disease resistance in their native habitats in Central and South America.

DISPERSIS OF TROPICAL FORAGE PLANTS IN COLOMBIA. J. Lenné, CIAT Tropical Pastures Program, Cali, Colombia.

During four years, tropical forage plants have been intensively evaluated for their grazing preferences in Colombia, especially at the Experimental Station IICA-CIAT, Carimagua, Meta, and at the Experimental Station CIMMYT, Santana de Cúcuta, Cauca. More than thirty diseases have been detected in forage legumes and grasses, most of them in legumes. The causal agents were determined from observations of symptoms in the field and afterwards verified in the laboratory. Fungi, bacteria, mycoplasmas, viruses and nematodes were recorded as causal agents of these diseases in most of the cases identified by fungal representatives of all taxonomic groups. The distribution and importance of diseases of promising genera of tropical forage plants is discussed.

PATHOGENIC VARIATION AMONG ISOLATES OF COLLETOTRICHEUM GLOEOSPORIOIDES AFFECTING STYLOSANthes SPECIES: JILLIAN M. LENNE, Amparo Vargas de Alavés and Celina Torres G. Tropical Pastures Program, CIAT, A.A. 6713, Cali, Colombia.

During the past four years, glasshouse studies of pathogenic variation among isolates of Colletotrichum gloeosporioides, the causal agent of anthracnose, from Stylosanthes species from South America have been carried out. To date, seven groups have been recognized: group 1 on common Stylosanthes guianensis; group 2 on late-flowering S. guianensis; group 3 on both S. guianensis; group 4 on S. capitata and S. scabra; group 5 on S. capitata and S. scabra; and group 6 on S. capitata and common S. guianensis. Groups 1, 2, 3, and 6 have been found in Colombia; groups 4, 5, and 7 in Brazil only. Group 1 also being common in Peru and Venezuela. Classification of the variability within the pathogen is continuing.


Corn smut is known in all the maize producing zones of the world. It causes losses ranging from 1 to 100%. Therefore it is important to understand factors affecting growth of the fungus. The present work was focused on the study of factors related to the host (genotype and plant age), the fungus (spore concentration, pathogenic variation and infection sites) and the environment (relative humidity, precipitation and temperature). The factors determining disease incidence seem to be genotype and plant age, inoculum source and concentration (with higher spore concentration there are more infection sites and therefore higher numbers of galls). Relative humidity, temperature and fresh wind are important factors because they affect spore germination and dissemination.

EFFECT OF CUTTING QUALITY ON CASSAVA (Manihot esculenta Crantz) PERFORMANCE. J.C. Lozano; B. Pineda and U. Jayasinghe. Camagüey, Cuba. INTA-FITUS, CALI, COLOMBIA.

Cassava is normally propagated by planting 20 long stem cuttings. The general performance of a native cultivar and a recently selected hybrid was investigated according to planting distance and density. The results showed that by using cuttings from plants regenerated after meristem culture, the root and stalk yield increased by 69.9% and 70.3%, respectively, with regard to traditional planting material. When comparing the native cultivar with the selected hybrid, there were no differences in yield if clean "cuttings" were used. With us using local planting material for the native cultivar the hybrid produced around 3.2 times more than the native cultivar. All these findings indicate a continuous decrease in the performance of cassava cultivars with time due to the effect of biotic stresses asserted during each growing cycle. These bring out the need for: a) careful evaluation of the genotypes during selection by using planting material of equal qualities; b) use of clean planting material for a high performance.

ASSESSMENT OF THE EFFECT OF SOME CULTURAL PRACTICES ON THE INCIDENCE OF MAIZE RAYADO FINO VIRUS IN CHAPINGO, MÉXICO. Gerardo Martínez, José A. Toledo and Moisés Cardenas-Alonso. Universidad Autónoma Chapingo, Departamento de Parasitología, Chapingo, México. 56230. México.

In two field trials we evaluated the effect of weed control, planting distances and densities and maize-field bean intercropping on the incidence of Maize Rayado Fino Virus (MRVF). A general incidence was observed in cuttings in intercropped (20%) compared to maize alone (10%) and in equidistant (33%) as normal planting distance (20%). The incidence of MRVF was highest in the always weed-free check with equidistant distribution (46 and 48% in low and high density, respectively). The lowest was observed in the always weedy check with normal planting distance (2 and 3% for the low and high density, respectively).


In the control of the diseases foliarias del frijol cargamonte (Phaseolus vulgaris L.) se ha encontrado que los fungicidas benomil, chlorotolom y captafóilo, en suspensiónes químicas, han dado los mejores resultados para el control de la Anthracnosis (Colletotrichum lindemuthianum) y la Mancha anillada (Ascochyta sp.). Dado que a altas densidades de siembra las enfermedades foliarias son limitantes se estudiaron diferentes distancias de siembra, siendo la de 60 x 60 cm con control quimico a base de Benomil, aquella en la que se obtuvieron los mas altos rendimientos (4.914 kg/ha).


Se confirmó la patogenicidad del Virus del Mosaico de la Soya (SMV) en frijol (Phaseolus vulgaris L.) 'Double White' mediante la observación con el auxilio de un microscopio de luz (x 1000) de las inclusiones intracelulares inducidas por el virus en plantas susceptibles. La observación de cortes ultrafinos de tejido de frijol infectado por el SMV, con un microscopio electrónico (x 1000) demostró la presencia de inclusiones citoplasmáticas radiales (pinwheels) típicas del grupo potyvirus al cual pertenece el SMV. La presencia de agregados laminares que clasifican al SMV dentro de la subdivisión III del grupo potyvirus, fue detectada en cortes ultrafinos de tejidos de soya pero no de frijol obtenidos de plantas infectadas sistémicamente.

PATOGÉNICIDAD Y DISTRIBUCIÓN SISTÉMICA DE UNA CEPA BICULTIVAR DEL VIRUS DEL MOSAICO DE LA SOYA EN FRIJOL (Phaseolus vulgaris L.) NO. 10, aislado en el Departamento de PARASITOS Y MICROORGÁNOS INFECCIOSOS, Universidad Autónoma del Caribe, Cali, Colombia.

Reprints of this article may be obtained from: COFFEE RUST PREDICTION: INTERNATIONAL PROGRAM. A.C. Kushalappa, and R. Montoya. Dept. de Fitopatología, Universidad Federal de Viçosa, Viçosa, Brasil, and CIAT, Lima, Peru.
YIELD EVALUATION OF BEAN CULTIVARS WITH SMALL OR LARGE RUST PUSTULE TYPE. M.A. Pastor-Corrales and F. Correa. Centro Internacional de Agricultura Tropical, A.A. 6713, Cali, Colombia.

Phaseolus vulgaris L. cultivars of known reaction to Uromyces phaseoli in Palmira, Colombia, were field evaluated under protected natural and rust inoculated conditions. The cultivars had either large rust pustule type of more than 500p in diameter and often accompanied by pustules of intermediate size or small pustule type of less than 300p in diameter. The disease progress was monitored and the predominant pustule types for each cultivar were identified. Statistically significant yield differences were observed between the protected and nonprotected plots for cultivars Pinto 650, Exico 23, Jamaica, PAB 883, BAT 256 and BAT 153 with large rust pustule type. No significant yield differences were observed between the protected and nonprotected plots for BAT 41, BAT 91, BAT 308 and EMP with small rust pustules. In this study, rust type pustule appeared to be more important than rust severity in determining yield differences between protected and nonprotected plots.


Muy poca informacion existe sobre las perdidas en rendimiento que puede causar la mancha angular del frjol. Se utilizo el cultivar susceptible C 2858 y los fungicidas Bixaazol (Baycor) y Top Cop (Sulfato Cuprico Trasicoso). Se hicieron treatamientos diferentes de aplicaciones con cada uno de los fungicidas a diferentes épocas después del siembra. En las parcelas de control no se recibieron fungicidas, el rendimiento fue de 1118 kg/ha. El rendimiento en todas las parcelas tratadas con fungicidas fue superior al del control. Los mayores incrementos en rendimiento con Baycor fueron de 412, 372 y 335 cuando se hicieron aplicaciones a los 26, 40 y 54 días después de la siembra, respectivamente. Con Top Cop los mayores incrementos se observaron cuando las aplicaciones se hicieron a los 26, 40 y 54 días (332, 40 y 59) y a los 40 y 54(303) días después de la siembra, respectivamente.


The rapessed, a plant with high oil content, has been recently introduced as an oil crop. It is commonly attacked throughout its production cycle by many insects and fungi. During the growing 1980-81, surveys were carried out collecting samples of insect attacked and diseased plants from several localities in the High Valleys and in observation plots planted at Chapango, Mexico. From the study we found: a) Pandi Philotherapy (Acland Rhamphid) -AB- cabbage (Pers. ex Chev.) Rantze; Alternaria Brassicae (Berk.) Sacc. b) Pieropsis parausatrasa Pers. ex Fr.: Sclerotinia sclerotiorum (L.) de Bary: b) Insects: Brevicoryne brassicae L.: Myzodes persicae Sulzer: Macrosiphum rosae (Burgess) - Green ear beetles (Nebiludiae) - Blossom bug (Miridae) and stalk borer (Curculionidae). We consider A. brassicae the pathogen with most incidence. We estimate that L. arisa is the most damaging species.


Basidiospores of Crinipellis perniciosa developed on autoclaved and propylene oxide sterilized dry witches' brooms of Theobroma cacao imbedded in water agar. These basidiospores were charac- teristic of those produced under natural conditions. The seven basidiospores developed from mycelial isolates of C. perniciosa from Brazil and Ecuador that were paired on each flask that contained sterilized brooms. Basidiospores from these basidio- spores were applied to shoot apices of T. cacao. Symptoms were observed after 3 and 6 wk in the two brooms that developed. Novel characteristic of the part of the fungus that was observed in free-spore sections of these brooms. Reisolation yielded mycelial cultures identical to cultures isolated from field produced brooms and to single basidiospore cultures of C. perniciosa.

A scoring method was used which considers unique character- istics black sigatoka. Disease incidence was recorded in several banana farms distributed throughout the Atlantic area of COSTA RICA. Except for the relative severity of leaf SP and the results related to banana leaf area rusted, the rest of the data were compared with the results obtained in Costa Rica. The disease incidence is mainly influenced by local climatic conditions, but also, defective crop management practices have been characterized as factors greatly favoring disease development. A better understanding of the problem on the part of the grower should help minimize disease losses.

Estudio de algunos aspectos relacionados con la muerte regresiva del aguacate. Amado Rondón G. CENIAP, Apatado 4653, Maracaibo, Venezuela.

Análisis del laboratorio sobre muestras de plantas de aguacate enfermas procedentes de diferentes huertos permitió concluir que "la muerte regresiva de las raíces" esta relacionada principalmente con la presencia en el tejido de las mismas, del hongo Botryodiplodia theobromae Pat., el cual se encuentra asociado a Biblicum sp y Pestalotiopsis sp. considerados organismos secundarios. Mediante contajes de plantas afectadas se lograron establecer porcentajes de infección que iban desde 0% en las variedades 'pedro', 'schaff', 'duke', 'yam' hasta un 80% en la variedad 'prince'. Así se determinó que la incidencia de la enfermedad estaba relacionada con lesiones o heridas en las mismas producidas por el sol por ataque de insectos, con condiciones ambientales favorables al patógeno y con prácticas agronómicas deficientes. Se logró buen control de la enfermedad combiniendo medidas preventi-

Fungicide residue levels predicted using a linear model. P. Santos, A.C. Pashalappa, and C. Vieira. Dept. de Fitopatologia, Universidade Federal de Viçosa, Viçosa, Brasil.

In 0.3 hectare of Phaseolus vulgaris cultivar Rico 23, in Viçosa, Brazil, proportion of leaflets (PLR) and leaflet area rusted, (PRA) and leaf area rusted, (PAAI) was determined at weekly intervals during four growing seasons from 1979 to 81. A regression model was developed to predict the infection rate (P R) based on PLR and PAAI, the dependent variable, for 14 days after the date of prediction (DP) as it on the coffee leaves was over the optimum level, 60 mg/m2 of the dependent variable, for 14 days after the date of prediction (DP) as it on the coffee leaves was over the optimum level, 60 mg/m2 of the dependent variable, for 14 days after the date of prediction (DP) as it on the coffee leaves was over the optimum level, 60 mg/m2 of the dependent variable, for 14 days after the date of prediction (DP) as it on the coffee leaves was over the optimum level, 60 mg/m2 of the dependent variable, for 14 days after the date of prediction (DP) as it on the coffee leaves was over the optimum level, 60 mg/m2 of the dependent variable, for 14 days after the date of prediction (DP) as it on the coffee leaves was over the optimum level, 60 mg/m2 of the dependent variable, for 14 days after the date of prediction (DP) as it on the coffee leaves was over the optimum level, 60 mg/m2 of the dependent variable, for 14 days after the date of prediction (DP) as it on the coffee leaves was over the optimum level, 60 mg/m2 of the dependent variable, for 14 days after the date of prediction (DP) as it on the coffee leaves was over the optimum level, 60 mg/m2 of the dependent variable, for 14 days after the date of prediction (DP) as it on the coffee leaves was over the optimum level, 60 mg/m2 of the dependent variable, for 14 days after the date of prediction (DP) as it on the coffee leaves was over the optimum level, 60 mg/m2 of.
leaf area. The major advantage of using the vertical box over the conventional one is that it increases the application efficiency on a higher number of coffee trees sprayed/day. The results could be very important in reducing cost of control of any pest on coffee.

RECOMMENDATIONS FOR FUTURE EXPLORATION

ECONOMIC IMPORTANCE OF A VIRUS COMPLEX IN MAIZE TRANSMITTED BY PEREGRINUS MAIDIS

Preliminary studies on the economic importance of a virus complex, observed in the Cauca Valley, complex in which there were to be involved at least four different viruses, all of them transmitted by Peregrinus maidis (Asm.) (Homoptera, Delphacidae), indicated that plants presenting each one of the three main symptoms associated with the disease complex: "raza amarilla", "hoja blanca" and "raza fina", is associated with yield reductions, that in all the cases was higher than 50%, when their yield was compared with the one from plants apparently free of the disease. This reduction in yield was higher than 80%, in plants infected early during the growing season, being very frequent the death of diseased plants. Similar results were observed in the four cultivars studied: ICA-H 211, ICA-H 212, ICA-H 257 and DIACOL-H 253.

ECONOMIC IMPORTANCE OF A VIRUS COMPLEX IN MAIZE TRANSMITTED BY PEREGRINUS MAIDIS

MAIZE HOJA BLANCA: A COMPLEX OF VIRUSES TRANSMITTED BY PEREGRINUS MAIDIS

MAIZE RAYA GRUESA: A RHABDOVIRUS TRANSMITTED BY PEREGRINUS MAIDIS

CONTROL DE LA HOJA AZUL EN TABACO. J. E. Ventura y R. Cancelado. Du Pont Co. Inc./Menfis, Florida, U. S. A.

El hongo azul del tabaco Pseudoperonospora tabacina Adams, ha producido severas epidemias en la mayoría de países productores de tabaco. Los métodos convencionales de control han fallado repetidamente cuando la cantidad de inóculo es elevada y las condiciones ambientales son favorables para su desarrollo.

Algunos de los tratamientos que se han utilizado para el control del hongo azul del tabaco han sido mancozeb (4)+mancozeb aplicado solo. Se ha observado que el control del hongo azul del tabaco se debe a la aplicación del fungicida mancozeb (4)+mancozeb aplicado solo. Se ha observado que el control del hongo azul del tabaco se debe a la aplicación del fungicida mancozeb (4)+mancozeb aplicado solo. Se ha observado que el control del hongo azul del tabaco se debe a la aplicación del fungicida mancozeb (4)+mancozeb aplicado solo.
CHEMICAL CONTROL OF SUGARCANE SMUT (Ustilago scitaminea Sydow) BY SEEDCANE TREATMENT. J. I. Victoria, P. Carrillo and C. Casaslett. CENICARA, Cali and ICA-CGCUta, Colombia.

The system used to evaluate the chemical control (eleven compounds at a concentration level of 500 ppm) consisted in a complete immersion of CPS7603 seedcane in hot water (50C for 2h) or cold water (25C for 2h). The best control results were obtained with triadimfenon. An inverse relationship was found between dosage and time for immersion in triadimfenon. For a lower dose (125 ppm) a longer period of immersion (2h) in hot or cold water was necessary; triadimfenon at 125 ppm in hot water gave good control even when the immersion was for only 5 min, not so in cold water where 500 ppm for 5 min of immersion were necessary to give similar control. Triadimfenon was not effective in controlling sugarcane smut when applied by foliar spraying, immersing only the seedcane ends in fungicide solution, spraying fungicides on seedcane ends or seedcane on rows; the best control was reached when there was a complete immersion of seedcane pieces.

RESISTANCE TO SUGARCANE SMUT (Ustilago scitaminea Sydow). C. Casaslett, J. I. Victoria, P. Carrillo and H. Runje. CENICARA, Cali and ICA-CGCUta, Colombia.

From 1977 to 1980 more than 426 sugarcane varieties were evaluated in Ingenio Sacarare (Codazzi), Agrouzia S.A. and ICA-CGCUta, as to their resistance to sugarcane smut (Ustilago scitaminea Sydow). Evaluation was done by immersing single seedcane buds in 2 g spores/l water plus triton ACT (0.5 ml/l) for 10 min. Periodically the production of the number of whips was determined and used as indication of susceptibility to smut. After several evaluations, 23 varieties were found as resistant to smut; from this group, 11 varieties were selected to have their agroindustrial characteristics checked at different sugar mills in the Cauca Valley (Colombia): (PR 61902, CoX, PR 980, B63, ICA 71-11, ICA 70-36, ICA 70-67, Ragnar, EPC 38212, ICA 69-11 and PR 61832). The four first varieties were found highly susceptible to sugarcane mosaic and the four following varieties had poor agroindustrial characteristics. The last three varieties have been selected to form a basic group to be used in regional trials at 10 different sugarcane mills.


The three diseases are foliar anthracnose Colletotrichum gloeosporioides (Penz.) Sacc.; dry rot (initially caused by C. gloeosporioides and finally associated with Fusarium corneum at the end of the infection process; and brown rot caused by Rhizopus stolonifer invading wounds or holes made by the seed and fruit borer Bephra maculalis C. Both. Incidence was rated at 72%, 42% and 42-72%, respectively. A relationship between brown rot and environmental conditions was determined. Some relationships between cultural practices and the appearance of these diseases were found. Descriptions of symptoms and causal agents were made. Some preliminary measures of management and control are advised.

EVIDENCE FOR PATHOGENIC SPECIALIZATION OF Sphaeceloma manihotica ON CASSAVA. R. S. Zeigler, Department of Plant Pathology, Cornell University, Ithaca, New York 14853, USA and J. C. Lozano, CIAT AA 6713 Cali, Colombia.

Sixty cassava cultivars of diverse geographic origins were used in a series of controlled inoculations with 30 single-spore isolates of S. manihotica of diverse origin. Inoculation was with conidia from 21-28 day-old colonies from PDA at 3 x 106 conidia/ml in 0.1% water agar and surfactant applied by asper. Stem cuticle was disrupted with a cotton swab immediately prior to inoculation. Inoculated plants were placed in controlled environment (100% RH for 48 hours, 24-28 C, 12 hr photoperiod at 11,000 lux), and evaluated after 10-12 days. Evaluation was as percent susceptible stem surface involved in lesions and number of internodes diseased. No hypersensitive response was detected. Two-way analysis of variance yielded repeatable significant cultivar x isolate interactions suggestive of pathogenetic specialization. Interactions frequently occurred with field resistant cultivars. Factors other than physiological compatibility are probably involved in field resistance.

THE PERFECT STATE OF Sphaeceloma manihotica, CAUSAL AGENT OF CASSAVA SUPERELONGATION DISEASE. R. S. Zeigler, Department of Plant Pathology, Cornell University, Ithaca, New York 14853, USA and J. C. Lozano, CIAT, AA 6713 Cali, Colombia.

Leaf, petiole, and stem lesions on cassava infected by Sphaeceloma manihotica collected throughout Colombia frequently had scattered or coalescing pulvinate structures with darkly pigmented surfaces. These were found to be ascoma typical of Elatinae species, the only known sexual stage of Sphaeceloma spp. Ascoma range from 20-130 μm in diameter, originate subepidermally, and contain scattered locules. Globose, bitunicate asci (13-22 μm in diameter) are solitary in the locules. Mature ascospores (11-14 x 3-7 μm) are hyaline with three transverse septa and often internal longitudinal septa. Germination may be direct or by production of conidia. Single ascospore isolates yielded colonies typical of S. manihotica and were pathogenic on cassava, causing typical SED symptoms. Ascoma development coincides with onset of rains and ceases as rains become sporadic. Ascospores are wind dispersed. This is the first Elatinae described on Manihot spp.