

PROGRAMA SANIDAD VEGETAL



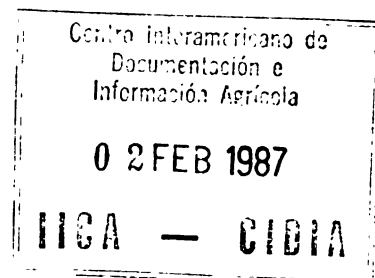
Roya y carbón de la
caña de azúcar

Bibliografía parcialmente anotada

IICA







**Roya y carbón de la
caña de azúcar**

Bibliografía parcialmente anotada

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El Programa de Sanidad Vegetal del Instituto Interamericano de Cooperación para la Agricultura-IICA, está cada vez más convencido de la necesidad de agrupar en una sola actividad fuerte y dinámica, la labor informativa sobre Protección Vegetal, presentando un frente único en el que el trabajo de comunicación sea la preocupación primordial permanente de sus componentes.

En vista de que existe una creciente demanda por parte de los países de la región de contar con información confiable y compatible para preparar planes de investigación y control de los problemas fitosanitarios que en la actualidad los aquejan, se han seleccionado algunos temas de interés para compilar una serie de bibliografías, que permita el acceso a la documentación en forma rápida y exacta sobre determinada plaga o enfermedad.

La presente Bibliografía sobre Roya y Carbón de la Caña de Azúcar, encierra un significativo cúmulo de conocimientos científicos y técnicos y constituye además un recurso acumulativo de información internacional laboriosamente escogido por un grupo de expertos y cumple con uno de los propósitos del Programa, el de promover la información fitosanitaria a nivel Latinoamericano y del Caribe.

Federico Dao
Director
Programa de Sanidad Vegetal

San José, Costa Rica
Agosto de 1981

INTRODUCTION

The Plant Protection Program of the Inter-American Institute for Cooperation in Agriculture-IICA, is convinced of the need to compile the written information on the subject of Plant Protection into one strong and dynamic activity, where information gathering is the most important and permanent concern of its components.

In view of the growing demand expressed by the countries of the region, for reliable and compatible information for the preparation of research plans and for the control of plant protection problems they are now facing, a series of bibliographies have been compiled on some specific subjects of interest, in order to provide rapid and precise information on plant pests and diseases.

The Bibliography on Rust and Smut of Sugarcane gathers a significant amount of scientific-human knowledge, and constitutes a resource of international information that has been carefully selected by a group of experts and thus fulfills one of the goals of the Program: to promote the dissemination of plant protection information throughout Latin America and the Caribbean.

Federico Dao
Director
Plant Protection Program

San José, Costa Rica
August, 1981

METODOLOGIA

Las referencias de los documentos presentados en esta bibliografía sobre Roya y Carbón de la Caña de Azúcar son el resultado de una búsqueda retrospectiva que no pretende ser exhaustiva, realizada en los siguientes repertorios bibliográficos:

Abstracts on Tropical Agriculture (Tropical Abstracts)

Agrindex

Agrinter (Bibliografía Agrícola Latinoamericana)

Agritrop

Horticultural Abstracts

Plant Breeding Abstracts

Review of Plant Pathology (Review of Applied Mycology)

Bibliografías nacionales de:

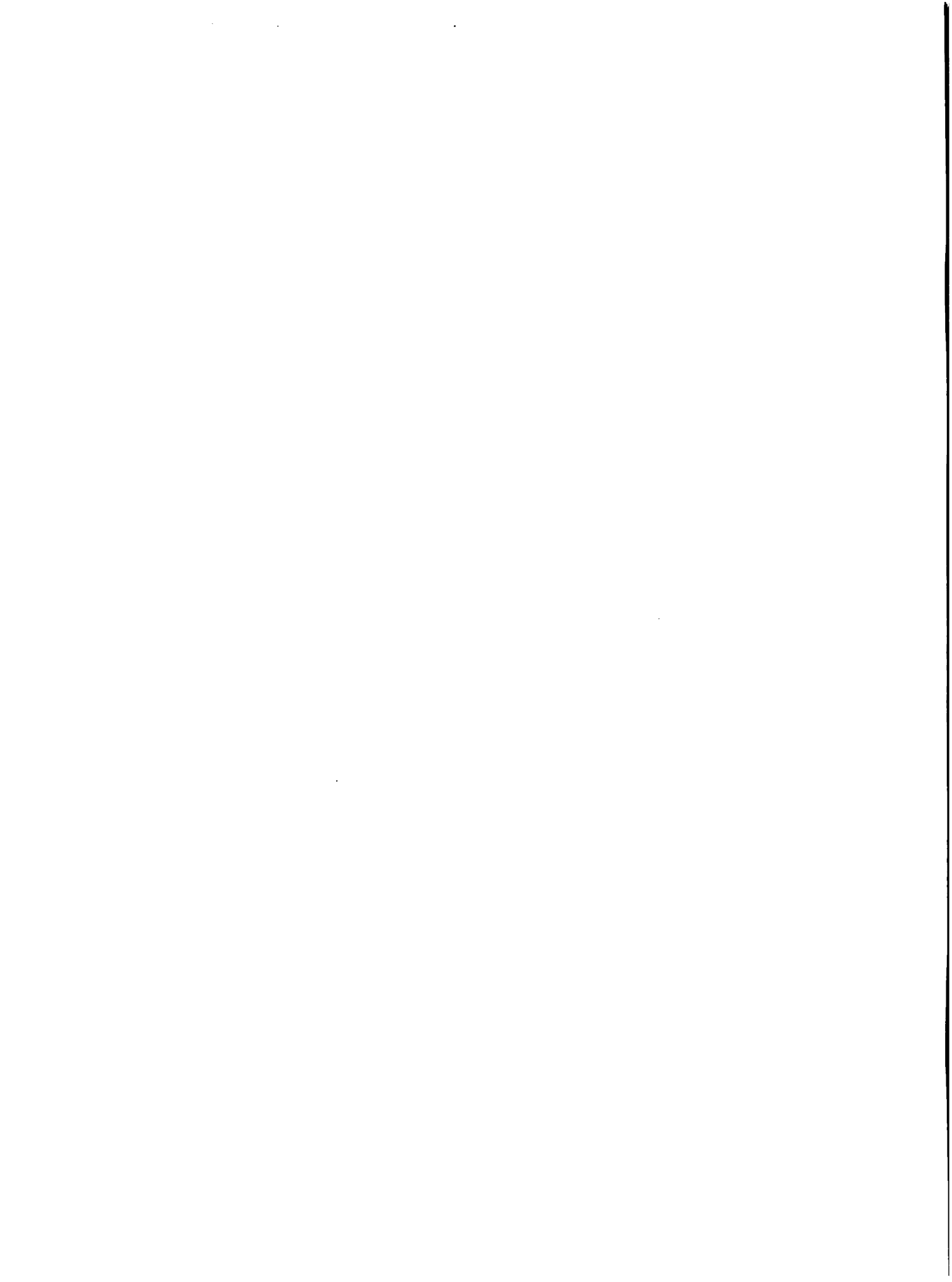
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- Colombia
- Venezuela
- Haití

Catálogo Público de la Biblioteca Conmemorativa Orton

El período de búsqueda se realizó de 1965 a la fecha, para complementar la información ofrecida también se indizan los trabajos citados por los autores mencionados en las fuentes anteriormente indicadas, que están en la Biblioteca Conmemorativa Orton.

La bibliografía tiene 387 referencias; está organizada en orden alfabético de autor o título. Para facilitar el uso de esta publicación se han elaborado por separado para cada enfermedad, índices de materia y geográfico.

La Biblioteca Conmemorativa Orton en Turrialba, da acceso a los documentos, incluidos en esta bibliografía, cuyas referencias están acompañadas de un asterisco (*), a través del Servicio de Reproducción de Documentos del Centro Interamericano de Documentación e Información Agrícola-CIDIA.



ROYA Y CARBON
DE LA
CAÑA DE AZUCAR

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ROYA Y CARBON DE LA CAÑA DE AZUCAR

- * ABU-ZEID, O. M. Problems of sugar-cane production in the Sudan. World Crops 25(3):132-135. 1973. (01)

Mention is made of work on varietal improvement and yield results from trials of introductions are summarized. Breeding work includes the development of varietal resistance to *Ustilago scitaminea*. (Plant Breeding Abstracts 44:2613)

- AGETE Y PIÑEIRO, F. La caña de azúcar en Cuba. La Habana, 1946. pp. 514-516. (02)

- AGRICULTURAL RESEARCH in Bihar. Agric. Res. Indian Counc. Agric. Res. 4: 68-71, 204-205. 1964. (03)

Incluye *U. scitaminea*, *P. buehni*

- AHMED, N. J. y PADMANABHAN, D. Studies on the incidence of sugarcane smut (*Ustilago scitaminea* Syd.) in relation to ratooning. Madras Agricultural Journal 54:651-652. 1967. (04)

Between 1959 and 1964 one plant crop and 3 ratoons were grown. Smut incidence was generally low, being only 8.88% even in the third ratoon of the most susceptible of the 5 varieties tested. Apparently a resistant variety can be ratooned without danger from smut, and even a susceptible variety can safely be ratooned once or twice provided good planting material is used. (Horticultural Abstracts 38:8757)

- AINSWORTH, G. C. C.M.I. descriptions of pathogenic fungi and bacteria. Kew, Commonwealth Mycological Institute, 1965. Set 8; sheets 71-80. (05)

Incluye *Ustilago Scitaminea*

This set, prepared by G. C. Ainsworth, contains descriptions of *Sphacelotheca cruenta* on sorghum, *Sorghum* spp., Sudan grass, etc., *S. destruens* on millet (*Panicum miliaceum* etc.), *S. reiliana* on sorghum, Sudan grass, and maize, *S. sorghi* on sorghum and Sudan grass, *Tilletia barclayana* on rice, *Tolyposporium ehrenbergii* on sorghum, *T. penicillariae* on pearl millet (*Pennisetum typhoides*), *Ustilago crameri* on Italian millet (*Setaria italica*), *U. maydis* on maize and *Euchlaena mexicana*, and *U. scitaminea* on sugarcane. (Review of Applied Mycology 45:2050)

* Se encuentra en la Biblioteca del CIDIA, Turrialba, Costa Rica y puede obtenerse a través de su Servicio de Reproducción de Documentos.

- AKHTAR, C. M. Principal diseases of major crop in Pakistan with reference to genetic resistance. In Amir Muhammed, Aksel, R. y Borstel, R. C. von, eds. Genetic diversity in plants. III. Genetic variability and resistance to disease. New York, Plenum Press, 1977. pp. 179-191. (06

Varieties, of local and foreign origin, of the following crops are listed: wheat, with resistance to *Puccinia striiformis*, *P. recondita*, *P. graminis*, *Ustilago tritici*, *Urocystis tritici*, *Tilletia foetida*, *T. caries*, *T. indica*, *Anguina tritici* and *Cochliobolus sativus*; rice, with resistance to *Pyricularia oryzae*, *Cochliobolus miyabeanus*, *Tilletia barclayana* and *Leptosphaeria salvinii*; sugar cane, with resistance to *Ustilago scitaminea*, *Physalospora tucumanensis* and sugar-cane mosaic virus; and cotton, with resistance to *Xanthomonas malvacearum* and *Corticium solani*. (Plant Breeding Abstracts 49:4399)

- * ALEXANDER, K. C. y SRINIVASAN, K. V. Sexuality in *Ustilago scitaminea* Syd. Current Science 35(23):603-604. 1966. (07

Two sexually distinct types were distinguished among single-sporidial cultures from 20 promycelia of *U. scitaminea*. Surface-sterilized buds from the sugarcane vars. Co. 213 and C.P. 33-409 became infected only when inoculated with pairs of compatible lines. The degree of virulence appeared to vary with the combination of haplotypes and differences in susceptibility to different combinations were observed. (Review of Applied Mycology 46:1714)

- * ALFIERI JUNIOR, S. A.; SEYMOUR, C. P. y MILLER, J. W. Sugarcane smut in Florida. Phytopathology 69(1):A2. 1979. (08

Since the first appearance of *Ustilago scitaminea* in the USA in 1978, sugar cane varieties are being tested and developed for resistance. Susceptible varieties constitute 32% of the sugar cane planted in Florida. The pathogen is being investigated to determine the possible existence of races. (Plant Breeding Abstracts 50:4152)

- * _____ . La enfermedad del carbón de la caña de azúcar. Sugar y Azúcar 73(7):41. 1978. (09

Smut caused by the fungus *Ustilago scitaminea*, though not yet observed in the US, is expected to arrive some time from the Caribbean area. Symptoms are briefly described. Control measures mentioned are: roguing of diseased stools, selecting healthy planting materials, disinfecting cuttings, avoiding ratooning of affected fields, crop rotation, and planting of resistant varieties. Port of entry inspections can also aid as a barrier against introduction of the disease. (Abstracts on Tropical Agriculture 4:23121)

- ANTOINE, R. Cane diseases. Report. Mauritius Sugar Industry Research Institute 1964:51-68. 1965. (10

Rust (*Puccinia kuehni*), identified in Madagascar in 1962, was recorded in Mauritius in Oct. 1964. The teleutospores

were readily produced, light-coloured when mature, and could occur in the same sorus as the uredospores; their germinability was established. M147/44, M202/46, and M442/51 are susceptible, but the disease is not expected to be of economic importance. (Review of Applied Mycology 44:3139f)

ANTOINE, R. Les nouvelles maladies de la Canne à Sucre à Maurice en 1964. Revue Agricole et Sucrière de l'île Maurice 43(4):373-375. 1964. (11)

Gummosis (*Xanthomonas vasculorum*) and leaf scald (*X. albilineans*), formerly exterminated from commercial plantations, reappeared in epidemic form. Vars. M.202/46 and M.147/44, on which leaf scald was 1st observed, are most susceptible to it. Legal measures against the use of vars. M.146/44, B.3337, and B.34 104 (highly susceptible to gummosis) take effect from 1 July. Yellow spot (*Cercospora koepkei*) on B.3337 and rust (*Puccinia kuehni*) on var. H49-5 are new records for Mauritius. (Review of Applied Mycology 44:1947)

_____. Smut. In Sugar cane diseases of the world. Amsterdam, Elsevier, 1961. pp. 327-345. (12)

ANUSORN UTTAPANYO, WIRAT CHUBAMRUNG y WANTANEE AUWANIT. Etiology and distribution of the sugarcane rust in Thailand. In Thailand. Ministry of Agriculture and Cooperatives. Dept. of Agriculture. Annual Research Report 1975-1976. Bangkok, Thailand, 1977. pp. 493-497. (13)

Sumario

* APPALANARASAYYA, P. Some physiological studies on sugarcane smut (*Ustilago scitaminea* Syd.). Indian Phytopathology 17(4):284-286. 1964. (14)

Optimum temperature for germination of sugarcane smut spores has been determined to be 25°C. Appreciable increase in germination of the smut spores has been observed with all the sugars except lactose and mannite. In the case of fructose, however, marked depression in germination has been observed at 1.5 per cent concentration.

* ARCENEUX, G. Sugarcane smut in Guyana. Sugar Journal 38(4):15. 1975. (15)

In order to prevent invasion of the sugar-cane smut disease in the USA, a concerted change to resistant varieties is recommended. The disease caused by the fungus *Ustilago scitaminea*, has been found in Guyana and also in Martinique. (Abstracts on Tropical Agriculture 2:7454)

ARIF, A. G. y NAZIR AHMAD, C. Relative resistance of sugarcane varieties to smut of cane. In Pakistan Science Conference, Sixteenth, Lyallpur, Pakistan, 1964. Proceedings. s.n.t. p. A255. (16)

Of 30 varieties evaluated for resistance to *Ustilago scitaminea*, eight were immune and three resistant. (Plant Breeding Abstracts 41:503)

ARRUDA, S. C. Alguns resultados experimentais sobre resistênciã de variedades a doença carvão da cana. In Congresso Panamericano de Agronomia, 2º, Piracicaba, Brasil, 1954. Resumos. s.n.t. p. 173E. (17)

* _____ . A produção da muda selecionada da cana em face da doença "carvão". O Biológico (Brasil) 19:127-133. 1953. (18)

El autor defiende la tesis de la necesidad de organizar el cultivo de la caña de azúcar a base de producción de plantas seleccionadas en viveros propios, aún en el caso de pequeños agricultores, en las grandes plantaciones los viveros deberán ser fragmentados; cada sección tendrá su propio vivero. Analisa las ventajas de esas medidas como arma eficiente contra el carbón; explica el por qué de la restricción al movimiento de las plantas; las formas de infección, el significado de los casos de "carbón" encontrados en la variedad resistente Co.290, mediante las observaciones realizadas sobre el papel de la infección latente como principal factor de propagación del hongo. (CV)

* _____ y TOFFANO, W. B. O carvão da cana no Estado de São Paulo. O Biológico (Brasil) 17:155-165. 1951. (19)

Los autores indican el año 1946 como el año en que se detectó por primera vez el carbón en el Estado de San Pablo en Brasil. Describen los síntomas y la causa de la enfermedad, su forma de diseminación y el proceso de infección, condicionado a un previo cruzamiento de esporas que ofrece oportunidades impares para hibridaciones intra e interespecíficas de las cuales pueden resultar tipos de los más diversos del punto de vista de la virulencia para esta o aquella variedad.

Establecen la importancia económica que tiene la enfermedad para las zonas subtropicales y sobre todo para Brasil. En relación al combate del "carbón" las medidas que recomiendan son:

- reducción del volumen de inóculo mediante la destrucción de cañaverales de las variedades P.O.J. 36 y P.O.J. 213.
- substitución de variedades; las variedades permitidas son: Co.290, P.O.J. 2727 y P.O.J. 2878. La variedad Co.290 presentó algunos casos de infección, pero su comportamiento es satisfactorio.
- inspección técnica e investigación

En cuanto a las medidas de control esencialmente preventivas deben realizarse mediante la selección de variedades, se recomiendan las siguientes: Co.290, Co.413, Co.421, C.P.27/139, C.P. 29/137, P.O.J. 2727 y P.O.J. 2878 y la producción de plantas libres de enfermedades.

Al finalizar el artículo hay una nota de los autores comunicando que cuando el trabajo estaba ya en prensa fue detectado "carbón" en un cultivo de caña de la variedad Co.290 en Piracicaba, lo que confirma la capacidad de diseminación de la enfermedad y necesidad de establecer constante vigilancia de las plantas para realizar un combate inspirado en la investigación sobre la interrelación entre la planta, el parásito y el estado favorable de un equilibrio que puede variar. (CV)

ARRUDA, S. C. Reação sexual e patogenia entre isolamentos monoesporídicos de *Ustilago scitaminea* Syd. In Congresso Internacional de Microbiologia, 5°, Rio de Janeiro, 1950. Rio de Janeiro, Brasil, s.f. pp. 162-163.

(20)

_____. O carvão. In Instituto Biológico. Seção de Fitopatologia Aplicada. Doenças da cana-de-açúcar: relatório. São Paulo, Brasil, 1946. pp. 1-42.

(21)

- * AZZI, G. M. A situação das variedades de cana-de-açúcar cultivados no Estado de São Paulo. Brasil Açucareiro 78(3):26-29. 1971. (22)

Sugarcane varieties situation are described in Sao Paulo State. Tables of acreage and percentage for each variety cultivated are presented.

The variety CB 41-76 continues to be the most popular and it constituted 34.7% of the growing cane. Co 419 while still a widely grown variety, declined further in overall popularity since it is susceptible to smut. The smut susceptible varieties represents 19% of the total cane area.

In the last year "The Committee for Sugarcane Smut Control" detected 17 of the disease, represented by 200 hectare of infested cane.

- * BACHCHAV, M. B. *et al.* Note on losses in yield and juice quality of sugarcane affected by smut. Indian Journal of Agricultural Sciences 49(11): 902-904. 1979. (23)

In field trials in Maharashtra the yield loss from setts naturally infected by *Ustilago scitaminea* was 100% and from inoculated setts 42.47%, compared with controls. The juice content was 56.62% from diseased and 62.21% from healthy canes. Reduction in sucrose content occurred in smutted and apparently healthy canes. (Review of Plant Pathology 59:3886)

_____. *et al.* Chemical control of sugarcane rust. Sugarcane Pathologists' Newsletter no. 20:33-35. 1978. (24)

Effective control of *Puccinia erianthi* was achieved with 4 sprays of ferbam (0.75%) + nickel sulphate (0.5%) at 21-day intervals starting at the time of disease appearance. Incidence was reduced by 37.5% and cane yield increased by 7.66 tonnes/ha over the control. (Review of Plant Pathology 58: 1936)

_____. y PATIL, A. O. Screening of sugarcane varieties against smut disease. Indian Sugar 26(4):199-200. 1976. (25)

The cane cvs. Co 6608, Co. 6609 and Co. 62101 were resistant to smut (*Ustilago scitaminea*) in 3 field and 2 glass house trials. (Horticultural Abstracts 47:7978)

BAILLEY, R. A. Most serious disease hazard facing South African Industry. The increasing threat of smut. South African Sugar Year Book no. 49: 20-22. 1979. (26)

The incidence of smut (*Ustilago scitaminea*) in sugar-cane has been fluctuating in severity and importance since the early 1950's when Co 301 was badly affected. In the 1960's there was a new outbreak in NCo 310 in the northern irrigated areas. Now smut is gaining importance again since an increasing incidence in NCo 376 has been observed. Losses in various varieties are mentioned. Control should be conducted by suitable management practices and selection of resistant varieties. (Abstracts on Tropical Agriculture 6:30947)

_____. Possibilities for the control of sugarcane smut (*Ustilago scitaminea*) with fungicides. In Annual Congress, South African Sugar Technologists' Association, 53rd, Mount Edgecombe, Natal, 1979. Proceedings. Mount Edgecombe, Natal, 1979. pp. 137-142. (27)

Smut was successfully controlled in the plant cane crop when seedcane was treated in hot water containing triadimefon (500µg/ml). Control continued when treated setts were subsequently either inoculated with smut or were planted into soil infected with smut spores. A triadimeton/hot water treatment for seedcane is suggested as a means of controlling both smut and ratoon stunting disease. (Horticultural Abstracts 50:2219)

_____. Sugarcane rust in South Africa. Sugarcane Pathologists' Newsletter no. 22:12-13. 1979. (28)

Sugarcane var. Co 301 has been continuously affected by rust since 1941 when the pathogen was identified as *Puccinia kuehnii*. It is now confirmed to be caused by *P. melanocephala*. The effect of the disease on N 55/805 is described. (Review of Plant Pathology 59:3392)

_____. Evidence of an association between smut and leaf scald. Sugarcane Pathologists' Newsletter no. 20:40-42. 1978. (29)

A marked association between incidence of smut (*Ustilago scitaminea*) and the expression of leaf scald (*Xanthomonas albilineans*) symptoms was observed in 2 sugarcane field trials on vars. NCo 376 and NCo 310 which are susceptible to smut but considered resistant to leaf scald. In both trials more plants developed leaf scald symptoms in the smut-inoculated plots than in the uninoculated control plots. (Review of Plant Pathology 58:1926)

_____. Sugarcane smut in South Africa current control recommendations. In Annual Congress, South African Sugar Technologists' Association, 51st, Mount Edgecombe, Natal, 1977. Proceedings. Mount Edgecombe, Natal, 1977. pp. 47-50. (30)

In the northern, irrigated areas smut is widely distributed, and although the incidence is generally low, it is a threat

to the continued production of the dominant cv. N:Co. 376. An integrated system of control measures is described, based on the production of disease-free seed-cane and roguing or eradicating affected fields. Spot applications of Roundup (glyphosate) proved to be rapid and effective for roguing smut-infected stools. (Horticultural Abstracts 48:1877)

BAILEY, R. A. Recurrence of rust in South Africa. Sugarcane Pathologists' Newsletter no. 17:51. 1976. (31)

A note on the increasing occurrence of *Puccinia erianthi* on the sugarcane cv. N55/805 in most areas of the South African cane belt. It is not considered to have more than a slight effect on yield. (Review of Plant Pathology 56:3698)

BALUCH, K. K., JAGIRDAR, H. A. y KAMAL, M. Efficacy of fungicidal treatment of setts on emergence, disease incidence and yield on sugarcane in South West Pakistan. West Pakistan Journal of Agricultural Research 7(4):16-21. 1969. (32)

Of 5 fungicides tested antimucin and aretan gave the best control of *Ustilago scitaminea*, and improved germination and yield of vars. Co 547 and Co 421; agallol and formaldehyde were less effective. (Review of Plant Pathology 50:2480)

BARAT, H. Ce qu'il faut savoir le charbon de la canne à sucre. Notes et Informations. Centres Techniques de la Canne et du Sucre. Guadeloupe no. 1:10-15. 1975. (33)

_____. Sugarcane diseases in French speaking West Africa South of the Sahara. Sugarcane Pathologists Newsletter 8:25-26. 1972. (34)

The area is fairly free from serious diseases of sugarcane. Ring spot, red spot, pineapple disease and red rot occur commonly. Rust (*Puccinia kuehni*) has appeared in Cameroon. Sugarcane ratoon stunting virus, introduced to the Ivory Coast in experimental material, has been eradicated. Chlorotic streak, reported on experimental sites in the Ivory Coast, also appears to have been eradicated. (Review of Plant Pathology 51:4307)

BARNES, A. C. The sugar cane - botany, cultivation and utilization. London, Leonard Hill, 1964. 456 p. (35)

This further addition to the World Crops Books series contains a chapt. (258-280) on diseases and pests with a section on quarantine methods used throughout the world and notes on diseases in general and on sugarcane mosaic and ratoon stunting viruses, gumming disease (*Xanthomonas vasculorum*), red rot (*Colletotrichum falcatum*), smut (*Ustilago scitaminea*), and the damage caused by lightning, frosts, and high winds. (Review of Applied Mycology 44:1945)

BARREDO, A. T. y BARREDO, F. C. Yield performance of two promising VMC hybrids. Sugar News 56(5):178-183. 1979. (36)

The sugar cane hybrids VMC67-315 and VMC71-238 were compared with numerous local cvs at several localities. The data are tabulated. Both hybrids were found highly resistant to smut. VMC71-238 was also highly resistant to leaf scorch whereas VMC67-315 was susceptible to it. Generally, both hybrids compared well with regard to yield in both the plant and ratoon crops. (Horticultural Abstracts 50:2948)

_____. y BARREDO, F. C. Yield performance of two promising VMC hybrids. Victorias Agricultural Research Reports no. 16/21:30-43. 1978. (37)

The sugar cane varieties V.M.C. 67-315 and V.M.C. 71-238 were compared with Phil. 56-266, Phil. 66-07 and V.M.C. 67-611. V.M.C. 67-611, which was released in 1976, is a high tonnage, medium-sucrose cane, susceptible to smut. V.M.C. 67-315 is a high tonnage, high-sucrose cane susceptible to leaf scorch, and V.M.C. 71-238 is a high tonnage, high-sucrose cane, resistant to smut and leaf scorch. (Horticultural Abstracts 50:3801)

BARREDO, F. C., BARREDO, A. T. y LEDESMA JUNIOR, F. I. Yield performance of 67-611 in the VMC district farms. Sugar News 55(1):17-19, 28. 1979. (38)

Yield performance of the hybrid sugar cane cv. VMC 67-611 was determined during 8 years of testing and 2 years of commercial planting and the data are tabulated. It consistently produced a very high tonnage but lower percentage sugar/tons of cane compared with other commercial cvs. However, compared with Phil 56226 (the standard cv.) it produced more sugar/ha. VMC 67-611 rating for smut resistance was 6 on a 0-9 rising scale. (Horticultural Abstracts 49:9695)

BATES, J. F. Smut disease in Guiana. Sugarcane Pathologists' Newsletter no. 13/14:8. 1975. (39)

The disease (*Ustilago scitaminea*) is newly confirmed from Guyana. (Review of Plant Pathology 55:867)

BAUDIN, P. Problemas patológicos de la caña de azúcar en Costa de Marfil. Informe de misión mayo-junio de 1978. Doc. IRAT C.5168(519). Paris, 1978. 12 p. (40)

Estado sanitario de los complejos azucareros, visitados en Costa de Marfil: Ferkessedougou (tasas de carbón elevadas: 10% de las cañas transformables; "roqueing" inoperante; re-plantación luego del barbecho recomendado, con variedades resistentes, en las plantaciones demasiado infectadas); Boro-tou (viveros y plantaciones nuevas, sanas, pero atacadas por el borer, *Eldana saccharina*, sobre las cañas que tienen más de 12 meses sobre todo; se lucha por corte a los 12 meses, o quema, o girotrituración); Zuenoula (40 ha de hermosos viveros; algunas *Eldana*, y termitas sobre los esquejes);

Serebou (boreres *Sesamia calamitis* y *Eldana saccharina*; *Ustilago scitaminea* a controlar por "rogueing" = arranque de las cepas enfermas todos los 10 días); Marabadiassa (160 ha de hermosos viveros, con algunos escasos casos de carbón, de albinismo, de desecación rápida de las hojas debido a una falta de drenaje sin duda), Tombokro y la estación de Bouaké (excelente estado sanitario). El carbón es favorecido por las condiciones climáticas de Ferkessedougou (zonas secas más favorables al carbón, así como temperaturas elevadas y sol fuerte). La lucha debe ser pues estricta en el norte de la Costa de Marfil, y limitada a los viveros en las otras regiones. (Agritrop 3:79-562)

BAUDIN, P. Ensayo de comportamiento varietal en el tizón (*Ustilago scitaminea*) de la caña de azúcar en Alto Volta. Doc. I.R.A.T. París, 1977. 15 p. (41)

Si bien no es posible extraer conclusiones en cuanto a la resistencia de las cañas vírgenes, se puede observar que ciertas variedades se infectan más rápidamente que NCo310: en orden decreciente H50.72.09, B60.267, Co331 y B47-44. Es preciso esperar los resultados de los primeros y segundos rebrotes para las restantes variedades. Debe subrayarse, sin embargo, que ningún tocón de las variedades Co449, F141, B37-172, CB56.20, Co775 y M31.45 ha mostrado síntomas después de la inmersión de los esquejes en una suspensión de esporas. (Agritrop 2:78-132)

_____. Rapport de mission. (Phytopathologie) au Mali. Bamako, Mali, Institut de Recherches Agronomiques Tropicales, 1976. 13 p. (42)

Only SC57.423, of several varieties studied, showed resistance to *Ustilago scitaminea*. More than on strain of *U. scitaminea* is thought to exist. (Plant Breeding Abstracts 49:3742)

_____. La pathologie des plantes à Madagascar. Terre Malgache no. 3: 107-117. 1968. (43)

An inventory of plant diseases new since 1946 is given and their detection and introduction discussed. Among recently introduced diseases sugarcane mosaic and Fiji disease viruses and *Puccinia kuehni* on sugarcane, *P. polysora* on maize, and many rice diseases e.g. and *Cercospora oryzae* are noted. Methods of control are discussed in general terms. (Review of Applied Mycology 47:3065)

_____. Present-day methods of controlling virus diseases of sugarcane. In Congrès de la Protection des Cultures Tropicales, 1965. Compte rendu des travaux. Marseille, Chambre de Commerce et d'Industrie, 1966. pp. 329-334. (44)

BAUTISTA JUNIOR, J. A. Studies in the modes of transmission of sugarcane smut. Tesis M.S. Malabon, Philippines, Araneta University Foundation, 1976. 55 p. (45)

- * BERNARD, F. Roya de la caña de azúcar. Cañero (República Dominicana) 7(8-9): 1-7. 1978. (46)

El autor hace una reseña sobre la aparición de la roya de la caña de azúcar, en 1890 en Java, hasta la clasificación del patógeno como *Puccinia* y su distribución geográfica hasta ser detectada en República Dominicana en 1978, en un campo de caña de la variedad B43-62. Describe los síntomas de la enfermedad, las necesidades ambientales para su expansión, las formas más eficaces para su combate. Establece su importancia económica ante el hecho de que el 25% del área total sembrada en el país, lo está con la variedad B43-62, que es susceptible. Informa sobre las investigaciones que se realizan en el Departamento de Fitopatología de la División Experimental Duquesa para determinar el grado de resistencia o susceptibilidad de variedades comerciales y prometedoras de la CEA y para evaluar el efecto de fungicidas con relación a esta enfermedad. (CV)

- * _____ . Consideraciones sobre enfermedades fungosas de la caña de azúcar. Agro (República Dominicana) 6(47):5-6, 40. 1977. (47)

El autor hace consideraciones generales sobre las distintas enfermedades fungosas de la caña de azúcar en República Dominicana y el uso de los distintos fungicidas necesarios para su control. Para el control del "carbón" *Ustilago scitaminea*, recomienda: "...Medidas estrictas de higiene, el entresaque y quema de los tallos afectados, termoterapia o tratamiento por el calor aplicado a las estacas antes de la siembra y el uso de variedades resistentes, siendo esto último lo más eficaz y recomendable. Actualmente, según información personal del Dr. F.H. Redman, se ha estado ensayando el control del Carbón con el fungicida Busan 301...", también se ha estado ensayando con Daconil. (CV)

- BHOJ, R. L. y KAPOOR, P. C. Co.6611- a substitute for Co.312 in western U.P. Indian Sugar 17:805-808. 1968. (48)

Co.6611, a hybrid of Co.508 x Co.617, is described and its performance reported as being generally superior to that of Co.312. It resists lodging, is resistant to smut and moderately resistant to red rot. (Horticultural Abstracts 39: 1707)

- BHOMBE, B. B. y SOMANI, R. B. An atypical symptom of sugarcane smut. Indian Phytopathology 31(2):239-240. 1978. (49)

A description is given of an atypical ovaricolous smut on the sugarcane cv. Co. 740 infected with *Ustilago scitaminea*. Diseased plants were stunted and produced a malformed arrow with individual spikelets transformed into leafy structures. The smut sorus was 12 cm long and 1-1.5 cm wide, and at first covered with a silvery membrane. The membrane bursts in the upper part to expose the blackish, powdery spore mass. (Review of Plant Pathology 59:1382)

- * BOCK, K. R. Studies on sugarcane smut (*Ustilago scitaminea*) in Kenya. Transactions of the British Mycological Society 47(3):403-417. 1964. (50)

Germination of chlamydo-spores of *Ustilago scitaminea* Sydow is typical of the Ustilaginaceae only on rich nutrient media such as potato dextrose agar. On sugar cane surfaces sporidia are rarely produced; the promycelia give rise directly to infection hyphae. This atypical germination sequence also takes place on non-nutrient media and on media containing only sugars (mannose, sucrose, lactose).

There is a sharply defined optimum temperature (31°C.) for production of infection hyphae; promycelia and sporidia develop over a broad temperature range. Comparatively high spore concentrations (10^6 - 10^7 spores/ml.) were required for severe infection, which is influenced by age of nodal bud or length (age) of tiller; both parts are increasingly resistant with age. Other factors affecting the severity of outbreaks include the rate of smut-whip production in different varieties, the presence of a continuous source of inoculum of high concentration, and the distribution and frequency of rainfall. A reliable method for the laboratory screening of cane varieties for susceptibility is described and analyses.

- BOTANY. PLANT pathology and seed services. In Rhodesia. Ministry of Agriculture. Report 1963-1964. Rhodesia, 1965. pp. 81-92. (51)

- BOWLER, P. A., TRUJILLO, E. E. y BEARDSLEY JUNIOR, J. W. Insect feeding on sugarcane smut in Hawaii. Proceedings of the Hawaiian Entomological Society 22(3):451-456. 1977. (52)

Eight potential vectors of *Ustilago scitaminea* are reported feeding on chlamydo-spores. (Review of Plant Pathology 58: 3993)

- * BOYER DE LA GIRODAY, E., CHATENET, M. y BAUDIN, P. Royas de la caña de azúcar y de algunas gramíneas de la Reunión. Agronomie Tropicale 34(4): 372-376. 1979. (53)

En 1965, une Rouille est apparue à la Réunion et elle prend de l'importance depuis 1975. Elle est due à *Puccinia melanocephala* Syd. Sur des Graminées, adventices des champs de canne à sucre, trois autres Rouilles ont été déterminées:

- *Puccinia versicolor* Diet. et Holw sur *Hypanthia* sp.
- *Uromyces leptodermus* Syd. sur *Panicum maximum* Jacq.
- *Puccinia purpurea* Cooke sur *Sorghum verticilliflorum* (Stend) Stapf.

Le comportement, vis-à-vis de *Puccinia melanocephala*, de 42 variétés de canne à sucre cultivées en grande culture a été observé. Selon les croisements, on obtient une plus ou moins forte transmission de la sensibilité à la Rouille.

- * BRIEGER, F. O. Carvão de cana-de-açúcar; mal epidêmico. Brasil Açucareiro 65(2):14-16. 1965. (54)

El autor da información sobre los diversos focos de "carbón" localizados y las variedades atacadas. Hace una reseña sobre

la sintomatología, el causante y la forma de transmisión de la enfermedad. Indica distintos métodos de combate culturales y químicos; pero destaca que el proceso más eficiente es el del cultivo de variedades resistentes para las condiciones ecológicas de Brasil y la eliminación de las variedades susceptibles.

Variedades resistentes al "carbón"

CB 36-24	IAC 36-25
CB 40-69	IAC 48-65
CB 41-76	IAC 55-26
CB 47-15	Co 413
CB 45-15	Co 419
CB 49-260	Co 421

Variedades susceptibles al "carbón"

CB 40-98	IAC 50-134
CB 41-58	IAC 55-29
CB 45-3	Co 331 (3x)
CB 49-15	

BURGESS, R. A. An outbreak of sugarcane rust in Jamaica. Sugarcane Pathologists' Newsletter no. 22:4-5. 1979. (55)

Puccinia melanocephala is newly reported from Jamaica where it affected virtually all plantings of var. B 4362 in 1978. (Review of Plant Pathology 59:3387)

_____. La enfermedad del carbón en la caña de azúcar en Jamaica. ATAC. Revista de la Asociación de Técnicos Azucareros (Cuba) 37(4):16-25. 1978. (56)

Ustilago scitaminea was first noticed in Jamaica in the most extensively cultivated variety, HJ5741, which was found to be the most susceptible. Varieties of known resistance already grown in Jamaica include B41227, B51129 and B4362, none of which equal HJ5741 in both yield and quality. (Plant Breeding Abstracts 49:9367)

_____. Smut now in Jamaica. Sugarcane Pathologists' Newsletter no. 18:1. 1977. (57)

Culmicolous smut of sugarcane is newly reported from Jamaica, on the highly susceptible var. HJ5741. (Review of Plant Pathology 57:278)

_____. Sugar cane smut disease in Jamaica. Sugardigest (Jamaica) 1977: 17-20. 1977. (58)

_____. Sugarcane smut and variety policy. Sugar Cane (Jamaica) 7(3):1-5. 1976. (59)

BYTHER, R. S. y STEINER, G. W. Comparison of inoculation techniques for smut disease testing in Hawaii. In Congress of the International Society of Sugar Cane Technologists, 15^o, Durban, South Africa, 1974. Edited by J. Dick y D. J. Collingwood. Durban, South Africa, ISSCT, 1974. v.1, pp. 280-288. (60)

The results are presented of tests on inoculating lateral buds of standing sugarcane with *Ustilago scitaminea* and of dip, paste and spray inoculations of stem cuttings. (Review of Plant Pathology 55:3721)

* _____ y STEINER, G. W. Unusual smut symptoms on sugarcane in Hawaii. Plant Disease Reporter 58(5):401-405. 1974. (61)

Sugarcane smut (*Ustilago scitaminea*) was observed recently in Hawaii for the first time. Besides the normal disease symptoms, unusual symptoms were commonly seen. These include convoluted sori from lateral buds and growth anomalies. General stalk distortion, stem galls and callus, multiple buds, and knife cuts constituted these irregularities.

_____. et al. Smut disease of sugarcane in Hawaii. Plant Disease Reporter 57(11):966-968. 1973. (62)

Sugarcane smut (*Ustilago scitaminea*) was first observed in Hawaii in 1971. Extensive field surveys showed an estimated 3000 acres to be infected to some degree. Evidence would indicate that the disease was spread from the initial infection site to other areas of the plantation and to the Hawaiian Sugar Planters' Association Experiment Station by distribution of diseased seed (vegetative stem cuttings). The two major clones grown in Hawaii are resistant under field conditions; however, 14 of the 20 most commonly grown clones in the State are susceptible. The disease is presently confined to the island of Oahu.

_____, STEINER, G. W. y WISMER, C. A. New sugarcane diseases reported in Hawaii. Sugarcane Pathologists' Newsletter 7:18-21. 1971. (63)

Cochliobolus lunatus, *Curvularia senegalensis*, *Drechslera hawaiiensis* and *D. rostrata* were isolated from young seedlings and shown to cause seedling blight. The last 3 have not previously been associated with the disease. *Ceratocystis adiposa* was found causing the same symptoms as *C. paradoxa* but was less pathogenic. *Ustilago scitaminea* is newly recorded in Hawaii. (Review of Plant Pathology 51: 2812)

* CARVALHO, P. DE C. T. DE. Observações sobre as epifitotias do carvão da cana-de açúcar no Estado de São Paulo. Brasil Açucareiro 67(1):55-61. 1966. (64)

No presente trabalho o autor tece considerações sobre as epifitotias do carvão da cana-de-açúcar, causado por *Ustilago scitaminea* no Estado de São Paulo. Sobre a atual epifitotia,

o autor considera que a presença de uma população com alta densidade de variedades suscetíveis ou de baixa resistência, biótipos virulentos de *U. scitaminea*, alta disseminação do patógeno e alto potencial de inóculo foram condições que, somadas à condições de inverno frio e seco, devem ser responsabilizadas pela atual epifitotia.

O autor sugere pesquisas sobre a biologia de *Ustilago scitaminea*, ecologia e variedades resistentes.

CARVALHO, P. DE C. T. DE. O carvão de cana-de-açúcar. In Pragas e doenças da cana-de-açúcar. Piracicaba, Brasil, Escola Superior de Agricultura "Luiz de Queiroz", 1963. pp. 67-74. (65)

CHANCE, W. F. J. Research and technical services-diseases. Varieties and disease. Microbiology. Report. Experiment Station of the South African Sugar Association 1968-1969:11; 17; 44-45. 1970. (66)

A newly released var. N. 6, from Co. 421xC.P. 36/85, producing high cane yields but having a lower sucrose content than N:Co.376, was found to be susceptible to leaf scald. Some smut infection was found in it in areas of high incidence. (Review of Plant Pathology 49:2618b)

* CHONA, B. L. et al. *Trichothecium roseum* Link. A hyperparasite of sugarcane rust (*Puccinia erianthi*). Indian Phytopathology 18(4):386-387. 1966. (67)

Pustules of the rust were covered with the pinkish fluffy mycelium of *T. roseum* in the glasshouse in Delhi under high humidity. This is the 1st report of *T. roseum* on this rust. Germinating spores of *T. roseum* contained a substance inhibitory to the germination of uredospores of *P. erianthi* and *P. kuehni*. (Review of Applied Mycology 45:2237)

* _____, y GATTAN, M. L. Kans grass (*Saccharum spontaneum* L.) a collateral host for sugar cane smut in India. Indian Journal of Agricultural Science 20:359-362. 1950. (68)

_____. Sugar cane smut and its control. Indian Farming 4:401-404. 1943. (69)

* CHU, T. L. et al. Performance of new sugarcane varieties in the coastal and inner plains of eastern Puerto Rico. Journal of Agriculture of the University of Puerto Rico 63(2):202-213. 1979. (70)

Treinta y siete nuevas variedades de caña de azúcar se evaluaron en cuatro experimentos en los llanos costeros e interiores de la región oriental de Puerto Rico durante los años 1973-77. Los resultados de las cosechas de plantilla y dos retoños demostraron ser altamente satisfactorios. La variedad PR 67-1070 produce cañas gruesas, es buena germinadora y retoñadora y es tolerante a la sequía y al encamado.

Es la mejor de todas las variedades probadas por su producción en toneladas de caña y alto rendimiento en azúcar. Parece ser apta para los suelos permeables y de buen drenaje de la región de Humacao-Yabucoa. Su alto contenido en sacarosa durante los meses de enero y febrero la hacen recomendable para comenzar la zafra en toda esta área; no obstante, en Yabucoa alcanza la maduración máxima en abril.

La variedad PR 67-3129 que produce buen tonelaje, y es buena germinadora, ahijadora y retoñadora parece ser más apta para los suelos húmedos y pesados de esta región. Su más elevado contenido en azúcar se logra aparentemente en abril en Humacao, y en febrero-marzo en Yabucoa.*

La variedad PR 67-245, de cañas más bien gruesas, es buena ahijadora y resistente al encamado. Se adapta bien a los suelos pesados de la región. Su máxima maduración ocurre en abril.

La variedad PR 64-1618 es de rápido crecimiento inicial, buena retoñadora, resistente al encamado y de una alta producción en toneladas de caña. Su contenido en sacarosa no es alto.

La variedad PR 63-192 produce buen tonelaje en los suelos pesados ya mencionados. Se caracteriza por un crecimiento inicial lento, buen ahijamiento, retoñamiento y alta resistencia al encamado. Por los datos de maduración estudiados es recomendable sembrarla para cosecharla en abril.

Las variedades PR 64-610 y la PR 67-3073, aunque producen un alto tonelaje y sus jugos son de buena calidad, no son aptas para el corte mecanizado, por su peculiar hábito de crecimiento.

La variedad PR 67-3210, de cañas delgadas, erguida y buena productora de sacarosa, debe observarse más detenidamente en la zona de Humacao, a causa de la inconsistencia de los datos obtenidos.

* PR 67-3129, demostró ser altamente susceptible a la roya (*Puccinia erianthi*), que fue detectada en Puerto Rico en 1978. Por lo que no es recomendable para plantaciones comerciales.

CILLEY, M. Sugarcane smut (*Ustilago scitaminea*) invades Florida. Sunshine State Agricultural Research Report 23(1):20-21. 1979. (71)

COIMBATORE. SUGARCANE BREEDING INSTITUTE. Annual report 1974. Coimbatore, Indian Council of Agricultural Research, s.f. 60 p. (72)

In the plant pathology section (45-47) work on the identification of genetic stocks with high resistance to smut and on the secondary spread of smut is described. (Review of Plant Pathology 57:763)

_____. Annual report 1969. Coimbatore, Indian Council of Agricultural Research, s.f. 71 p. (73)

In the Plant Path. section (33-36) of 33 Co vars. tested 11 were resistant to str. D and 3 to str. R135 of red rot and 17 to smut. Of 83 seedling clones 7 were resistant to red rot. Of 37 tested against smut 8 were resistant. Natural infection by grassy shoot virus was absent from 43 clones and 47 developed no symptoms of ratoon stunting virus when inoculated. Hot water treatment at 50°C for 2 h controlled grassy shoot in 2 vars. and for 2.5-3 h controlled ratoon stunting. Among

recently released vars. Co.6602 and Co.6806 have shown high resistance to strain D of red rot and to smut. (Review of Plant Pathology 53:4572)

COIMBATORE. SUGARCANE BREEDING INSTITUTE. Plant Pathology. Report 1967-68: 52-60. 1969? (74)

G. R. Singh & M. M. Rao report further testing for resistance to red rot, smut and mosaic virus (which caused a 13.3% yield loss in one experiment). Losses in yield and quality from infection by grassy shoot virus were assessed in 3 vars.; CO421 and CO658 gave losses of 90.5 and 82.2% respectively whilst CO453 was not affected. Losses from ratoon stunting virus (RSV) in 10 vars. are tabulated in detail. Hot water treatment (50°C for 2 hr) to control RSV in 6 vars. gave variable results. (Review of Plant Pathology 50:1365)

_____. Plant Pathology. Report 1966-67:67-78. 1969. (75)

G. R. Singh & M. M. Rao report on further results of testing for resistance and physiologic races in red rot. The inheritance of resistance appears to be due to recessive factors. Tests of resistance to smut also continue. (Review of Plant Pathology 49:1127)

_____. Plant Pathology. Report 1963-64:34-36; 1964-65:47-51; 1965-66: 62-72. (76)

K. V. Srinivasan, K. C. Alexander & M. C. Muthaiyan report inoculation tests on clones and seedlings for resistance to red rot and smut. In resistance tests with rusts, seedlings susceptible to one were sometimes resistant to the other; physiologic races are reported. (Review of Applied Mycology 48:1938a)

COLBERG, F. Métodos de control a seguir en caso de la enfermedad del carbón de la caña (Smut). Revista del Café (Puerto Rico) 32(9-10):19-20. 1977. (77)

In order to avoid dissemination of smut disease of sugarcane (*Ustilago scitaminea*) in Puerto Rico, control measures are reviewed. The disease has been recorded lately in Jamaica. (Abstracts on Tropical Agriculture 4:20324)

COMSTOCK, J. C. Y HEINZ, D. J. A new race of culmicolous smut of sugarcane in Hawaii. Sugarcane Pathologists' Newsletter no. 19:24-25. 1977. (78)

A second race (B) of *Ustilago scitaminea* in Hawaii was detected in 1976 and confirmed by varietal screening tests. Clones H50-7209, H57-5026 and H59-3775 were resistant to race A (discovered in Hawaii in 1971) and susceptible to race B, whereas H48-160 was susceptible to A and resistant to B. Currently race A is found on the islands of Oahu, Kauai and Maui and race B on Oahu. No smut has been found on the island of Hawaii. (Review of Plant Pathology 57:3595)

- * CONTROLE DO "carvão" da cana. Biologico (Brasil) 33:155. 1967. (79)

A solicitud de la Comisión Técnica Permanente de la Caña de Azúcar y de la Comisión de Control del "carbón de caña", el Secretario de Agricultura, basado en las investigaciones efectuadas en los Institutos Biológico y Agronómico, reglamentó las variedades de caña de azúcar que pueden o no ser cultivadas en el Estado de San Pablo y la reducción paulatina del área cultivado con la variedad Co419, hasta llegar a su total substitución. (CV)

- * CRUZ FILHO, J. DA. Avaliação da resistência de variedades de cana-de-açúcar ao "carvão" *Ustilago scitaminea* Sydow. Brasil Açucareiro 71(3):27-28. 1968. (80)

También en: Revista da Sociedade Brasileira do Fitopatologia 2(2): 198-200. 1968.

Se realizó en 1965 en Visconde do Rio Branco, un ensayo con 26 variedades, que desde el punto de vista cultural deberán tener una buena producción en la región para estudiar la resistencia de esas variedades al "carbón" de la caña de azúcar y substituir con las más apropiadas a la variedad CB 45-3 que fue atacada por la enfermedad. (CV)

- * DEAN, J. L., TAI, P. Y. P. y TODD, E. H. Sugarcane rust in Florida. Sugar Journal 42(2):10. 1979. (81)

The first discovery of sugar-cane rust (*Puccinia melanocephala*) in the continental United States on March 23, 1979, is reported. (Abstracts on Tropical Agriculture 6:28598)

- _____. Smut mainland sugarcane. Proceedings - New Series. American Society of Sugar Cane Technologists 7:36. 1978. (82)

- DONELAN, A. Smut disease of sugar cane. Extension Newsletter (Trinidad and Tobago) 8(4):16-17. 1977. (85)

Causal fungus and characteristic symptoms of the disease are mentioned. Since the discovery in Trinidad in 1976 the disease has spread in 18 months throughout the island's cane area. The highly susceptible cane varieties HJ 5741, B 49119 and B 50112 are particularly affected; however, two thirds of the cane area is planted to resistant varieties such as B 41227. Smut in the Caribbean area also occurs in Guyana and Jamaica. Planting of resistant varieties in other countries as a precaution is recommended. Abstracts of Tropical Agriculture 4:23113)

- * DUARTE, M. DE L. R. y TOKESHI, H. Inoculation of sugar cane seedlings for selection of resistance to *Ustilago scitaminea*. International Sugar Journal 81(964):116. 1979. (84)

Spores were sprayed on to seedlings 24 h or 48 h after sowing. Sampling to determine the presence of mycelium in seedling tissue may be started four days after application of spores.

Within-variety comparisons showed seedlings of PR980 to be most susceptible six days after sowing while those of CP5848 proved most susceptible ten days after sowing. (Plant Breeding Abstracts 50:6516)

- * DUARTE, M. DE L. R. y TOKESHI, H. Efeito de fungicidas sobre a germinação de esporos de *Ustilago scitaminea* Sydow. in vitro. Fitopatologia Brasileira 2(1):73. 1977. (85)

Ensaio foram conduzidos com o objetivo de determinar os contaminantes presentes em amostras de esporos de *Ustilago scitaminea* Sydow produzidos em condições de casa-de-vegetação. Verificou-se que nas condições estudadas, os contaminantes mais frequentes nas amostras de esporos coletadas em épocas diferentes foram *Fusarium moniliiforme*, *Fusarium* sp., *Helminthosporium* sp., *Cladosporium* sp., *Aspergillus* sp. e *Penicillium* sp. Inoculações artificiais através de atomização de suspensão de esporos de *Ustilago scitaminea* em plantulas de cana-de-açúcar: provenientes de polinização livre da variedade PR 980, revelaram que dos contaminantes isolados, os mais patogênicos foram: *Fusarium* sp., *Fusarium moniliiforme* e *Helminthosporium* sp. Visando-se eliminar os contaminantes sem afetar o poder germinativo, trataram-se os esporos de *U. scitaminea* com sulfato de cobre a 0,05% e tiofanato-metílico em diferentes concentrações, baseados nos resultados obtidos por Stakeman *et al.* (1929) e Steiner & Byther (1972). Os tratamentos com sulfato de cobre e tiofanato-metílico reduziram a porcentagem de germinação dos esporos. Ambos fungicidas tiveram ação fungicida sobre os esporos de *U. scitaminea*.

_____. Padronização metodológica de inoculação de plantulas de cana-de-açúcar para seleção de resistencia a *Ustilago scitaminea*. Tese Mest. Piracicaba, Escola Superior de Agricultura Luiz de Quieroz, 1976. 76 p. (86)

- * DURAIRAJ, V., NATARAJAN, S. y PADMANABHAN, D. Reaction of some sugarcane varieties to smut (*Ustilago scitaminea* Syd.). PANS. Pest Articles and News Summaries 18(1):171-172. 1972. (87)

Of 26 sugarcane cvs tested for resistance to *U. scitaminea* only Co.527 was resistant. (Horticultural Abstracts 43:845)

_____. *et al.* Results of some experiments on smut of sugarcane in Tamil Nadu State, India. Sugarcane Pathologists' Newsletter 8:34-35. 1972. (88)

Of 140 varieties tested for reaction to *Ustilago scitaminea*, 29 were highly resistant and 40 moderately so. (Plant Breeding Abstracts 44:1866)

- EARLY, M. P. Current programs in sugarcane disease. Research Centres. VI. Kenya, Sugarcane Pathologists' Newsletter 5:32-34. 1970. (89)

Data are presented on varietal screening for resistance to *Ustilago scitaminea* and resistance mechanisms in the hosts. (Plant Breeding Abstracts 42:959)

EAST AFRICAN AGRICULTURE AND FORESTRY ORGANIZATION. Record of research. Annual report 1976. Nairobi, Kenya, 1977. 191 p. (90)

Seven EA69 selections which were recommended for East Africa all outyielded Co421 and all were highly resistant to *Ustilago scitaminea* except EAK6934, which was immune. Results from seedling studies indicated that the field characters tiller number, leaf area, joint size and leaf length are correlated with Brix, cane weight and final sucrose yield. Seedlings have been raised from crosses between *Saccharum officinarum* and *Sorghum vulgare* tetraploids. Commercial biparental hybrids bred in 1976 are listed with the breeding object in each case. (Plant Breeding Abstracts 50:5985)

EDITOR'S NOTES. Quarterly Report Caribbean Plant Protection Commission 8(2):i. 1979. (91)

The latest available information on the distribution (Caribbean and Central America) of sugarcane smut includes Guyana, Venezuela, Trinidad, Martinique, Guadeloupe, St. Kitts, Jamaica, Cuba, USA (Fla.), Belize, Honduras and Nicaragua; and for rust includes Guadeloupe, Puerto Rico, Jamaica, Cuba, USA (Fla.), Honduras, Panamá, Guatemala, Mexico and Belize. (Review of Plant Pathology 59:894)

EGAN, B. T. A name change for the rust pathogen. Sugarcane Pathologists' Newsletter no. 22:1. 1979. (92)

Puccinia melanocephala is now the accepted name for the common rust of sugarcane, *P. erianthi* being a synonym. (Review of Plant Pathology 59:3385)

* _____ y RYAN, C. C. Sugarcane rust, caused by *Puccinia melanocephala*, found in Australia. Plant Disease Reporter 63(10):822-823. 1979. (93)

Rust disease, caused by *Puccinia melanocephala* was newly found on sugarcane in Australia. Spread to all cane-growing districts was rapid. Its arrival in Australia and in the Caribbean reported recently, probably occurred at approximately the same time.

_____. Susceptible indicator varieties for rust disease (*Puccinia melanocephala*). Sugarcane Pathologists' Newsletter no. 22:10-11. 1979. (94)

The vars. and the countries in which they show susceptibility to the diseases, caused by *P. melanocephala* or *P. kuehni* are tabulated. It is suggested that all reported outbreaks in Africa and the Mascarene Islands have been caused by *P. melanocephala* and that *P. kuehni* is probably confined to the Asian-Australasian-Pacific region. (Review of Plant Pathology 59:3391)

EGAN, B. T. y RYAN, C. C. A new rust disease in North Queensland. Cane Growers' Quarterly Bulletin 42(3):60-62. 1972. (95)

At the end of 1978 a new rust disease appeared in N. Qd. and spread rapidly through plantings of the sugarcane cv. Q90, differing in pathogenicity from *Puccinia kuehnii* which is a minor disease compared with the new outbreak. The new rust is believed to be *P. erianthi* possibly synonymous with *P. melanocephala*. Q105 appears to be the most susceptible, while heavily infected patches were found in cvs. Q82, Q83, Q84, Q90, Q91, Q100, Q106 and Q107; Q57, Q75, Q77 and Q78 seem highly resistant and Q99 shows some resistance. (Review of Plant Pathology 58:5008)

EMPIG, L. T. Current status of the variety improvement programme of the Philippines Sugar Institute. Proceedings of the 23rd. Annual Convention Philippines Sugar Tech. 1976:351-361. (96)

The history of sugar cane breeding in the Philippines is reviewed. The present breeding programme uses nobilization, parental clone development and commercial hybrids to develop varieties to replace Phil 56226 and Phil 58260, which are susceptible to *Ustilago scitaminea* and *Sclerospora sacchari*, and to develop a sufficient number of improved varieties to ensure that none are grown on more than 25% of the area of any mill district. (Plant Breeding Abstracts 49:11089)

* ENFERMEDAD DEL carbón en la caña de azúcar. Cañero (República Dominicana) 5(12):4-5. 1976. (97)

También en: Agro (República Dominicana) 6(43):9-10. 1977.

Se establece la posibilidad de la aparición del "carbón" en República Dominicana, así como la situación vulnerable de la industria, ya que la principal variedad cultivada, PR 980, es susceptible.

Se indica la forma de transmisión, la manera de identificar la enfermedad, las variedades PR 980, B 49 119, Co 419, CB 44-105, UCW 54/65 como susceptibles y las variedades comerciales Co 331, CP 52-43, CR. 61-01, B 43-62 y B 42-231 como resistentes.

Se sugiere que se dedique algún tiempo dentro de las labores culturales, para examinar los cañaverales. (CV)

ERSHAD, D. y BANI-ABBASSI, N. The occurrence of sugarcane smut (*Ustilago scitaminea* Syd.) in Iran. Iranian Journal of Plant Pathology 7(2):19-22, 71-78. 1971. (98)

The disease was newly recorded in Iran. Symptoms, the pathogen and control measures are described. (Review of Plant Pathology 53:1527)

FASIHI, S-U-D. y AHMAD, H. Performance of some promising early maturing cane varieties at the Sugar-cane Research Station, Risalewala, Lyallpur. Pakistan Journal of Agricultural Research 5(4):10-21. 1967. (99)

The performances of 8 promising early maturing sugar cane varieties were compared with that of the standard variety Co.L.29. Together with a low tillering capacity and a smaller number of canes, the variety B.L.4 produced thick canes. This resulted in higher cane yield, hundred-cane weight and c.c.s. The canes were soft, free from splits and easy to detrash. The variety was fairly early, resistant to lodging and comparatively less susceptible to smut. (Horticultural Abstracts 39:1704)

FAUCONNIER, R. Experimentación sobre la caña de azúcar en Guayana. Informe del ejercicio 1977-1978. Campaña 1977. Documento IRAT. 1978. 32 p. (100)

En junio 1976, el IRAT ha reemprendido una experimentación comenzada por el C.T.C.S. de Martinica. Se han puesto en plaza nuevos ensayos. En total, 11 ensayos se siguen en 3 sitios: km 6 de la carretera St Laurent-Mana, granja del Acarouany, St Laurent. Algunas colecciones de variedades están en Cabassou cerca de Cayena. Los resultados pueden resumirse así: el despunte en la plantación es bueno y los cultivos son suficientemente densos; el crecimiento es excelente, alcanzando las cañas alturas muy buenas cuando la cosecha; el amacollamiento es insuficiente; el diámetro de las cañas es normal a partir del momento en que reciben cuidados y un abonado conveniente; los rendimientos agrícolas pueden ser muy buenos (80 a 130 tm/ha para una primera corta entre 10 y 13 meses). La maduración estimada ha sido buena. La variedad HJ 57-41 se ha revelado la mejor por el vigor de arranque, la rapidez inicial de crecimiento, la longitud de las cañas, el porte bien levantado, el rendimiento agrícola aliado a una buena riqueza (92 a 111 tm/ha de cañas para tres cortas, Brix de jugo, 7,6). Esta variedad es desgraciadamente muy sensible al carbon (*Ustilago scitaminea*). Otras dos variedades parecen buenas: B51-129 precoz y rica, B 46-364 rústica. Los horadores de tallos son igualmente enemigos temibles, las tres mejores variedades citadas aquí arriba parecen ser también las más sensibles. A este respecto, debe emprenderse un trabajo importante. (Agritrop 3:79-187)

* FAWCETT, G. L. El "carbón" de la caña de azúcar (*Ustilago scitaminea* Syd.). Tucumán. Estación Experimental Agrícola. Boletín no. 47. 1944. 15 p. (101)

El carbón se observó por primera vez en la Estación Experimental Agrícola de Tucumán en 1940, en una muestra enviada por el Ingenio Amalia, la variedad afectada era la P.O.J.36. Tucumán ha ofrecido las condiciones que más favorecen el desarrollo de la enfermedad. En 1942 el "carbón" era común en todas partes.

El autor nos "habla" sobre:

- . la sintomatología de la enfermedad, con referencia especial a la variedad P.O.J. 36.

- . las formas de combatir el "carbón" como la recolección de brotes enfermos, rotación con otros cultivos no atacados por la enfermedad, métodos que ahora sabe que son poco importantes, y el uso de variedades resistentes, la mejor medida. En Tucumán las variedades P.O.J. 2725 y P.O.J. 2878 no han sido atacadas, la variedad P.O.J. 213 a reaccionado al hongo, se ha establecido una especie de equilibrio entre la variedad y la enfermedad.
- . describe el hongo, su forma de desarrollo y diversas reacciones y los ensayos que realizó para determinar la manera de como ataca las plantas. Llegando a la conclusión de que sólo ataca a las yemas y que la infección se realiza en forma lenta. (CV)

FAWCETT, G. L. Notas sobre el carbón de la caña de azúcar. Tucumán. Estación Experimental Agrícola. Circular no. 114:1-3. 1942. 2 p. (102)

- * _____ . El "carbón" o "tizón" de la caña de azúcar. Tucumán. Estación Experimental Agrícola. Circular no. 103. 1941. 2 p. (103)

Ante el recrudescimiento del carbón o "tizón" de la caña de azúcar en zonas de influencia de la Estación Experimental Agrícola de Tucumán, el fitopatólogo G. Fawcett, nos informa que se están tratando de determinar las áreas a las que se ha extendido la enfermedad y se están aconsejando las medidas necesarias para combatirla.

La variedad atacada es la P.O.J. 36. Se está trabajando para determinar cuales son las variedades inmunes o resistentes para reemplazar a las variedades atacadas. (CV)

- * _____ . El carbón o tizón de la caña de azúcar. Tucumán. Estación Experimental Agrícola. Circular no. 100:1-2. 1941. (104)

El autor establece que el "carbón" de la caña es principalmente una enfermedad de las plantas jóvenes y que la presencia de la enfermedad es fácilmente reconocible por los largos apéndices o "cola", de color oscuro, negras o grises, muy parecidas a las sogas de los látigos, que salen del brote terminal de las cañas. Las esporas del hongo (*Ustilago sacchari*) son diseminados por el viento en contacto con las plantas, germinan y producen la infección.

En cuanto a la mejor manera de combatir la enfermedad establece que:

- si las plantas atacadas son muy pocas, conviene arrancarlas y alejarlas de la plantación.
- si son numerosos será mejor arar el terreno y hacer una rotación con cultivos inmunes a la enfermedad.
- para hacer nuevas plantaciones se deben utilizar tallos de plantaciones donde la caña no está atacada por el carbón. (CV)

- * FELIX, M., VAVRICK, A. y BROWN, A. L. Roya de la caña de azúcar en el Caribe. Boletín Fitosanitario de la FAO 27(2):56. 1979. (105)

También en inglés: FAO Plant Protection

" " francés: Bulletin Phytosanitaire de la FAO

En República Dominicana se detectó en julio de 1978, una infección de roya de la caña de azúcar *Puccinia melanocephala*

Sydow (= *Puccinia erianthi*) es la variedad B-4362.
La enfermedad se encuentra también en Cuba, Guadalupe, Jamaica y Puerto Rico. (CV)

FLORES, C. I., CARPENA, A. L. y ROSARIO, E. L. Evaluation of sugarcane hybrids for resistance to sugarcane smut (*Ustilago scitaminea* Sydow.). Philippine Journal Crop Science 3(2):121-125. 1978. (106)

Alternative methods of evaluating resistance were tested. Correlation and covariance analyses showed that stomatal and hair counts on the leaf as well as stomatal counts on the outer bud scale and spore germination in leaf saps could not be used as bases of evaluation. The usual method of identifying resistance clones through inoculation screening tests is the most reliable. A variation in the degree of resistance was found among hybrid progenies. Significant differences in stomatal and hair counts and spore germination on the leaf saps among hybrid progenies were obtained. Leaf saps extracted from inoculated hybrids inhibited smut germination. (Review of Plant Pathology 58:6041)

* FLORES, S. El carbón de la caña de azúcar en Florida, E.E.U.U. y en Corozal, Belice. Sugar y Azúcar 73(12):19-21, 56, 58-59. 1978. (107)

The degree of resistance of various varieties to *Ustilago scitaminea* is indicated. (Plant Breeding Abstracts 51:2337)

_____. Smut in Florida and Belize - a serious threat to the Mexican sugar industry. Sugarcane Pathologists' Newsletter no. 21:1-2. 1978. (108)

Since the discovery of smut in Fla. and in Belize in a region not far from a sugarcane area of Mexico, measures are being taken to safeguard the industry from an imminent problem. Mexican sugarcane cvs. have been sent to Belize and Fla. for smut resistance testing. (Review of Plant Pathology 59:430)

* FLORES CACERES, S. El carbón de la caña de azúcar *Ustilago scitaminea* Sydow. PANAGFA (México) 5(41):19-24. 1977. (109)

Ante la posibilidad de la llegada del "Carbón" a República Dominicana se dan a conocer los síntomas de la enfermedad, la forma de propagación de este hongo, las medidas de control adecuadas, y se informa sobre la conveniencia de evitar la importación de nuevas variedades de caña, así como cualquier tipo de material vivo de plantas que pudiera traer esporas de este hongo. Se indica que la severidad de la infección del "carbón" es variable, porque sus daños dependen de la susceptibilidad o resistencia de las variedades que se tengan en cultivo comercial; presenta los casos de Jamaica y México. (CV)

FORS, A. L. Occurrence of rust in El Salvador. Sugarcane Pathologists' Newsletter no. 23:33. 1979. (110)

An outbreak of rust was observed on the sugarcane cv. B 4362 in June, 1979. (Review of Plant Pathology 59:5898)

_____. Sugarcane rust in Haiti. Sugarcane Pathologists' Newsletter no. 22:9. 1979. (111)

The disease, caused by *Puccinia melanocephala* is newly reported. (Review of Plant Pathology 59:3390)

_____. Smut in Belize. Sugarcane Pathologists' Newsletter no. 21:3. 1978. (112)

The discovery of sugarcane smut in Belize in July 1978, only 2 miles from the Mexican border, presents a positive menace to all the industry in Central America, particularly Mexico. (Review of Plant Pathology 59:431)

FRANCIS, C. B. Sugarcane smut. Madras Agricultural Journal 26:468-474. 1938. (113)

A popular account is given of sugar-cane smut (*Ustilago scitaminea*) in Madras and its control by the removal of diseased material from the field and its destruction by 15 minutes immersion in boiling water. Since 1934-35 regular searches have been made for infected plants on the estates of the East India Distilleries and Sugar Factories, Ltd., Nellikupam, starting about May and finishing towards the end of the year, with the result that the incidence has declined from 1,099 over 150 acres (average per acre 7) in 1935-36 to 55 over 112 acres (under one per two acres) in 1937-38; up to the end of August, 1938, 156 cases were found over 108 acres, the cost of the work amounting to under 8 annas per acre as compared with Rs. 1.12.8 in 1935-36. In 1934-35 the average number of Badilla canes removed was 540 per acre (all inspections), the corresponding figures for Co.281 and P.O.J. 2878 being 119 and 16, respectively; in 1937-38 only five plants per acre of Badilla, one of Co.281, and none of P.O.J. 2878 had to be eliminated for smut. In 1937 similar inspections were instituted among the peasants' cane, the removals among which amounted to 152, 51 and 14 per acre for Badilla, Co.281, and P.O.J. 2878, respectively. Endomychid beetles are believed to carry the smut spores on their bodies and so assist in the spread of infection. (Review of Applied Mycology 18:477. 1939)

GARGANTIEL, F. T. y BARREDO, F. C. Efficacy of surfactants in smut inoculation. Sugarcane Pathologists' Newsletter no. 21:21-25. 1978. (114)

Tween 80, Surfac H, Triton, Tergitol NPX and Citowett improved the inoculation of sugarcane pieces by making it easier to mix the smut spores with water and the cane bud was more easily

wetted with the suspension. Too high concs. of the adjuvants reduced the percentage infection, indicating a detrimental effect on the spores. (Review of Plant Pathology 59:434)

- * GIRODAY, E. B. DE LA, CHATENET, M. y BOUDIN, P. Rouilles de la canne à sucre et de quelques graminées a la Reunion. *Agronomie Tropicale* 34(4):372-376. 1979. (115)

The rust *Puccinia melanocephala* appeared in Reunion in 1965. Sugar cane cvs and their susceptibility are tabulated. Virulence apparently increases with altitude where susceptible cvs such as M.555/60 produce lower yields. Several cvs are moderately resistant. (Horticultural Abstracts 50:9710)

- GOMEZ QUIROGA, R. El carbón de la caña (*U. scitaminea* Sydow) en Colombia. In Congreso Nacional de Productores de Panela, 1º, Medellín, Colombia, 1979. *Memorias*. Medellín, Colombia, Fábrica de Licores de Antioquia, 1979. p.v. (116)

_____. La roya de la caña (*P. melanocephala* Sydow and Sydow) en Colombia. In Congreso Nacional de Productores de Panela, 1º, Medellín, Colombia, 1979. *Memorias*. Medellín, Colombia, Fábrica de Licores de Antioquia, 1979. p.v. (117)

- GOODIN, P. L. Smut threatens mainland sugarcane. *Agricultural Research* 26(8):13. 1978. (118)

- * GOSNELL, J. M. y LONSDALE, J. E. Effects of irrigation level and trash management on sugar cane. I. *International Sugar Journal* 80(957):264-269. 1978. (119)

Overhead irrigation was applied at pan factors ranging from 0.37 to 1.0 to cane grown on PE1 sandy clay loam. Data on the water-holding capacity of the soil are tabulated. The cv. N:Co.376 was harvested at about 12 month intervals from November 1969 (2nd ratoon) to November 1973 (6th ratoon). A very marked interaction was observed between irrigation level and burning vs. trashing; at normal irrigation levels (0.84-1.0) burning produced higher cane and sugar yields/ha than did trashing but when the cane was subjected to severe moisture stress (0.37-0.53) trash conservation resulted in higher yields at an irrigation level causing moderate stress (0.68). Data are also tabulated on the effect of irrigation level and trash management on stalk population, stalk diameter, occurrence of smut and lodging, and on the effect of irrigation on leaf N, P, K, Ca and Mg contents. (Horticultural Abstracts 49:1584)

- GROWING, D. P. y BAHI-ABBASSI, N. Diseases at the Haft Tappeh Cane Sugar Division Khuzestan, Iran. *Iranian Journal of Plant Pathology* 11(1-2):1-7, 1-8. 1975. (120)

The most serious losses of sugar cane were due to smut (*Ustilago scitaminea*), red stripe (*Xanthomonas rubrilineans*) and sugar cane mosaic virus. Susceptible and resistant cvs are indicated. (Horticultural Abstracts 47:5126)

GUPTA, M. R. Testing sugarcane varieties for smut resistance in north India. Sugar Journal 42(11):21. 1980. (121)

Of the 15 sugar cane cvs tested, only Co.1148 was resistant to smut. The cvs Co.312, Co.453, CoS.728 and CoS.7923 were only moderately resistant. (Horticultural Abstracts 50:9696)

_____. Control of smut disease of sugarcane through hot water treatment. Indian Sugar 27(7):385-386. 1977. (122)

Good control of *Ustilago scitaminea* and the highest yields (66.36 t/ha) were obtained from hot water treatment for 2 h at 50°C. After 1.5 and 2.5 h treatment the yields were 59.52 and 60.44 t/ha, respectively. Yield of untreated cane was 58.32 t/ha. (Review of Plant Pathology 57:5107)

GUPTA, S. C. *et al.* Control of diseases by hot water treatment of sugarcane seed material. Indian Sugar Crops Journal 5(2):28-29, 36. 1978. (123)

Treatment of setts at 50°C for 2 h gave good control of albino (GSD). After treatment percentage germination varied between 42.2 and 55.4 in 3-year trials compared with 18.5-40.5% in untreated apparently healthy setts. However, treatment at 50° for 2 h or 52° for 1.5 h failed to control red rot. Treatment at 50° for 2 h reduced smut (*Ustilago scitaminea*) on planting material but also reduced germination and this was attributed to the susceptibility of smut-infected material to heat. (Horticultural Abstracts 49:3906)

_____. y VERMA, K. P. Sugarcane smut an alarming problem in Uttar Pradesh. Cane Grower's Bulletin 4(1):9-11. 1977. (124)

The occurrence of smut on numerous sugar cane cvs, principally Co.1158, is discussed. The control measures proposed are timely roguing of affected clumps before the emergence of whip, seed selection, field sanitation coupled with rotation, and hot water treatment of seed cane. (Horticultural Abstracts 48:1876)

* GUYANA - SMUT on sugar-cane. Outbreaks and new records. Boletín Fitosanitario de la FAO 23(2):49. 1975. (125)

También en inglés: FAO Plant Protection
También en francés: Bulletin Phytosanitaire de la FAO

El brote de *Ustilago scitaminea* fue identificado en las variedades de caña de azúcar HJ5741 y D141/46. (CV)

* HAWAII DEVELOPS smut resistant varieties. Sugar Journal 42(12):27. 1980. (126)

Following the discovery of smut in sugar-cane caused by the fungus *Ustilago scitaminea* in Hawaii in 1971 the variety selection programme was expanded to offset the effects of the disease. Tissue and cell culture techniques will also be used in order to hasten the development of resistant varieties. (Abstracts on Tropical Agriculture 6:32802)

- * HAWAIIAN SUGAR PLANTERS' ASSOCIATION EXPERIMENT STATION. Annual report 1978. Aiea, Hawaii, 1979. 69 p. (127)

U. scitaminea

- _____. Report 1977. Aiea, Hawaii, 1978. 56 p. (128)

In the section on diseases, the reactions of commercial and high yielding FT5 and FT7 vars. to races A and B of *Ustilago scitaminea* are tabulated. In other tests healthy seed pieces of resistant and susceptible vars. were inoculated with *U. scitaminea*. On an individual stalk basis the pathogen was isolated throughout the stalk or not at all, indicating that it becomes systemically established in the stalk in both susceptible and resistant vars. if infection is successfully initiated. Both races were isolated more frequently from susceptible than from resistant vars. (Review of Plant Pathology 58:2921)

- * _____. Report 1972. Aiea, Hawaii, 1972. 77 p. (129)

The breeding programme (2-10) was dominated by testing for resistance to smut, of which the 2 most important commercial clones (50-7209 and 59-3775) are highly tolerant. The reactions of all the important clones were tabulated, with comparisons between 3 methods of artificial inoculation and natural infection on 13 cvs. Progeny analysis of 40,000 clones indicated the availability of resistance in the germplasm pool. Results from the smut testing programme were analyzed by computer.

Under diseases (45-51) details are given of the distribution of *U. scitaminea* in Hawaii, still confined to the island of Oahu, and the occurrence of the disease elsewhere in the world. Descriptions are given of techniques employed in smut disease testing and the use of fungicides to control smut. Tests are in progress to determine the best conditions for hot water treatment of infected seed pieces. Some unusual symptoms are described. (Review of Plant Pathology 53:1521)

- * _____. Report 1971. Honolulu, Hawaii, 1972. 73 p. (130)

Under pests and diseases and their control, diseases (37-42), *Ustilago scitaminea* is newly recorded in Hawaii on sugarcane in Honolulu and subsequently at other locations on Oahu. Quarantine measures are in force to prevent the spread of the disease. Survival studies as a result of the outbreak showed that under moist soil conditions, 60-70 days would be adequate to eliminate all teliospores landing on soil. PMA, ceresan L and panogen (each at 0.1 µg/ml), dexton (100 µg) and lysol (5 µg) completely inhibited teliospore germination and the first 3 were the most effective when added to the soil. Standard hot water treatments (52°C for 20 min or 50° for 30 min) would kill all propagules of the fungus on stem cuttings.

In tests with helminthosporoside (from *H. sacchari*) cytological and ultrastructural changes in susceptible tissues treated with the toxin greatly resembled those in infected tissues. The toxin was also demonstrated in the tissues of naturally infected sugarcane and was shown to produce runner symptoms. It was used experimentally to detect susceptible seedlings. Further tests were made of fungicides against pineapple disease (*Ceratocystis paradoxa*). *Trichoderma* sp. was isolated from benlate treated cuttings and prevented germination of cuttings sprayed with spores. Possible yield losses and poor germination associated with susceptibility to pineapple disease were investigated. (Review of Plant Pathology 52: 2011)

HAYES, A. G. Rust disease in New South Wales. Sugarcane Pathologists' Newsletter no. 23:35-36. 1979. (131)

Puccinia melanocephala was observed for the first time on sugarcane in NSW in June 1979. Symptoms were inconspicuous and confined to 1 of 19 plantings of the susceptible cv. Q 90. (Review of Plant Pathology 59:5900)

HEINRICH, W. O. E falsa a notícia do aparecimento do carvão nos canaviais de São Paulo. *Biológico (Brasil)* 12:71-72. 1946. (132)

HERNANDEZ C., O. V. Informe de la participación del coordinador de fitopatología del departamento de sanidad vegetal del OIRSA en la reunión realizada en West Palm Beach (USA) sobre los avances del carbón (*Ustilago scitaminea* Sydow) y roya (*Puccinia* spp.) de la caña de azúcar. (12-15 Mar. 1979). San Salvador, OIRSA, 1979. 12 p. (133)

A HIGH sugarcane variety. *Madras Agricultural Journal* 57:152. 1970. (134)

The new cane variety Co.6806 is superior in yield and quality to Co.419 and is highly resistant to red rot and smut diseases. Comparative yield data are tabulated for these varieties and also for Co.658 and Co.997. (*Horticultural Abstracts* 41:2694)

* HIRSCHORN DE MAZOTI, E. Carbones. Castelar, Argentina. INTA. Curso de Fitopatología para Graduados. Apuntes de clase no. 50. 1965. 84 p. (135)

La autora hace un estudio de los Ustilaginales, parásitos vegetales conocidos bajo el nombre vulgar de "Carbones o Tizones". Establece algunos caracteres generales en relación a su morfología y longevidad. Indica los caracteres para distinguir las especies y géneros y la importancia económica de los carbones. Hace constar que de las 1162 especies de Ustilaginales, alrededor de 150 se encuentran en la flora Argentina, de las cuales 12 especies, pertenecen a 4 géneros que atacan trigo, maíz, sorgo y caña de azúcar.

Da la clave para la identificación de las especies que en relación a caña de azúcar es:

"Soros en la terminación de los tallos, cubierto parcialmente por los tejidos del hospedante (formando látigo), clamidosporos ligeramente equinulados.

Ataca *Saccharum officinarum*..... *Ustilago scitaminea*" (CV)

- * HIRSCHORN, E. Un nuevo método de infección artificial con el carbón de la caña de azúcar. Revista de Investigación Agrícola (Argentina) 3:335-344. 1949. (136)

La grave destrucción de las mejores variedades de caña de azúcar, causada por *Ustilago scitaminea*, y la imposibilidad de controlarlo por diversos tratamientos, obliga a luchar contra el mismo mediante la crianza de variedades resistentes. La falta de un método de infección artificial que garantice el éxito de las experiencias tendientes a la obtención de variedades resistentes, ha retardado un tanto la lucha contra la grave enfermedad de los cañaverales argentinos. Con el propósito de ayudar en lo posible a solucionar el problema, hemos iniciado investigaciones tendientes a encontrar un método sencillo, adecuado y eficaz, que permita iniciar a la brevedad posible las experiencias que reclama el país. Con tal motivo se han utilizado densas suspensiones de clamidosporas y esporidias inoculando variedades muy susceptibles sobre yemas dormidas, al comienzo del desarrollo y en plantitas, aplicando los métodos y procedimientos siguientes:

- 1) Al vacío sobre yemas dormidas sin lastimar;
- 2) Al vacío sobre yemas dormidas lastimadas;
- 3) Con pincel sobre yemas dormidas sin lastimar;
- 4) Con pincel sobre yemas dormidas lastimadas;
- 5) Pulverizando las yemas dormidas sin lastimar;
- 6) Pulverizando las yemas dormidas lastimadas;
- 7) Inoculando con jeringa hipodérmica plantitas de 1-60 centímetros de altura.

Con todos los métodos se obtuvo infecciones, pero de todos ellos el más ventajoso resultó ser el método al vacío, no sólo porque produjo, en general, mayor número de plantas con ataque, sino por ser de manipuleo más rápido y por asegurar buena cantidad de plantas infectadas. Permite utilizar tanto material clamidospórico como de cultivo.

La eficacia del método de infección al vacío se confirma por los resultados obtenidos inoculando cañas provenientes de Colombia, donde no existe carbón. Interesa destacar que la variedad C.P. 807, de origen norteamericano, igual que otras de igual procedencia donde no se conoce el *Ustilago scitaminea* hasta el presente, son sumamente sensibles al parásito. Este hecho constituye un toque de alerta a los cultivadores de caña de azúcar de aquel país, ya que las medidas pertinentes tomadas a tiempo podrían evitar un posible ataque, similar al ocurrido en nuestro país en 1941-44.

HOLDER, D. G. y DEAN, J. L. Screening for sugarcane smut resistance in Florida. Sugar Journal 42(11):16-17. 1980. (137)

Of the 38 commercial sugar cane cvs tested, 26 rated as resistant or intermediate in resistance to *Ustilago scitaminea*. The data are tabulated. (Horticultural Abstracts 50:9695)

* _____ y DEAN, J. L. Screening for sugarcane smut resistance in Florida. Second preliminary report. Sugar Journal 41(11):18-19. 1979. (138)

After smut (*Ustilago scitaminea*) was discovered in Florida in mid-1978, preliminary screening tests with 37 commercial varieties in Florida and 12 varieties in Louisiana were conducted in 5 months old cane plants. The grades indicated resistant or tolerant, intermediate, and susceptible. (Abstracts on Tropical Agriculture 6:28591)

* _____ y DEAN, J. L. Preliminary report on screening for sugarcane smut resistance in Florida. Sugar Journal 41(7):16. 1978. (139)

Smut, caused by the fungus *Ustilago scitaminea*, was discovered in Florida in mid 1978. Resistance to infection was established in 895 varieties according to the Hawaiian system which employs 9 grades (4 resistant or tolerant, 1 intermediate, and 4 susceptible). Grades of 37 varieties at 12 weeks after planting are listed. (Abstracts on Tropical Agriculture 5:26888)

* _____ . Sugarcane varieties naturally infected by smut in Florida in 1978. Sugar Journal 41(11):19. 1978. (140)

HSIEH, W. H. y LEE, C. S. Effects of temperatures on the cultural characteristics of the two races of *Ustilago scitaminea* Sydow. in Taiwan. Report of the Taiwan Sugar Research Institute no. 76:53-57. 1977. (141)

Cultural characteristics of single teliospores or sporidia of the fungus from sugar cane, at different temps., could be used for differentiating races 1 and 2 in Taiwan. Single teliospore colonies of race 1 incubated at 26°C on PDA for 21 days turned creamy and white, whereas those of race 2 remained smooth and white. Single sporidia of race 2 on PDA at 30-34° produced dark brown colonies and fine, short, monokaryotic hyphae 2 and 7 days after incubation, respectively, whereas race 1 colonies were always creamy, yeast like, without mycelium. The temp. effects remained very consistent and did not vary with the sugarcane var. or locality. (Review of Plant Pathology 57:766).

_____, LEE, C. S. y CHAN, S. L. Rust disease of sugarcane in Taiwan, the causal organism *Puccinia melanocephala* Sydow. Taiwan Sugar 24(5):416-419. 1977. (142)

The rust does not usually cause considerable yield losses in Taiwan but var. F176 was severely affected in spring 1977.

Experiments with urediospores indicated that high temp. is one of the factors limiting incidence of the disease. (Review of Plant Pathology 58:353)

- HSIEH, W. H. y LEE, C. S. Compatibility and pathogenicity of two races of *Ustilago scitaminea* Sydow in Taiwan. Report of the Taiwan Sugar Research Institute no. 73:51-57. 1976. (143)

Intercrossing of 33 sporidia isolated from 12 teliospores of *U. scitaminea* showed that the mating pattern was a bipolar plus-minus system. The sugarcane cv. F 173, highly susceptible to races 1 and 2, showed typical smut symptoms after inoculation with dikaryotic mycelia obtained by mating 2 incompatible sporidia of the 2 races. Teliospores were collected and inoculated on the indicator cvs NCo 310 (immune from race 2), F 134, Yomitanzan (immune from race 1) and NCo376 (immune from both races). All these cvs. developed symptoms, suggesting that a new race of *U. scitaminea* could be induced by artificial mating of races 1 and 2. (Review of Plant Pathology 56:3207)

- HUGHES, G. y STEINDL, D. Special issue, sugarcane diseases. Cane Growers' Quarterly Bulletin 41(1):1-24. 1977. (144)

The cause, symptoms, spread, effect on crop and control of the following sugar cane diseases are briefly discussed and the symptoms are illustrated: Fiji disease, leaf scald, ratoon stunting, red stripe/top rot, eye spot, yellow spot, mosaic, chlorotic streak, pineapple disease, basal stem, root and sheath rot, *Sclerophthora*, bacterial mottle, smut, pokkah boeng, ring spot, rind disease and red rot. Also mentioned are canekilling weeds, *Striga* sp. and *Thesium australe*. (Horticultural Abstracts 48:975)

- HUNSIGI, G. *et al.* Role of sugarcane varieties in sugar production. Current Research no. 12:151-152. 1974. (145)

The variety Co62175 outyields Co419 and Co740 by about 30% and is tolerant of *Ustilago scitaminea*, *Glomerella tucumanensis* and grassy shoot virus. The nonarrowing variety H2045 is proposed for release for late planting. (Plant Breeding Abstracts 45:9168)

- * HUSAINI, S. W. H., SAXENA, S. K. y KHAN, A. M. Studies on sugarcane smut caused by *Ustilago scitaminea* Syd. III. Effect of metal cations on spore germination. Journal of the Indian Botanical Society 48(1-2): 112-113. 1969. (146)

Chlamydospores of *U. scitaminea* did not germinate in 10^{-1} - 10^{-6} M sols. of AgNO_3 , $\text{Cd}(\text{NO}_3)_2$, $\text{Hg}(\text{NO}_3)_2$ and $\text{Th}(\text{NO}_3)_4$. Germination was poor in 10^{-1} - 10^{-4} M ZnSO_4 , BaCl_2 , $\text{Al}(\text{NO}_3)_3$ and CuSO_4 . In $\text{Pb}(\text{NO}_3)_2$ germination varied depending upon the source of the collection. (Review of Plant Pathology 49:2981)

HUSMILLO, F. R. Resistance tests of some promising Phil varieties to sugarcane smut. Sugar News 47(6):263-264. 1971. (147)

A tabulated list of the reactions to *Ustilago scitaminea* of plant and ratoon crops of 32 Phil cane varieties. (Horticultural Abstracts 42:5116)

INDIAN INSTITUTE OF SUGARCANE RESEARCH, LUCKNOW. Mycology. Agricultural Research New Delhi 5(3):197-198. 1965. (148)

Infection of sugarcane by rust (*Puccinia erianthi*) was reduced by a fall in temp. below 25°C., but the pathogen is probably able to withstand the summer temps. on the plains of N. India. (Review of Applied Mycology 45:2331b)

_____. Mycology. Agricultural Research New Delhi 5(2):111-112. 1965. (149)

Under Mycology it is noted that severe sugarcane stunting in Jaora, Madhya Pradesh, was due to ratoon stunting virus. Some evidence was obtained for the existence of physiologic races in *Ustilago scitaminea*. (Review of Applied Mycology 45:944b)

_____. Report. Indian Council Agricultural Research 3:28-33, 116-119, 201-203, 288-290. 1963. (150)

Screening of clones of *Saccharum* and *Erianthus* species for resistance to *Puccinia erianthi* was effected. The results of studies of varietal incidence of *Scirpophaga nivella* are briefly indicated. (Plant Breeding Abstracts 35:6932)

* INSTITUT DE RECHERCHES AGRONOMIQUES TROPICALES ET DES CULTURES VIVRIERES, FRANCIA. Rapport annuel 1978. Paris, 1979. pp. 92-109. (151)

Inicio de la creación varietal. El objetivo es crear variedades de caña de azúcar de amplia adaptabilidad. Una técnica de cultivo de los brotes, estudiada en Montpellier, hará posibles el mantenimiento, bajo volumen reducido, de clones en buen estado sanitario y la obtención de material vegetal en condiciones estériles. Los cultivos de tejidos realizados en la UER de Orsay tienen como objetivo aumentar la variabilidad del material vegetal. En Guadalupe el trasplante de plántulas se ha puesto a punto a partir de semillas provenientes de polinización libre.

El diagnóstico precoz de las enfermedades. Un nuevo invernadero de cuarentena es actualmente operacional en el centro GERDAT de Montpellier. Las posibilidades de distribución de variedades sanas se aumentan de esta manera. El comportamiento de las variedades cara al tizón (*Ustilago scitaminea*) se sigue en varios países. El cribado de las plántulas de caña por su resistencia a esta enfermedad se ha puesto a punto utilizando la inoculación artificial. Una técnica de diagnóstico rápido del mosaico y del escaldamiento de la caña está en curso de estudio.

Resistencia varietal al carbón

Variiedad	D	Calificación de la variedad	Puntaje
M 3145	0	Immune o muy resistente	0
Co 449	0	" " "	1
Co 775	0	" " "	1
Q 83	4	Muy resistente	2
Co 798	8	" " "	2
L 6025	- 23	Resistente	3
M 44251	- 23	"	3
Regnar	- 10	"	3
M 51168	- 10	"	3
B 52107	- 5	"	3
B 41227	- 5	"	3
B 46364	14	Bastante resistente	4
CB 3822	15	"	4
Q 63	16	"	4
MCo 334	20	"	4
B 54142	22	"	4
F 134	22	"	4
F 141	23	"	4
B 57150	25	"	4

Variiedad	D	Calificación de la variedad	Puntaje
MCo 376	26	Bastante resistente	4
M 53216	27	"	4
B 37172	31	Un poco sensible	5
PR 1059	39	"	5
CB 49260	54	"	5
Q 82	56	"	5
Co 617	59	"	5
M 51339	123	Bastante sensible	6
Mex 54215	126	"	6
M 55805	171	"	6
Co 622	179	"	6
B 60227	188	"	6
Mex 58142	276	Sensible	7
MCo 310	355	"	7
CB 4176	370	"	7
B 4744	597	Muy sensible	8
Co 331	672	"	8
M 507209	1754	Entrudamente sensible	9

* INSTITUT DE RECHERCHES AGRONOMIQUES TROPICALES ET DE CULTURES VIVRIERES, FRANCIA. Rapport annuel 1977. Paris, 1977. 192 p. (152)

Work done at GERDAT, Montpellier, France and in Madagascar, Mali, Niger, Ivory Coast, Senegal and Cameroon on protection of rice, maize, sorghum, millet, soybean, sugarcane and market garden and other crops is reported. Maize streak virus was recorded on maize in Reunion and Cameroon. The behaviour of sugarcane cvs. towards smut was studied in Upper Volta. There are accounts of work on *Pseudomonas solanacearum* on tomato, *Colletotrichum* sp. and *P. solanacearum* on eggplant, *Xanthomonas campestris* on cabbage, and *Erysiphe cichoracearum* and *Peronospora tabacina* on tobacco. (Review of Plant Pathology 59:25)

IZUMI, S. et al. Studies on the chemical control of sugarcane smut, 1: Screening test of fungicides. Proceedings of the Association for Plant Protection of Kyushu no. 24:30-32. 1978. (153)

JAGATHESAN, D. Induction and isolation of mutants in sugarcane. In Research Coordination Meeting on Improvement of Vegetatively Propagated Plants and Tree Crops Through Induced Mutations, 2°, Wageningen, 1976. Proceedings. Viena, IAEA, 1976. pp. 69-72. (154)

También en: Mutation Breeding Newsletter no. 9:5-6. 1977.

Single-budded sets of the varieties Co453, Co419, Co312, Co527 and Co997 were exposed to X and γ rays; 52 mutants were isolated. A glabrous mutant of Co527, mutant 13, did not flower and had a better yield than the parent variety. Mutants of Co449 and Co997 resistant to *Colletotrichum falcatum* (*Glomerella tucumanensis*) have been released for cultivation. Of 1057 Co1287 mutants tested, 32 were resistant to *Ustilago scitaminea*. A description of some of the mutants is given. (Plant Breeding Abstracts 48:1005)

- * JALEEL AHMED, N. Y SAMBASIVAM, K. Reaction of some sugarcane varieties to smut caused by *Ustilago scitaminea* Syd. Indian Journal Sugarcane Research and Development 8:299-301. 1964. (155)

The varietal resistance trials have yielded fruitful results since a good number of varieties which are found to combine both agronomical and moderate resistance to smut are in different stages of trial. Among them, Co.658 and Co.785 are in the extended field trial stage. The variety Co.658 has been particularly found to be an all season cane with higher degree of resistance than the standard variety Co.419. Dry weather during tillering phase appears to predispose the plants to smut infection. The resistance or susceptibility of a variety does not appear to be associated with the thickness or thinness of the variety.

- JAMES, G. L. The effect of ratoon stunting disease on the expression of smut symptoms. In Annual Congress of the South African Sugar Technologists' Association, 50th, Durban, 1976. Proceedings. Edited by D. J. Collingwood. Mount Edgecombe, Natal, South African Sugar Technologists' Association, 1976. pp. 69-72. (156)

The literature on the control of *Ustilago scitaminea* by hot water treatment is reviewed and it is noted that smut frequently develops in the ratoons of previously hot water treated sugarcane. Data from 4 trials are given and observations are made about the influence RSD infection has on the expression of smut symptoms. It is concluded that the bacterium causing RSD suppresses smut incidence; however the mechanism responsible for this suppression is not explained. (Review of Plant Pathology 56:4670)

- _____. Possible source of sugarcane smut in Guyana and Martinique. In Annual Congress of the South African Sugar Technologists' Association, 50th, Durban, 1976. Proceedings. Edited by D. J. Collingwood. Mount Edgecombe, Natal, South African Sugar Technologists' Association, 1976. pp. 73-74. (157)

The possible ways in which *Ustilago scitaminea* reached Guyana in Dec. 1974 and then Martinique, and the implications of its presence in the Caribbean for the sugarcane industries in this area, Central America and USA are discussed. (Review of Plant Pathology 56:4671)

- _____. Pre-plant fungicidal dips = a long-term measure against smut. Sugarcane Pathologists' Newsletter no. 17:4-5. 1976. (158)

In an attempt to find alternatives to Hg fungicides, the best suppression of smut over 2 crops was given by pre-planting dips in aretan or G20072 among the 9 treatments tested, but there were no significant differences in sugar yield parameters. (Review of Plant Pathology 56:4183)

- * _____ . Sugarcane smut infection in Guyana and Martinique. Sugar Journal 38(12):17. 1976. (159)

JAMES, G. L. The search for alternative varieties to N:Co. 376 in Rhodesia. In Annual Congress of the South African Sugar Technologists' Association, 49th, Mount Edgecombe, Natal, 1975. Proceedings. Mount Edgecombe, Natal, 1975. pp. 196-201. (160)

A review of 22 trials conducted over the past 10 years and involving over 100 cvs is presented. The early mid- and late season yields of those which compared favourably with N:Co.376 are discussed. Varietal smut resistance ratings are also included in the tables. The data show that very few cvs consistently out-yield N:Co.376. (Horticultural Abstracts 46:8094)

_____. Culmicolous smut of sugarcane and the effects of its control on yield. In Congress, International Society of Sugar Cane Technologists, 15°, Durban, 1974. Proceedings. Durban, South Africa, 1974. v.1, pp. 292-299. 1974. (161)

Disease control and yield responses as a result of roguing were much better in N:Co.376 than in N:Co.310; but roguing increased smut (*Ustilago scitaminea*) incidence in both cvs when infection levels were high. Furthermore, smut incidence was related to moisture availability which depended on soil type, thus more infection was recorded on poorer soils. There was also a relationship between roguing effectiveness and soil type, with the removal of whips controlling disease on the better soils but increasing smut on the poorer soils. The effect of the pathogen on the host was primarily one of stress, smut infection increasing the sugar content of the cane but depressing cane yields. Irrespective of cv. or roguing treatments, smut incidence increased to a maximum by the second ratoon and thereafter declined. (Horticultural Abstracts 45:7982)

_____. Harvest practice and smut levels. Sugarcane Pathologists' Newsletter no. 11/12:8. 1974. (162)

The effects on sugarcane yield of burning trash at harvest versus its retention were observed in a 6 yr trial. Concurrently, smut whip populations were recorded each year. By the 3rd and 5th ratoons the incidence of smut was higher in the trashed plots, indicating that the practice of trashing carried a smut hazard. (Review of Plant Pathology 54:3460)

_____. Culmicolous smut. Sugarcane Pathologists' Newsletter no. 10:20. 1973. (163)

También en: International Sugar Journal 76(905):144. 1974.

Fourth ratoon crops of nine varieties and third ratoon crops of 15 varieties were evaluated for resistance to *Ustilago scitaminea* in trials in Rhodesia. N52/219 (third and fourth ratoons) and M383-41 (only investigated as fourth ratoon) were the only resistant varieties. (Plant Breeding Abstracts 44:7905)

JAMES, G. L. Effect of smut infection on sugar yield. Sugarcane Pathologists' Newsletter no. 10:32-33. 1973. (164)

The results not only confirmed that smut infection directly decreases the sucrose content of sugarcane, but also showed that the disease adversely affects sucrose %/fibre, thus affecting mill recovery of sugar. (Review of Plant Pathology 53:1531)

* _____ . Effects of roguing on yield and smut of sugarcane. Experimental Agriculture 9(1):73-82. 1973. (165)

Sugarcane yields and smut incidence levels were observed in three successive crops. The effect of pathogen upon host was primarily one of stress, as smut infection was shown to increase sucrose content of cane whilst depressing yields in tonnes of cane per ha. Where infection levels were high, roguing was shown to increase disease incidence. However, smut whip removal was confirmed as the best roguing treatment for commercial fields. Disease control and yield responses related to roguing effort were much better in NCo376 than NCo310, and, therefore, continued cultivation of NCo310 fields with high smut incidence was concluded to be a major hazard to the industry.

_____ . Smut spore germination on sugarcane internode surfaces. In Annual Congress of the South African Sugar Technologists' Association, 47th, Mount Edgecombe, Natal, 1973. Proceedings. Mount Edgecombe, Natal, 1973. pp. 179-180. (166)

Data for germination of smut spores on internode surfaces of 40 sugarcane cvs are presented. They support the hypothesis that resistance to the disease is governed by a chemical rather than a morphological mechanism. The possibility of using a technique described in the paper as a method for rapid determination of varietal susceptibility is discussed. (Horticultural Abstracts 44:2908)

_____ . The effects of cane row spacing and 50% population reduction upon smut expression in an infected crop. In Annual Congress of the South African Sugar Technologists' Association, 46th, Mount Edgecombe, Natal, 1972. Proceedings. Mount Edgecombe, Natal, 1972. pp. 216-217. (167)

A 50% reduction of population in plots of N:Co.376 at 3 months of age was shown not only to stimulate the production of more tillers, but also to increase smut incidence, as the seed cane was infected. Roguing heavily smut-infected cane fields will therefore increase, and not decrease, smut incidence. The importance of not allowing infection to develop beyond low incidence levels was emphasized. (Horticultural Abstracts 43:7245)

_____ . y BURTON, J. Roguing and its effects on yield and smut of sugarcane. Sugarcane Pathologists' Newsletter no. 9:20-21. 1972. (168)

Of the 3 treatments, whip removal was more efficient than infected stool removal or no roguing in reducing *Ustilago*

scitaminea in 3 successive crops. Yields increased by 1.75 t/ha in 1st and 2nd ratoons. (Review of Plant Pathology 52:2732)

- JAMES, G. L. Smut incidence in variety trials. In Annual Congress of the South African Sugar Technologists' Association, 46th, Mount Edgecombe, Natal, 1972. Proceedings. Mount Edgecombe, Natal, 1972. pp. 211-215. (169)

Data are presented for several cane crops showing the increase in the incidence of smut in 68 cvs planted in 16 trials. A summary of ratings of smut varietal resistance is given. Two methods for establishing cv. smut resistance are discussed. The classification of susceptibility should be based on whip population data. The necessity for finding a cv. or cvs of equal agronomic potential to N:Co.376 is emphasized. (Horticultural Abstracts 43:7231)

- _____. A summary of varietal resistance ratings to smut in Rhodesia, 1963-71. Sugarcane Pathologists' Newsletter no. 8:14. 1972. (170)

Tabulated data are presented on resistance ratings of 79 varieties to *Ustilago scitaminea*. (Plant Breeding Abstracts 44:3972)

- _____. Smut susceptibility testing of sugarcane varieties in Rhodesia. In Annual Congress of the South African Sugar Technologists' Association, 43rd, Mount Edgecombe, Natal, 1969. Proceedings. Mount Edgecombe, Natal, 1969. pp. 85-91. (171)

Data from artificial inoculation experiments to evaluate smut susceptibilities of varieties were compared with observations on established variety trials and the results from smut exposure trials. It was concluded that varietal resistance to smut was best determined by natural infection methods. The smut susceptibility of about 50 varieties under test in the Lowveld has been determined. No relationship was found between varietal susceptibility and the degree of tightness of the bud scales. (Horticultural Abstracts 40:7489)

- _____. Smut incidence survey in the Rhodesian Lowveld. In Annual Congress of the South African Sugar Technologists' Association, 42nd, Mount Edgecombe, Natal, 1968. Proceedings. Mount Edgecombe, Natal, 1968. pp. 172-178. (172)

In a survey of the incidence of smut in sugar cane it was found that the distribution of the disease was random throughout the fields. Two survey techniques are described and results from these revealed that, of the 3 main commercial varieties grown, N:Co.310 had the highest smut incidence. C.P.29/116, normally a resistant variety, was shown to suffer from the disease if planted in soil containing a large spore inoculum. Transmission by infected seed-cane was also evident. Cattle grazing in cane caused an increase in smut incidence if no roguing was carried out. A "start clean-stay clean" policy is put forward as the means of reducing smut intensity in the Rhodesian Lowveld. (Horticultural Abstracts 39:5964)

JAMES, N. I. Sugarcane smut; an eminent threat to the U.S. mainland. Proceedings - New Series. American Society of Sugar Cane Technologist 7:63-66. 1978. (173)

JOSHI, L. K. y SHARMA, B. L. Studies on losses in sugarcane yield and juice quality due to incidence of smut in the Dabra region of M.P. JNKVV Research Journal 1(1):24-26. 1967. (174)

A survey of smut in this area showed infection to be greater on ratoons than on the plant crop. Losses in yield and quality in var. Co.453 due to smut were greatest in stools showing whippy growth compared with normal canes. (Horticultural Abstracts 38:2219)

* KANDASAHU, P. A. y VIJAYALAKSHMI, U. *Puccinia erianthi* on cultivated sugarcane. Current Science 28:209-210. 1959. (175)

* KANWAR, R. S. Results of hot air treatment on the control of various diseases of sugar cane in India. International Sugar Journal no. 939:63-64. 1977. (176)

Investigations carried out in 1974-75 and 1975-76 are reported in which Co. J46, a mid-to-late maturing variety, and five other varieties were exposed to hot air treatment as a means of controlling various diseases, including ratoon stunting disease and grassy shoot disease. Reports of the experiments indicate the positive effect of the treatment. Incidence of red rot and smut %.

* KENYA. DEPARTMENT OF AGRICULTURE. Annual report 1961. Ruiru, Kenya, 1962. v.1, 83 p. (177)

Ustilago scitaminea: p. 40

Studies on sugarcane smut (*Ustilago scitaminea*) were continued. The varieties Co.331, Co.421 and B.41227 (an irrigation cane) show a fair degree of resistance to smut in the field. The varieties Co.270, Co.290, Co.301, Co.312, Co.396 and Co.419, which are all cultivated in Kenya have been shown to be susceptible. Commercial stocks of Co.421 are generally contaminated with Co.270 and this susceptible variety gives a false impression of the degree of resistance of Co.421.

* _____ . Annual report 1963. Ruiru, Kenya, 1966. v.2, 182 p. (178)

Incluye *Ustilago scitaminea*: p. 36

It was calculated that to obtain results with a tolerated deviation of $\pm 2\%$, 90 setts of each sugarcane var. must be inoculated with smut (*Ustilago scitaminea*). Only 20 setts are needed for a 5% tolerance. Infection occurs only through the buds, and the tops of healthy canes may be used as smut-free planting material. (Review of Applied Mycology 45:3030c)

KENYA. MINISTRY OF AGRICULTURE. Annual report of the Research Division, 1970. Ruiru, Kenya, Ministry of Agriculture, 1972. 228 p. (179)

In the Plant Pathology section (14-20).

The work on sugarcane included the screening of vars. against *Ustilago scitaminea* and the establishment of an epidemiology trial. (Review of Plant Pathology 54:1092)

- * KHAN, A. M. y SAXENA, S. K. Effect of temperature and relative humidity on the viability of chlamydospores of *Ustilago scitaminea* Syd. Indian Sugarcane Journal 9(1):55. 1964. (180)

Chlamydospores from 7 localities remained viable for 110-148 days at 0-10°C., 105-128 at 25°, 68-98 at 30°, 35-60 at 35°, and 10-18 at 40°, although significant differences occurred between the collections at the different temps. Freshly collected spores and spores stored for 15 days at 0-25° showed moderate germination after 4 hr., those stored for longer only after 8 hr. Viability was adversely affected at 100 and 98% R.H. on the 2nd and 10th day, respectively, but was moderate even after 30 days at other R.H.s. Significant differences occurred again between collections. (Review of Applied Mycology 45:1497)

KOENING, M. J. P. Notes on diseases of sugarcane at Hippo Valley estates limited - 1962 to 1967. Proceedings South African Sugar Technologists' Association 41:202-205. 1967. (181)

Ustilago scitaminea and *Xanthomonas albilineans* were the only pathogens of economic importance recorded at Hippo Valley sugarcane estates in Rhodesia in 1962-67. Trials indicated that the resistant var. N:Co.376 was more susceptible to *U. scitaminea* in the presence of a high inoculum than N:Co.310. *X. albilineans* was first recorded on B.34104 in 1965; N:Co.376 and N:Co.310 appear to be tolerant. Control measures against the 2 diseases are discussed. (Review of Applied Mycology 47:2251)

KOIKE, H. Rust of sugarcane in Louisiana: a first report. Plant Disease Reporter 64(2):226. 1980. (182)

The disease, caused by *Puccinia melanocephala*, is newly reported from La. on a few cvs. None of those grown commercially is heavily infected. It has already been reported from Fla. (Review of Plant Pathology 59:5345)

- * KOIKE, H. *et al.* Rust of sugarcane in the Caribbean. *Plant Disease Reporter* 63(4):253-255. 1979. (183)

A rust is newly reported on sugarcane in Jamaica and Puerto Rico. The causal organism is identified as *Puccinia melanocephala*. The rust is mainly confined to the sugarcane cultivar B 4362 in Jamaican commercial fields and to several cultivars in Puerto Rican commercial and experimental fields. Because of the widespread commercial planting of B 4362 in the Western Hemisphere, rust may constitute a threat to sugar industries of this hemisphere.

- KUSHWAHA, U. S. Reaction of some sugarcane varieties to smut in M.P. *JNKVV Research Journal* 2(1):66. 1968. (184)

For inoculation sugarcane cuttings were immersed in a suspension of spores (10 g spores/10 gal water, 70% viability) before planting. Of 11 vars. tested Co.1198, 1202 and 527 were resistant; Co.421, 1196 and 1231 moderately resistant; and the rest susceptible. (Review of Plant Pathology 49:1473)

- LADD, S. L. y HEINZ, D. J. Smut reaction of non-Hawaiian sugarcane clones. *Sugarcane Pathologists' Newsletter* no. 17:6-14. 1976. (185)

The results are presented on the reaction of 526 sugar cane species and clones to infection by *Ustilago scitaminea*. (Plant Breeding Abstracts 48:1423)

- _____. *et al.* Natural infection reaction to smut disease. *Sugarcane Pathologists' Newsletter* no. 13/14:9-10. 1975. (186)

Reactions obtained on sugarcane clones from using the dip inoculation technique (described) correlated well with natural tolerance of *Ustilago scitaminea*, and propagation of clones with <20% infection in inoculation tests resulted in very few, if any, susceptible clones being included. However, it is possible that some field tolerant clones may be excluded by this method. (Review of Plant Pathology 55:1432)

- _____, MEYER, H. K. y HEINZ, D. J. Breeding, selection and the smut program. *Hawaii Sugar Technol. Rep.* 32:76-84. 1974. (187)

Ustilago scitaminea has been found to be widespread on sugar cane in the Ewa region of Oahu. Artificial inoculation and natural infection showed that 70% of varieties are susceptible and these are not recommended for planting. A selection programme has been started. (Plant Breeding Abstracts 45:4729)

- _____, HEINZ, D. J. y MEYER, H. K. Control of sugarcane (*Saccharum* sp.) smut disease (*Ustilago scitaminea*) through breeding and selection of resistant clones. *South African Sugar Journal* 58(5, suppl.):10. 1974. (188)

Since 1971, 4000 commercial, potentially commercial and breeding clones and 35.000 new hybrids have been tested for resistance

The two major Hawaiian clones, occupying 50% of the sugar-cane area, and 40% of the breeding and commercial clones were resistant. (Plant Breeding Abstracts 45:494)

- LADD, S. L., HEINZ, D. J. y MEYER, H. K. Breeding for smut (*Ustilago scitaminea* Syd.) resistance in sugarcane (*Saccharum* sp.). Agronomy Abstracts 1973:9. 1973. (189)

Of approximately 4000 clones screened, 65% have proved susceptible, including 16 of the 20 most widely grown clones in Hawaii. However, two important commercial clones, H50-7209 and H59-3775 have displayed resistance under field conditions. Among the clones in the breeding collection, 64% have been eliminated owing to their susceptibility. (Plant Breeding Abstracts 44:8828)

- * LAMBAT, A. K., CHENJULU, V. V. y CHONA, B. L. Morphological variation in the sugarcane smut *Ustilago scitaminea* Syd. Mycopathologia et Mycologia Applicata 36(3-4):300-304. 1968. (190)

A study of the morphological variability among 25 different collections of sugarcane smut fungus *Ustilago scitaminea* from the States of Delhi, Uttar Pradesh, Bihar, Madhya Pradesh, Maharashtra, Andhra Pradesh and Madras revealed that considerable variation exists in spore size, colour, spore-wall markings of the isolates. On the basis of statistically significant differences in the spore size, the 25 isolates can be classified into 4 distinct groups. Three types of spore-wall markings viz., verrucose, punctate and echinulate are met within the isolates studied. There is no appreciable difference in the spore wall thickness of the different isolates. Spore colour of the different isolates varied from yellow to brown with several shades in between.

- * _____., CHENJULU, V. V. y CHONA, B. L. Influence of soil temperature of infection of sugarcane by the smut fungus *Ustilago scitaminea*. Indian Phytopathology 19(2):237-238. 1966. (191)

The optimal temperature for both infection by and germination of *U. scitaminea* is 25°C. Infection may be increased by incubating inoculated setts at this temperature for at least 1 week before planting. (Review of Applied Mycology 46:2819)

- LAMBHATE, S. S. *et al.* Influence of climatic conditions on the incidence of sugarcane rust in the Deccan tract of Maharashtra State. Journal of Maharashtra Agricultural Universities 1:257-259. 1976. (192)

The incidence of *Puccinia erianthi* on 9 sugarcane cvs. was monitored in 1972-75 after creating an epidemic by inoculation. The disease occurred in Nov. - Feb. and was most severe in Jan. when the temp. was 30.1°C and RH 57.3%. (Review of Plant Pathology 57:2641)

LAPASTORA, E. P. *et al.* Characteristics of five newly released sugarcane varieties. *Sugar News* 52(5):172-173, 195. 1976. (193)

The five newly released Philippine varieties Phil6421, Phil6425, Phil6429, Phil6553 and Phil6559 are briefly described. Their yield potential is similar to that of Phil56226 but they are resistant to major diseases such as *Ustilago scitaminea*, *Sclerospora sacchari* and *Stagonospora sacchari* and have better agronomic traits than other standard varieties. (Plant Breeding Abstracts 47:7603)

LAPITAN, R. L. y LANTIN, M. M. Agronomic performance and evaluation of resistance to smut of eleven sugarcane clones. *Philippine Journal of Crop Science* 2(3):171-179. 1977. (194)

Of the clones tested, H57-5174, H57-775 and H52-246 gave the best cane and sugar yields. Ratings for resistance to *Ustilago scitaminea* varied from moderately resistant to highly susceptible. (Plant Breeding Abstracts 48:9867)

LATIZA, H. S. Morphology, artificial culture, and nutrition of the different isolates of *Ustilago scitaminea* in the Philippines. Tesis M.S. Laguna, University of the Philippines, 1978. 100 p. (195)

LAUDEN, L. L. Smut disease now in Hawaii. *Sugar Bulletin* 50:14. 1972. (196)

Varietal differences in resistance to *Ustilago scitaminea* in sugar cane are mentioned. A number of wild *Saccharum* species have been screened and their desirable characteristics incorporated in breeding lines. Some lines show good frost tolerance. (Plant Breeding Abstracts 43:498)

* LEE-LOVICK, G. Smut of sugarcane - *Ustilago scitaminea*. Review of Plant Pathology 57(5):181-188. 1978. (197)

LEU, L. S. Culmicolous smut of sugar cane in Taiwan. VI. New pathogenic strain obtained by artificial hybridization and further studies on compatibility of *Ustilago scitaminea* Sydow. *Annals of the Phytopathological Society of Japan* 44(3):321-324. 1978. (198)

Hybridization of str. 1 and 2 resulted in the production of a new str. (3) which was pathogenic to both sugarcane cvs. NC0310 and F134, susceptible only to 1 and 2, respectively. If inoculated cuttings were kept at room temp. (26-28°C) for a few days before planting, only 1 of the 2 str. (1 or 2) could be recovered from newly developed whips resulting from inoculation with a mixture of teliospores of both str. All 5 sets of sporidia tested from 5 teliospores showed 2 mating types with 2 allele systems. Compatible matings resulted in mycelial growth on colonies. (Review of Plant Pathology 58:2922)

LEU, L. S., TENG, W. S. y WANG, Z. N. Resistant trial of sugarcane culmicolous smut in Taiwan. Taiwan Sugar 24(2):321. 1977. (199)

_____, TENG, W. S. y WANG, Z. N. Culmicolous smut of sugarcane in Taiwan. IV. Resistant trial. Report of the Taiwan Sugar Research Institute no. 74:37-45. 1976. (200)

During 1968-71 367 sugarcane cvs. and clones were screened against *Ustilago scitaminea* using an inoculation method in which the bases of plants 2-5 cm high were pricked with a row of needles and brushed with a teliospore suspension. When teliospores from western Taiwan were used, i.e. str. 1, reactions varied from 100% infection to nil. In a given cv. repeated inoculation sometimes gave different results. The cvs. NCo310, H49-5 H62-10, F160, F154 and F134 were used as standards to represent highly susceptible (the first 3), moderately susceptible (F160) and the remainder highly resistant. A higher incidence of disease was obtained with this inoculation procedure than when cuttings were placed in a teliospore suspension. The incubation period of the disease depended on temp.; symptoms appeared more rapidly at higher temps. C. 80% of diseased plants showed symptoms 7-9 months after inoculation. (Review of Plant Pathology 56:4185)

_____. y TENG, W. S. Culmicolous smut of sugarcane in Taiwan. V. Two pathogenic strains of *Ustilago scitaminea* Sydow. In Congress of the International Society of Sugar Cane Technologists, 15°, Durban, South Africa, 1974. Edited by J. Dick y D. J. Collingwood. Durban, South Africa, ISSCT, 1974. pp. 275-279. (201)

También en: South African Sugar Journal 58(5):14. 1974.

Line F134 was immune to strain 1 but susceptible to strain 2, while live NCo310 showed the reverse reactions. (Review of Plant Pathology 55:3720)

_____. Culmicolous smut of sugarcane in Taiwan. Sugarcane Pathologists' Newsletter no. 9:16-17. 1972. (202)

The development of the promycelium from, and storage of, teliospores of *Ustilago scitaminea* are briefly described. (Review of Plant Pathology 52:2731)

_____. Culmicolous smut of sugar cane in Taiwan. III. Germination and storage of teliospores, and compatibility of *Ustilago scitaminea* Sydow. Report of the Taiwan Sugar Experiment Station no. 56:37-48. 1972. (203)

Freshly collected teliospores were germinated on water agar at 10-34°C. Nonseptate promycelia were observed at 38 and 42°. Teliospores collected in summer germinated faster than winter ones. At 18-34° promycelia occurred 2 h after incubation and became septate in a further 2-6 h, when some sporidia or hyphae were observed at the higher temps. The pattern of development of sporidia and mycelium is described. Under dry conditions at 5° germination did not decline after 1 yr and in one test there was 92% germination after 4 yr. Under wet

conditions no germination occurred after 2 weeks storage. Compatibility between sporidia is reported on, (Review of Plant Pathology 52:3416)

LEU, L. S. y TENG, W. S. Pathogenic strains of *Ustilago scitaminea* Sydow. Sugarcane Pathology Newsletter 8:12-13. 1972. (204)

Strs. 1 and 2 were isolated from N:Co310 and F154, respectively. (Review of Plant Pathology 51:4319)

_____. Reaction of clones of *Saccharum spontaneum* L. to *Ustilago scitaminea* Sydow, the causal fungus of the culmicolous smut of sugarcane. Sugarcane Pathologists' Newsletter 7:10-11. 1971. (205)

The reactions varied from 0 to 100% diseased plants. The number of chromosomes in different clones showed no correlation with susceptibility. (Review of Plant Pathology 51:2819)

_____. Smut of sugar cane in Taiwan. I. Recurrence of smut in Taiwan. Plant Protection Bulletin 11(2):91-99. 1969. (206)

Occurrence and distribution of the disease (*Ustilago scitaminea*) in Taiwan are described. Common before 1910, it disappeared c. 1930 and then recurred in 1964. Incidence tends to be higher on mountain sides and in areas irrigated by streams. Ratoon crops are more heavily infected than newly planted ones. Nearly 85% of diseased stools developed whip-like structures in the warmer months compared to 15% in cooler months. Teliospores from various locations and vars. differed little in shape or size (av. 6.4-7.2 μ). Of the 7 vars. showing symptoms since 1964, N:Co310 and F 134 are highly susceptible. Control recommendations include use of resistant vars. and roguing of infected stools before whip emergence. (Review of Plant Pathology 51:3534)

LEWIN, H. D., NATARAJAN, S. y RAJAN, S. D. Screening of sugarcane clones for resistance to smut (*Ustilago scitaminea* Syd.). Sugarcane Pathologists' Newsletter no. 17:1-3. 1976. (207)

The reactions are tabulated of 32 clones (tested as plant and ratoon crops) to infection by *U. scitaminea*; none was immune. (Plant Breeding Abstracts 48:1422)

* LIU, L. J. Occurrence of sugar-cane rust in Puerto Rico. Journal of Agriculture of the University of Puerto Rico 63(4):476-479. 1979. (208)

P. melanocephala

Although rust of sugar-cane has been reported in many countries, it has not yet been reported in Puerto Rico. On October 11, 1978, rust pustules were observed on leaves of sugar-cane seedlings 87-57 in the Fortuna Substation. According to uredospore and teliospore morphology, the rust is identified as *Puccinia erianthi* (*P. melanocephala*). The origin of this rust in Puerto Rico is unknown. It is fortunate

that the incidence of rust, up to now, is restricted to seedlings in the Substations Fortuna and Lajas. Rust has not been detected in commercial plantations. Therefore an emergency programme to eliminate sugar-cane seedlings affected with rust is now underway to prevent the spread of rust to commercial plantations. (Abstracts on Tropical Agriculture 6:30453)

LIU, L. J. Rust; a new sugarcane disease in Puerto Rico. Sugarcane Pathologists' Newsletter no. 22:2-3. 1979. (209)

The disease, caused by *Puccinia melanocephala* and newly reported from Puerto Rico, is described and the results of varietal tests are presented. (Review of Plant Pathology 59:3386)

* _____ . Rust of sugarcane in Puerto Rico. Plant Disease Reporter 63(4): 256-258. 1979. (210)

Sugarcane rust, caused by *Puccinia melanocephala*, is reported for the first time in Puerto Rico on 1978 series seedlings at the Fortuna Substation along the southern coast of the Island. This is the first report on sugarcane rust in the United States. Thousands of seedlings from various Substations (Isabela, Lajas, and Gurabo) were severely affected. Commercial varieties PR 980, PR 62-258, PR 1141, H 32-8560, and PR 1059 were apparently resistant to the rust. Of the 18 sugarcane varieties inoculated, PR 63-1165 and PR 1124 were highly susceptible.

_____. y BERNARD, F. Sugarcane rust in the Dominican Republic. Sugarcane Pathologists' Newsletter no. 22:5-7. 1979. (211)

The pathogen, previously reported to be *Puccinia kuehni* has now been identified as *P. melanocephala*. Observations on the disease including those on climatic factors, physiologic races and varietal reactions are presented. It is suggested that the most economic method of control would be to replace the susceptible B 4362 by resistant cvs. (Review of Plant Pathology 59:3388)

LO, C. C. Mutation breeding of sugarcane in Taiwan. Taiwan Sugar 24(6):450-456. 1977. (212)

Of a range of *Saccharum* varieties and species subjected to 2-14 kR γ rays, F153, F158, NCo376 and *S. spontaneum* '6ONS32' were the most resistant to radiation damage. In F153 and F160 spindle extension was stimulated by 0.5-2.0 kR γ rays while in F146 it was depressed. Data are also presented on the effects of γ rays on germination, the position of buds on the stem with respect to radiosensitivity, and the induction of mutations with respect to resistance to *Sclerospora sacchari* and *Ustilago scitaminea*, high sugar content, and lack of hairs. (Plant Breeding Abstracts 48:10806)

- * LOPES NETTO, J. P. DA S. Carvão no Estado do Rio de Janeiro. Brasil Açucareiro 80(1):31-36. 1972. (213)

El autor hace una reseña sobre la aparición del "Carbón" de la Caña, en el mundo y especialmente en Brasil. Informa sobre la causa de la enfermedad, las formas de transmisión, así como de los resultados experimentales positivos sobre la infección de caña de azúcar a partir de clamidospores. Indica métodos de control y que en Brasil, principalmente en San Pablo, el "carbón" está controlado con el uso de variedades resistentes. El artículo trae una lista de variedades de caña de azúcar probadas y en observación por la Sección de Fitopatología Aplicada del Instituto Biológico en Campinas, San Pablo, hasta marzo de 1969. (CV)

- LOPEZ, M. D. Una nueva enfermedad de la caña de azúcar en Cuba: el carbón producido por *Ustilago scitaminea* Sydow. Habana, Ministerio de la Agricultura, 1979. 11 p. (214)

- LOYNET, G. Ensayo de dosis crecientes sobre cinco variedades de caña de azúcar (análisis combinado 1974-1977) en La Reunión. Doc. I.R.A.T. 1977. 12 p. (Ficha de ensayo no. 40) (215)

Cinco variedades (R 541, RP 340-65, RP 92-66, RP 115-66, RP 119-66) y 4 dosis de nitrógeno (0, 60, 120, 180 kg/ha) se colocan en ensayo factorial con 5 repeticiones. Aporte de 200 kg/ha P₂O₅ y 200 kg/ha K₂O por brote. La respuesta al nitrógeno se señala sobre los tres brotes: N0 luego N1 y N2, luego N3. La riqueza en azúcar es un carácter varietal, pero que fluctúa de un brote al otro. La variedad RP-119-66 posee la riqueza más alta (17%). Las variedades reaccionan de manera diferente a las dosis crecientes de N (interacción variedades / dosis de nitrógeno significativa). Las variedades RP 340-65, RP 92-66 y RP 119-66 valorizan las que mejor el nitrógeno; su respuesta es máxima a la dosis 120 kg/ha. La variedad RP 119-66 es la más interesante, pero ha manifestado una cierta sensibilidad al carbón (*Ustilago scitaminea*). (Agritrop 3:188)

- LUTHRA, J. C., SATTAR, A. y SANDHU, S. S. Experiments on the control of smut of sugarcane (*Ustilago scitaminea* Syd.). Proceedings Indian Acad. Sci., Sect. B 12:119-128. 1940. (216)

- * _____ . Life-history and modes of perpetuation of smut of sugarcane (*Ustilago scitaminea* Syd.). The Indian Journal of Agricultural Science 8:849-861. 1938. (217)

Effect of different nutrient solutions, temperature and hydrogen-ion concentration on the germination of spores of *Ustilago scitaminea* Syd. has been studied. Viability of spores under a variety of conditions has been tested. Studies on the modes of perpetuation of the disease for four years have clearly shown that the disease is carried over from year to year by the following methods:

1. By planting setts taken from smutted shoots of canes.
2. By spores adhering to the buds of setts at the time of planting.
3. By aerial infection of the buds of standing canes.
4. By ratooning smutted canes.

The writers' thanks are due to S. Harbans Singh, Sugarcane Specialist, Risalewala for placing at their disposal cane material and land for some field experiments.

The authors are jointly responsible for the work.

The investigation reported was carried out as part of the scheme of Sugarcane Research financed by the Imperial Council of Agricultural Research.

McMARTIN, A. Sugar cane smut. A report on visits to the sugar estate of southern Rhodesia and Portuguese East Africa, with general observations on the disease. South Africa Sugar 2(32):737-749. 1948. (218)

_____. Sugar-cane smut: reappearance in Natal. South Africa Sugar 2(29):55-57. 1945. (219)

* MALAWI. DEPARTMENT OF AGRICULTURE. Annual report for the year 1969/70. Zomba, Malawi, Government Printer, 1973. 300 p. (220)

Smut (*Ustilago scitaminea*) was the major disease on sugarcane. (Review of Plant Pathology 53:764e)

* _____. Annual report for the year 1963/64. Malawi, 1967. 142 p. (221)

Sugarcane smut (*Ustilago scitaminea*) was found in the Chikwawa area where it has been observed sporadically for several years. (Review of Applied Mycology 47:399c)

* MALAWI. MINISTRY OF AGRICULTURE AND NATURAL RESOURCES. Annual report plant pathology services for the year 1971-72. Limbe, Malawi, Bvumbwe Research Station, 1972? 13 p. (222)

Ustilago scitaminea on sugarcane at the Nchalo Sugar Estate has increased to a dangerous level. Both main vars. (NCO 310, NCO 376) grown are susceptible. A high incidence of dieback and death of rooted tea cuttings is reported. As previously *Phomopsis theae* and *Macrophoma theicola* were consistently associated, *Fusarium solani* and *Cylindrocladium scoparium* also causing death in nurseries. (Review of Plant Pathology 53:766c)

* MARIOTTI, J. *et al.* El mejoramiento genético de la caña de azúcar. Programa de trabajo en la Estación Experimental Agrícola de Tucumán. Situación Actual y perspectiva. Argentina. Estación Experimental Agrícola de Tucumán. Boletín no. 125. 1977. 13 p. (223)

Los autores informan sobre la labor desarrollada por la Estación Experimental Agrícola de Tucumán en relación al mejoramiento genético de la caña de azúcar. Dividen este desarrollo en tres etapas:

- La primera que comprende aproximadamente 50 años y que se caracterizó por la introducción de cultivares seleccionados en el extranjero y la importación de semilla sexual con el propósito de efectuar selecciones locales.
- La segunda etapa, que se inicia en 1960, se caracterizó por la introducción de tecnología. Se sentaron las bases del programa de mejoramiento, la producción de semilla sexual, que ha servido para la selección de nuevos cultivares.
- La tercera etapa, donde se enfocan los problemas actuales y las perspectivas futuras del mejoramiento varietal.

Los resultados logrados con los cuatro cultivares de más reciente difusión se resumen en el cuadro siguiente, en comparación al testigo N.A.56-79 - variedad dominante en la provincia de Tucumán.

Variedad	Localidades	Núm. de cosechas	TCH*		Rto. % esperado			KAI**	
			promedio	100	Mayo	Julio	Setiem.	promedio	100
N.A. 56-79	6	35	80,7	100	8,29	10,42	11,38	8.133	100
Tuc. 67-24	6	35	78,7	97	8,56	11,05	12,23	8.334	102
Tuc. 67-27	6	35	71,3	88	9,30	11,42	12,36	7.729	95
N.A. 56-79	7	41	78,3	100	8,10	10,24	11,21	7.850	100
Tuc. 68-18	7	41	85,3	109	7,34	10,10	11,49	8.304	106
Tuc. 68-19	7	41	81,2	104	8,61	10,89	12,13	8.644	110

Los datos de este cuadro son provisorios. El informe definitivo se encuentra en preparación.

* Toneladas de caña por ha.

** Kg. de azúcar por ha.

En estas nuevas variedades subsiste una sensibilidad preocupante a importantes enfermedades como el "carbón".

Variedades	Estría Roja ("polvillo")	Mosaico	Carbón	Mal de la Escalera	Podredumbre Roja
Tuc. 67-24	--*	Resistente ¹	Moderadamente susceptible	Susceptible	Resistente
Tuc. 67-27	--	Altamente resistente	Altamente resistente	--	--
Tuc. 68-18	Susceptible ²	Muy altam. resistente	Resistente	--	Medianamente susceptible
Tuc. 68-19	Resistente	Altamente ¹ resistente	Susceptible	Susceptible	Medianamente susceptible
N.A. 56-30	Susceptible ³	Medianamente susceptible	Medianamente resistente	Susceptible	Resistente
N.A. 56-62	Susceptible	Susceptible ⁴	Resistente	--	Resistente
N.A. 56-79	Susceptible	Susceptible	Susceptible	--	Resistente
N.A. 63-83	--	Susceptible	Susceptible	--	--
N.A. 63-90	--	Altamente susceptible	--	--	--

Informe preparado por la Sección Fitopatología de la E.E.A.T. en Marzo de 1977.

* - Sin información para calificación por resistencia.

1 - Se observan plantas enfermas en zonas de alta infección.

2 - En zonas de alta infección. Antes se calificaba como resistente.

3 - Más acentuado en caña planta.

4 - En ensayos comparativos el rendimiento no aparece afectado por la enfermedad.

Se hace necesario el control de la calidad de la caña semilla. Para el caso del carbón que ha aparecido con frecuencia en el Departamento Cruz Alta, determina que una variedad como Tuc. 68-19, no debe expandirse en más del 20% del área cultivada en dicha zona. Recientes selecciones de las series 1969; 1970, 1971, presentan perspectivas interesantes, pero recién este año (1977) se inician controles de comportamiento en experimentos regionales.

Se están realizando introducciones masivas para reestructurar la base genética para el avance del programa; al mismo tiempo se está construyendo una estación de cuarentena sanitaria, para caña de azúcar. En esta etapa también se realizará la selección simultánea de nuevas variedades en diferentes regiones ecológicas. (CV)

MARTIN, J. P. A survey of sugarcane diseases in Thailand. Bangkok, Sugar Industrial Aid Fund, 1964. 40 p. (224)

Incluye carbón

This report, based on observations made during a 4-month visit to Thailand in 1964 includes a survey of sugarcane diseases, possible means for increasing cane and sugar yields, and general comments. The major diseases include white leaf, or 'grassy shoot', apparently caused by a virus, which occurred in many areas, causing greater losses than any other disease, and affecting the var. Co.421 most severely and also N.Co.310, P.O.J. 2878, PSA-14, and LP-95-9. Smut (*Ustilago scitaminea*) occurred generally, Fiji disease virus was confined to 2 districts, but yellow spot (*Cercospora koepkei*) was widespread, causing moderate to severe disease. An unknown leaf spot, characterized by light brown irregular lesions which coalesced to form large expanses of dead leaf tissue, caused considerable damage. Most of the commercial cane fields were free from sugarcane mosaic virus but where the disease did occur considerable losses were sustained. Sugarcane ratoon stunting virus was present only in small amounts. Leaf scorch (*Stagonospora sacchari*) was observed on Co.421 but caused no serious losses. Brown stripe (*Cochliobolus stenospilus*) was chiefly confined to one district. The vars. L.P.-4 and L.P.-95-9 were affected by leaf scald (*Xanthomonas albilineans*) in one area. A further 28 diseases and disorders of minor importance are also listed. (Review of Applied Mycology 45:1168)

- * MATA, J. F. DA y TOKESHI, H. Comparações entre três métodos de preservação de *Ustilago scitaminea*. Summa Phytopathologica (Brasil) 2(3):187-193. 1976. (225)

Vários métodos de preservação de clamidosporos de *Ustilago scitaminea* Sydow foram investigados, simultaneamente, com os efeitos de diversos fatores que podem influir na porcentagem e maneira de germinar de clamidosporos submetidos a condições ambientais diferentes.

Clamidosporos coletados em diferentes épocas dos anos de 1972 e 1973 e em diferentes localidades dos Estados de São Paulo e Paraná foram utilizados no estudo da viabilidade dos clamidosporos durante um período de 12 meses (120 dias para o nitrogênio

líquido). Os métodos de preservação usados no estudo da viabilidade dos clamidosporos foram: a) preservação por dessecação com sílica-gel a três temperaturas diferentes: laboratório (15-28°C), refrigerador (5°C) e congelador (-10°C); b) preservação por liofilização; c) preservação com nitrogênio líquido.

Após 12 meses, os resultados mostraram alta viabilidade (86,72%) dos clamidosporos preservados em dessecadores com sílica-gel a 50°C, baixa viabilidade (32,26%) nos liofilizados e com base na literatura consultada, boa perspectiva para a preservação em nitrogênio líquida para período além de 12 meses.

MATA, J. F. DA. Preservação e determinação de viabilidade de clamidosporos de *Ustilago scitaminea*. Tesis Mestre. Piracicaba, Brasil, Universidade Federal da Paraíba, Escola Superior da Agricultura Luiz de Queiroz, 1975. 66 p. (226)

MATSUOKA, S. Contrôl do carvão da cana-de-açúcar no Brasil. In Reunión Plenaria do Grupo de Países Latinoamericanos y del Caribe Exportadores de Açúcar, 10°, Buenos Aires, 1979. Trabajos. Araras, SP, Brasil, 1979. 17 p. (227)

_____. A method for joint evaluation of sugarcane variety reaction to smut and mosaic. Sugarcane Pathologists' Newsletter no. 23:26. 1979. (228)

Combined inoculation with *Ustilago scitaminea* and sugarcane mosaic virus is used to evaluate material in the breeding programme. (Review of Plant Pathology 59:5890)

_____. Métodos de prétestagem de clones de cana-de-açúcar ao carvão e ao mosaico conjuntamente. In Congresso Nacional da Sociedade dos Técnicos Açucareiros do Brasil, 1°, Maceió, AL, 1979. Trabajos. Araras, SP, Brasil, 1979. 18 p. (229)

* _____, TOKESHI, H. y PARADELLA FILHO, O. Programação dos trabalhos relativos aos testes de resistencia ao carvão da cana de açúcar. Brasil Açucareiro 88(2):46-50. 1976. (230)

Se informa sobre las causas que llevaron a aprobar en 1956 el "Convenio para o contról do carvão da cana" para la ejecución continua de los trabajos sobre control del "carbón" en el Estado de San Pablo y la ampliación de que fue objeto en 1975. Detallan el programa a realizar y la metodología a seguir para lograr establecer variedades resistentes para ser liberadas para el cultivo comercial.

Fueron escogidas como variedades testigo las siguientes:

resistente	CB41076
intermedia	NA56-79
susceptible	CP52-1 (alternativa: CB45-3)

El material probado será liberado de acuerdo con el siguiente cuadro:

Puntaje	% de tallos con látigo ("chicote")			Clasificación
01	1	a	5%	Resistente
02	5,1	a	10%	Med. Resistente
03	10,1	a	15%	Suf. Resistente
04	15,1	a	20%	Susceptible
05	20,1	a	25%	" "
06	25,1	a	30%	" "
07	30,1	a	35%	Alt. Susceptible
08	35,1	a	40%	Alt. Susceptible
09	Más de 40%			Alt. Susceptible

El Instituto Biológico oficializará los resultados obtenidos por la Comisión de Control del Carbón en la Caña de Azúcar. (CV)

MAURITIUS. INSTITUT DE RECHERCHES DE L'INDUSTRIE SUCRIÈRE DE L'ÎLE MAURICE. Rapport pour 1976. Revue Agricole et Sucrière de l'Île Maurice 56:165-178. 1977. (231)

Three sugar-cane varieties were added to the varietal catalogue. M555/60, from M241/40 x 213/40, has high cane yields and is resistant to wind damage. M574/62, from Co779 x M147/44, has above-average sugar content and cane yields. Both are adapted to most regions of Mauritius. The third variety, Triton, imported from Australia, has already been described. A total of 25 out of 40 varieties were susceptible to *Ustilago scitaminea*, 14 of the 25 being only slightly affected; 24 out of the 40 were resistant to *Cercospora koepkei*. (Plant Breeding Abstracts 49:525)

MENDOZA, T. C. y LANTIN, M. M. Identification of *Saccharum spontaneum* clones resistant to sugarcane smut. Philippine Journal of Crop Science 2(3): 177-179. 1977. (232)

Of 76 sugarcane clones tested against *Ustilago scitaminea*, 30 were immune and 22 resistant; 13 were selected for future work. (Plant Breeding Abstracts 48:9868)

MOHAN, S. K. y MENEZES, J. R. Doenças da cana-de-açúcar. In Fundação Instituto Agrônomo do Pavona, Londrina. Recomendações técnicas para a cultura da cana-de-açúcar no Estado do Pavona. Londrina, Brasil, 1977. pp. 84-88. (Circular-Fundação Instituto Agrônomo do Paraná, no. 6) (233)

MOUNT EDGECOMBE, NATAL. SOUTH AFRICAN SUGAR ASSOCIATION EXPERIMENT STATION. Annual report 1975-76. Mount Edgecombe, Natal, 1976. 80 p. (234)

In the Pathology section (61-64) studies on the effect of hot water treatment on smut incidence showed that more smut developed in heat treated than in untreated NCo 376. This is probably due to a direct effect of the treatment on the sett buds elimination of other pathogens. More smut developed on healthy

canes of the susceptible cv. N55/805 than on ratoon stunting diseased (RSD) canes of the same cv. under 3 water regimes, severe, moderate, and no stress. Water stress increased the incidence of smut in both N53/216 and N55/805. Smut incidence in the 1st - 4th ratoons was greater in water stressed plots of susceptible cvs. In a trial on the effects of RSD on 6 sugarcane cvs. the yields of infected stools were reduced by 24-36%, emphasizing the need to continue stringent control measures. The expression of nodal symptoms of RSD in mature cane and the effects of RSD on yield of 16 commercial cvs. are tabulated. During 1975 a bacterium 1-4 x 0.2-0.3 μm was found associated with RSD infected sugarcane, apparently identical with bacteria reported from Australia, Taiwan and Mauritius in association with the disease. (Review of Plant Pathology 56:1258)

MOUNT EDGECOMBE, NATAL. SOUTH AFRICAN SUGAR ASSOCIATION EXPERIMENT STATION.
Annual report 1974-75. Mounth Edgcombe, Natal, 1975. 86 p. (235)

In the Pathology section (54-62) studies on the incidence and control of smut, leaf scald and ratoon stunting disease are described. Further attempts were made to elucidate the etiology of ratoon stunting and to develop a rapid diagnostic test. Various chemicals for sterilizing cane knives to prevent the spread of ratoon stunting were evaluated. Evidence was obtained that the North Coast stunting disease is the same as ratoon stunting disease. Lab. and field trials against pineapple disease (*Ceratocystis paradoxa*) are outlined. (Review of Plant Pathology 55:865)

_____. New variety N55/805 is resistant to most cane diseases. South African Sugar Journal 55:33. 1971. (236)

A comment on the disease reaction assessments of this cane variety in respect of mosaic, ratoon stunting, gumming, leaf scald and smut. (Horticultural Abstracts 41:7894)

_____. The new variety no. 6. South African Sugar Journal 54:105. 1970. (237)

The new sugar cane variety N.6 was developed from the cross Co.421 x C.P.36/85. Yields obtained in trials in different parts of S. Africa are tabulated; the sucrose content of N.6 was almost always less than that of N:Co.376. However, it is likely to be a useful variety in regions of the main coastal belt having medium to high altitudes. It is resistant to mosaic, red rot and chlorotic streak, fairly resistant to smut and gumming and susceptible to leaf scald and stunting disease. (Horticultural Abstracts 40:7493)

_____. Smut disease - a warning. South African Sugar Journal 52:34-37. 1968. (238)

The symptoms of smut disease (*Ustilago scitaminea*) are described. Recommended control measures comprise the careful selection of seed cane, the immediate removal

of rogue varieties and particularly the susceptible Co.301, and the eradication of smut-infected plants. (Horticultural Abstracts 38:8758)

- * MUTHAIYAN, M. C., SRINIVASAN, K. V. y SINGH, G. R. A new physiological race of *Puccinia erianthi* Padw. and Kham. Indian Phytopathology 19(3):317-318. 1966. (239)

A new race of *P. erianthi* designated race 6, appeared in 3 cultures isolated from Co.62077, Co.349, and H.44-2818. This race appeared only in cooler months and did not possess the high temp. tolerance of race 5. (Review of Applied Mycology 46:3557)

- MUTHUSAMY, S. y SITHANANTHAM, S. Screening of sugarcane varieties for smut resistance. Sugarcane Pathologists' Newsletter no. 13/14:1-2. 1975. (240)

Screening of 103 lines against *Ustilago scitaminea* revealed that resistance occurred in the progenies of Co.453 and Co.603. (Plant Breeding Abstracts 46:9260)

- _____, SITHANANTHAM, S. y BASKARAN, T. L. Studies on incidence of smut in promising sugarcane varieties. Indian Sugar 25(3):183-185. 1975. (241)

Of 12 varieties tested for *Ustilago scitaminea* resistance all were resistant in the main crop except Co.6512. In the ratoon crop Co.419, Co.1290, Co.6406, Co.6411 and Co.6512 were susceptible. (Plant Breeding Abstracts 47:5634)

- _____. Varietal susceptibility to smut (*Ustilago scitaminea* Sydow) in relation to bud characters. South African Sugar Journal 58(5):14. 1974. (242)

También en: Congress of the International Society of Sugar Cane Technologists, 15°, Durban, South Africa, 1974. Edited by J. Dick y D. J. Collingwood. Durban, South Africa, ISSCT, 1974. pp. 289-291.

There was a strong positive correlation in 20 sugarcane vars. between incidence of the fungus and bud sprouting in standing canes, and the position of the germ pore was subapical in most resistant vars. and apical in susceptible ones. Correlations were established for smut and *Chilo indicus* incidence and bud size. (Review of Plant Pathology 54:4129)

- _____. y RAJA, K. T. S. Fungicides in the control of sugar cane smut. Sugarcane Pathologists' Newsletter no. 10:11-13. 1973. (243)

Of 7 fungicides tested in the field against smut (*Ustilago scitaminea*), 0.5% agallol and 0.3% dithane Z-78 were effective as dip treatments of setts before planting. (Review of Plant Pathology 53:1530)

NASR, I. A. Standardization of inoculation techniques for sugarcane smut disease (*Ustilago scitaminea*). Sugarcane Pathologists' Newsletter no. 18:8-9. 1977. (244)

_____. y TALBALLA, H. A. Association of unusual symptoms with smut of sugarcane in the Sudan. Sugarcane Pathologists' Newsletter no. 15/16: 6-8. 1976. (245)

Unusual inflorescence symptoms of culmicolous smut of sugarcane (*Ustilago scitaminea*) and encountered in the Sudan are described. (Review of Plant Pathology 56:374)

_____. y AHMED, M. S. Sugar cane smut in the Sudan. International Sugar Journal 76(903):67. 1974. (246)

Smut (*Ustilago scitaminea*) was first observed at Guneid in the Sudan in 1964 and was subsequently controlled by a combination of pre-planting treatment with Aretan, roguing of infected stools and the abandoning of ratoons. This reduced the level of infection to about 7%. (Horticultural Abstracts 44:8112)

NATARAJAN, S. *et al.* Influence of weather factors on the incidence of *Ustilago scitaminea* Syd. on sugarcane. Indian Sugar 22(11):873-874. 1973. (247)

The incidence of smut was greatest in both resistant and susceptible cane cvs during May, June and July, which were months of high day temperatures and low RH combined with some rainfall. (Horticultural Abstracts 44:891)

* NEW FLORIDA sugarcane variety resists smut. Sugar Journal 42(12):27. 1980. (248)

Smut caused by the fungus *Ustilago scitaminea* is one of the airborne diseases which threaten the sugar-cane industry. The new variety CP 69-1052, a complex trispecies hybrid of *Saccharum officinarum*, *S. spontaneum* and *S. barberi* is not only resistant to smut but also to rust, mosaic, leaf scald and eye spot. It is a good ratooning, high tonnage, late flowering variety which has the same sugar yield per ha as CP 63-588, the leading commercial variety in Florida. (Abstracts on Tropical Agriculture 6:32803)

* NORONHA, A. DO R. Doenças da cana sacarina (*Saccharum officinarum* L.) em Moçambique. Agronomia Moçambicana 5(4):295-303. 1971. (249)

O A., após ter realizado uma prospecção às doenças da cana sacarina (*Saccharum officinarum* L.) em Moçambique, dá notícia das moléstias assinaladas. Refere a presença das bacterioses designadas "escaldão da folha" (*Xanthomonas albilineans*) e "risca vermelha da folha" (*Xanthomonas rubrilineans*) da virose denominada "virus do raquitismo", e das micoses "deformação do topo" (*Fusarium moniliiforme*), "morrão" (*Ustilago*

scitaminea), "ferrugem" (*Puccinia kuehnii*), "podridão das estacas e do colmo" (*Fusarium moniliforme*), "mancha castanha da folha" (*Cercospora longipes*) e da "mancha vermelha da bainha de folha" (*Cercospora vaginiae*).

Entre as lesões devidas a causas ainda não determinadas, assinala a presença de "murcha amarela", da "queimadura da folha" e da "mancha anelar". Refere-se também a lesões devidas a picadas por insectos, designadas "Pseudo-Fiji", e a manchas vermelhas nas nervuras e bainhas das folhas. Em apêndice, refere os efeitos das condições ambientais, dos factores genéticos, da acção fitotóxica de herbicidas e outros factores não transmissíveis, além de assinalar a presença de *Strigga* sp., erva daninha parasita da cana sacarina.

- NUSS, K. J. Seedling selection and resistance to smut disease in sugarcane. In Annual Congress of the South African Sugar Technologists' Association, 49th, Mount Edgecombe, Natal, 1975. Proceedings. Mount Edgecombe, Natal, 1975. pp. 187-188. (250)

Resistance to smut (*Ustilago scitaminea*) is an important selection criterion in the breeding programme at the northern field station at Pongola where the commercial clones are susceptible. The smut incidence in 5 consecutive series of the second selection stage revealed parental clones giving a high proportion of smut-resistant clones. (Horticultural Abstracts 46:8093)

- ORDOSGOITII F., A. Informe sobre la situación del carbón y de la roya de la caña de azúcar en Nicaragua. Managua, 1980. 17 p. (251)

- _____, ESPINOZA, J. y GONZALEZ, V. Situación de la roya de la caña de azúcar en Venezuela. Maracay, Venezuela, CENIAP, 1979. 7 p. (252)

- _____, GONZALEZ, V. y APONTE, A. Situación del carbón de la caña de azúcar en Venezuela. Maracay, Venezuela, CENIAP, 1979. 13 p. (253)

- PASSENDIA, C. E. y MATUO, T. Campanha de combate ao carvão da cana, diagnóstico de situação, medidas corretivas. Campinas, Brasil, Coordenadoria de Assistência Técnica Integral, 1971. 12 p. (254)

- PATHOLOGY. Report. Experiment Station of the South African Sugar Association 1969-1970:36-37. 1971. (255)

As an industry-wide hazard smut is second to ratoon stunting disease in importance. The situation in E. Transvaal is deteriorating and planting of var. NCo 310 may have to be curtailed to bring the disease under control. Standard hot water treatment controls the fungus in infected setts. (Review of Plant Pathology 50:3136a)

PATIL, A. O., BACHCHHAV, M. B. y JADHNY, J. S. An assessment of sugar cane varieties for susceptibility and resistance to sugar cane smut in artificial conditions. In Proceedings of the 5th Joint Convention of the Indian Sugar Technologists' Association 1975:53. 1975. (256)

Of 32 varieties that were screened for susceptibility to *Ustilago scitaminea*, the varieties Co6608, Co6609 and Co62101 proved completely resistant. (Plant Breeding Abstracts 49:9368)

PEREGRINE, W. T. H. Annual report Plant Pathology Laboratory. Bvumbwe, 1968. (257)

This report from Malawi reviews the crop disease situation and records the occurrence of *Puccinia erianthi* for the 1st time on sugarcane. (Review of Applied Mycology 48:2118a)

_____. y WATSON, D. R. W. Annual report of the Plant Pathology section, Dept. of Agriculture, Tanganyika, 1963-1964. 10 p. (258)

The virulent str. of *Colletotrichum coffeanum* causing coffee berry disease has spread to Tanganyika from Kenya and has been present up to 2 yr. Sugarcane rust, *Puccinia erianthi*, is newly recorded for Africa, and has probably been present for 12-15 months. It is not known how the disease arrived on the continent. (Review of Applied Mycology 44:599a)

PINO GUERRA, M. La roya de la caña de azúcar en Venezuela. In Universidad Centro Occidental Lisandro Alvarado, Barquisimeto. 2 Jornadas internas de la Escuela de Agronomía. Resúmenes de trabajos. Barquisimeto, 1980. pp. 16-17. (259)

* PINTO, E. Programas de trabalho do sector de fitopatologia do IIAM de apoio à indústria açucareira. Agronomia Moçambicana 5(4):305-314. 1971. (260)

No presente trabalho descrevem-se as principais doenças que afectam a cultura de cana-de-açúcar em Moçambique, fungão (*Ustilago scitaminea* Sydow) e raquitismo da cana (uma virose), e indicam-se igualmente os programas de trabalho que o sector de Fitopatologia do IIAM tem em curso visando o domínio das doenças acima referidas, bem como o estudo do comportamento das variedades de interesse actual e potencial em relação as mesmas.

Também se faz referência sumária à introdução de novas variedades após a sua adequada quarentena, apresentado-se listas das variedades existentes e em quarentena.

PLANT PROTECTION. Plant Pathology. A. dep. Rep. Dir. Agric. Fishery Hong Kong 1966-67:31-32. 1968. (261)

Sugarcane smut (*Ustilago scitaminea*) was serious in ratoon crops, especially in the Ping Shan area. (Review of Applied Mycology 47:3668c)

PLANT PROTECTION. Plant pathology. Report of the Secretary for Agriculture, Rhodesia 1964-65:54-59. 1966. (262)

New records include *Cercospora pini-densiflora* causing needle blight of *Pinus radiata*; *Sclerotinia sclerotiorum* on lettuce; *Botrytis cinerea* causing warty disease of coffee; and *Albugo candida* on cauliflower. New disease on sugarcane are red rot (*Phyfalospora tucumanensis*), basal stem and root rot (*Marasmius sacchari*), rust (*Puccinia erianthi*), and leaf scald (*Xanthomonas albilineans*). (Review of Applied Mycology 47:2359a)

POMMER, E. H., HIEPKO, G. y RODENBROKER, M. Session 4C. Pests and diseases of tropical perennial crops. In British Insecticide and Fungicide Conference, 7^o, Brighton, England, 1973. Proceedings. London, British Crop Protection Council, 1973. pp. 317-323. (263)

Chemical treatment of sugarcane smut (317-323, 2 diag., 3 tab.) BAS 3192F (w.p. 50% 2.5-dimethyl-furane-3-carbonic acid anilide) and BAS 3271F (w.p. 50% N-cyclohexyl-2.5-dimethyl-furane-3-carbonic acid amide) were highly effective (acting systematically) against *Ustilago scitaminea* in lab. and glasshouse tests. Granulates (5% a.i.) of BAS 3192F were suitable for soil treatment. Release of a.i. was almost constant over 10 days. (Review of Plant Pathology 53:4277b)

PRASADARAO, K. K. et al. Assessment of sugarcane varietal reaction to smut - a new approach. Sugarcane Pathologists' Newsletter no. 23:1-7. 1979. (264)

A method was developed for assessing var. reaction to smut after eliminating the seasonal effect. The association between the number of days taken for manifestation of the first smut whip and incidence of smut were determined for 313 cvs. using data collected over 10 yr. With reference to the product of these two characters (number of days and percentage of healthy plants) in 210 cvs. a discriminant function was set up for differentiating them in respect to their smut reaction. Those cvs. with a discriminant function < 850 were classified as susceptible and those with a value > 1000 as resistant. (Review of Plant Pathology 59: 5894)

* PRESSLEY, J. T., PERDOMO, R. y AYATS, J. D. Sugarcane rust found in the Dominican Republic. Plant Disease Reporter 62(10):843. 1978. (265)

Los autores nos dicen que el primer informe auténtico sobre Roya de la caña de azúcar en República Dominicana se hizo en Cristóbal Colón, en la plantación San Felipe el 3 de julio de 1978. Casi simultáneamente la enfermedad fue comunicada por el Consejo Estatal del Azúcar (CEA). La enfermedad fue observada también por ellos en una visita que realizaron el 17 de julio a Baiguá-División de la Central Romana, distante 40 millas de la plantación San Felipe. En este período las condiciones climáticas fueron ideales para el desarrollo de la roya. La única variedad afectada en ese momento era B43-62. (CV)

- * PRESSLEY, J. T. El tizón del tallo de la caña de azúcar. *Sugar y Azúcar* 73(10): 34-35, 38-39, 75-77, 80. 1978. (266)

Este artículo representa un intento de sintetizar la información reunida en una gran cantidad de artículos, textos e informes sobre los aspectos principales del "tizón" de la caña de azúcar, desde la descripción original de la plaga, la distribución del "tizón" en los distintos países, su forma de transmisión y las diversas técnicas de inoculación usadas. (CV)

- RAJA, K. T. S. *et al.* Effect of smut incidence in plant and ratoon crops on yield and quality. *Sugarcane Pathologists' Newsletter* no. 9:9-10. 1972. (267)

Incidence of *Ustilago scitaminea* on the susceptible var. Co. 419 increased from 1.56% in the plant crop to 40.4% in the 3rd ratoon with yield losses > 67% in the final ratoon; 3 other susceptible vars. were similarly affected. The results confirmed earlier ones that an increase in number of ratoons causes progressive increase in smut and decrease in yield. (Review of Plant Pathology 52:2730)

- * REAÇÃO DE variedades de cana-de-açúcar às principais doenças no Brasil. *Brasil Açucareiro* 92(2):7-14. 1978. (268)

Data are reported from trials on the susceptibility of 285 sugar cane cvs to 2 bacterial diseases, viz. leaf scald (*Xanthomonas albilineans*) and red stripe (*Pseudomonas rubrilineans*), 6 fungus diseases, viz. smut (*Ustilago scitaminea*), stem rot (*Fusarium moniliformis*), eye spot (*Helminthosporium sacchari*), brown spot (*Cercospora longipes*), rind disease (*Pleocyta sacchari*), and red rot (*Colletotrichum falcatum*), and mosaic virus. (Horticultural Abstracts 49:2992)

- THE RECURRING problem of smut. Recognising it and basic control measures. *South African Sugar Journal* 60(4):160-163. 1976. (269)

This article is intended to familiarize sugar-cane growers with the symptoms of smut and with basic control measures. The control measures include, besides breeding for resistant varieties, planting healthy seed cane, eradicating volunteers before re-planting, roguing of whips and ploughing out severely infected fields. (Abstracts on Tropical Agriculture 2:10436)

- REDDY, D. B., ed. *Quarterly Newsletter of the Plant Protection Committee for South East Asia & Pacific Region*. Bangkok, Thailand, FAO, 1969. 12 p.(270)

New records include *Ustilago scitaminea* on sugarcane in Battambang, Cambodia. The affected field was burnt immediately. Bacterial leaf streak (*Xanthomonas oryzaicola*) in W. Malaysia was 1st reported from Kedah State. (Review of Plant Pathology 49:3732)

RELATIVE RESISTANCE of 16 varieties of sugarcane against smut of sugarcane (*Ustilago scitaminea*). In Pakistan Science Conference, Sixteenth, Lyalpur, 1964. Proceedings. s.n.t. pp. C46-C47. (271)

The average percentage infection in 1963-64 is recorded for 16 varieties. (Plant Breeding Abstracts 41:622)

RELEASE OF new variety: N11. South African Sugar Journal 62(6):267. 1978. (272)

N11, derived from the cross Brazilian variety CB40/35 x NCo293, is resistant to major diseases including *Ustilago scitaminea*, *Xanthomonas albilineans* and mosaic and has out-yielded NCo376 under well-watered conditions. (Plant Breeding Abstracts 49:6118)

* RESISTENCIA AL carbón de las variedades de reciente difusión próximas a liberarse a gran cultivo. Argentina. Estación Experimental Agrícola de Tucumán. Publicación Miscelánea no. 62:34-35. 1977. (273)

REYES, R. M. delos. Virulence pattern, aggressiveness and grass morphology of isolates of *Ustilago scitaminea* Sydow on sugarcane (*Saccharum officinarum* Linn.) in the Philippines. Tesis Mag. Sc. Laguna, University of Philippines, 1979. 45 p. (274)

REYES, T. T., EMPIG, L. T. y ATIENZA, C. A. Morphological and physiological studies on the resistance of sugar cane to *Sclerospora sacchari* and *Ustilago scitaminea*. Philippine Sugar Institute Quarterly 20(2):14-17. 1974. (275)

The possible correlation between resistance to these diseases and morphological and/or physiological characteristics was investigated in 12 sugarcane vars. (Review of Plant Pathology 56:5781)

RICAUD, C. y AUTREY, J. C. Identity and importance of sugarcane rust in Mauritius. Sugarcane Pathologists' Newsletter no. 22:15-16. 1979. (276)

When the disease was first reported in 1964 the pathogen was identified as *Puccinia kuehni*, but recent studies after a severe outbreak in 1978 have shown it to be *P. melanocephala*. Reactions of commercially grown vars. are presented. (Review of Plant Pathology 59:3394)

* RIVERA, J. R. Tests on the resistance of some varieties and hybrids to smut disease of sugarcane. Philippine Sugar Institute Quarterly 9(1):3-9. 1963. (277)

Of 30 commercial vars. inoculated 9 were highly resistant, viz: CP29/116, B41-211, N:Co.310, CP29/320, B41-227, Q49, CP36-105, B42-231, and Pepe Cuca. The most susceptible were H37-1933, H44-3098, B34-104, and H32-8560. (Review of Applied Mycology 45:1177)

ROBERT, G. Le charbon de la canne à sucre. Notes et Informations. Centres Techniques de la Canne et du Sucre Guadeloupe no. 1:8-9. 1975. (278)

- * ROGERS, P. F., SIMBWA-BUNNYA, M. M. y EARLY, M. P. A survey of sugar cane diseases and pests in East Africa. East African Agricultural and Forestry Journal 38(2):162-169. 1972. (279)

The major diseases encountered during a survey in 1970 were brown spot (*Cercospora longipes*) and culmicolous smut (*Ustilago scitaminea*). Although sugarcane mosaic virus, *Xanthomonas rubrilineans* and *Gibberella moniliformis* were also seen they were not considered to be important. (Review of Plant Pathology 53:257)

- * ROMAN, A. L. DE. El ICA frente a dos enemigos: la roya y el carbón de la caña de azúcar. ICA Informa (Colombia) 13(4):10-12. 1979. (280)

Ante la aparición en la región del Zulia (Norte de Santander) de la "roya y el carbón de la caña" el ICA, con apoyo de CENICAÑA, están alertando a los agricultores, personal técnico, autoridades y público en general, acerca de esta amenaza sobre la sintomatología, forma de transmisión y la tecnología para su prevención y control. Ya comenzó la campaña de erradicación de la variedad B4362, afectada de roya y se ha declarado en cuarentena el área comprendida entre los ríos Táchira, Zulia y Cucutilla. Se instruyó sobre los métodos para destruir las plantas que presentan síntomas de "carbón"; la variedad atacada es la V49119.

La campaña contra la "Roya y Carbón de la caña" está estudiando la forma de reemplazar las variedades susceptibles a estas enfermedades por otras resistentes a ellas o con un grado de tolerancia. CENICAÑA y el ICA están seleccionando dentro de sus Bancos de Germoplasmas material genético con características de resistencia. También se harán importaciones de variedades resistentes y la Estación Cuarentenaria del Convenio ICA-CENICAÑA que se estableció en Tibaitatá, las recibirá y las someterá a observación antes de su distribución a los productores. (CV)

- ROSSLER, L. A. Sugarcane varieties for the northern irrigated areas of the South African sugar industry. In Annual Congress of the South African Sugar Technologists' Association, 48th, Mount Edgecombe, Natal, 1974. Proceedings. Mount Edgecombe, Natal, 1974. pp. 48-52. (281)

The results are presented of 3 irrigated variety trials planted in the lowveld of the eastern Transvaal and northern Natal. Over a period of 7 years, 7 crops were harvested in each experiment. On the Makatini loamy clay soils along the Pongola River N:Co.334, N:Co.310, N:Co.376, N:Co.293 and N.55/805 were the outstanding cvs in terms of total yields of sugar. On the Maputa sands N:Co.376 and N.55/805 performed the best. Because of varietal susceptibility to smut disease (*Ustilago scitaminea*) and leaf scald (*Xanthomonas albilineans*), the only cvs which should be considered at present for these northern irrigated areas of high yield potential are N:Co 376 and N:Co 334. (Horticultural Abstracts 45:686)

- RYAN, C. C. y LEDGER, P. E. Studies and observations on rust disease in Queensland. In Conference of Australian Society of Sugar Cane Technologists, Cairns, Queensland, 1980. Proceedings. Brisbane, Queensland, 1980. pp. 71-73. (282)

Cvs which are susceptible, intermediate and resistant to *Puccinia melanocephala* are listed. Of numerous sugarcane cvs tested, 32 were resistant. The results of screening 21 fungicides are also discussed. (Horticultural Abstracts 51:1652)

- _____. y EGAN, B. T. Rust on sugar cane (*Puccinia melanocephala*). Australasian Plant Pathology 8(3):46-47. 1979. (283)

This rust was first noted in Australia in Oct. 1978 and by late Dec. it was present in all fields of susceptible sugarcane cvs. between Mossman and Tully. By Apr. 1979 several cane growing areas in NSW had become infected. The source of the outbreak is not known. (Review of Plant Pathology 59:2902)

- * SAHNI, M. L. y CHONA, B. L. Studies on sugarcane rust in India. Indian Phytopathology 18(2):191-203. 1965. (284)

Since about 1950, sugarcane rust which is gradually increasing in India has been studied carefully. In cultural studies the incubation period was found to be 10-11 days both in sugarcane rust and *Erianthus fulvus* rust. Comparative morphological study of rusts on sugarcane and grasses closely related to sugarcane have shown that the causal organism of sugarcane rust is considered as *P. erianthi*. The uredospores of rusts on sugarcane, *E. fulvus*, *Saccharum arundinaceum* and *S. spontaneum* germinated freely in water at 10°C to 30°C, the optimum being about 20°C, and the time taken to germinate is within 6 to 12 hours in the first two while uredospores of *S. spontaneum*, *S. munja* and *S. arundinaceum* rust started to germinate within six hours. The uredospores of sugarcane rust, were found to remain viable for 12 weeks at 8-10°C and for 5 weeks at room temperature (18-28°C). The sugarcane could be infected with uredospores of *S. spontaneum* rust well as *Erianthus fulvus* rust. Optimum temperature for the germination of teleutospores of sugarcane and *E. fulvus* rusts seems to be 20°C. Dormancy in teleutospores was noted. These teleutospores failed to infect their respective hosts indicating thereby that these rusts are not autoecious. In a preliminary varietal resistance test out of 22 varieties three varieties, namely Co.513, Co.S.186 and Co.S.510 were found to be susceptible.

- SANDHU, S. S. *et al.* Screening of promising sugarcane varieties for resistance to smut by *Ustilago scitaminea* Syd. in the Punjab. Indian Sugar 25(5):423-426. 1975. (285)

Tabulated data are presented on the reaction of 92 cane cvs to smut disease in screening experiments during 1966-74. Sixty-one cvs were classified as resistant. (Horticultural Abstracts 46:11870)

SANDHU, S. S., BHATTI, D. S. y RATTAN, B. K. Extent of losses in sugarcane caused by red rot (*Physalospora tucumanensis* Speg.) and smut (*Ustilago scitaminea* Syd.). Journal Research, Ludhiana 6(2):341-344. 1969. (286)

También en: Journal Research Punjab Agric. 6:334-344. 1969.

In the Punjab, *P. tucumanensis* caused av. reduction in weight of 12-41.5% in the sugarcane vars. Co. 312, Co. 313, Co. 453 and Co. L. 29. The decrease in brix of juice was 2.7-21.7% and in sucrose 12.2-31.2%. The expected sugar recovery decreased by 17.1-36.5%. Loss in cane weight due to *U. scitaminea* was 70.7-75.3%; reduction in brix was 6-11.1%, in sucrose 11.8-22.2% and in commercial sugar 10.7-28.7%. (Review of Plant Pathology 49:2621)

_____. y MANN, N. S. Varietal resistance to sugarcane smut caused by *Ustilago scitaminea* Syd. in the Punjab. Journal Res., Ludhiana 3(4): 410-413. 1966. (287)

También en: Journal Research Punjab Agric. 3:410-413. 1966.

In inoculation tests and field trials in 1954-65, vars. Co. 453, Co. 617, Co. J39, and Co. L.9 were resistant to *U. scitaminea*, while Co. 312, Co. 313, Co. 838, Co. 886, Co. 1111, Co. L.29, and Co. S.321 were susceptible. (Review of Applied Mycology 46:2508)

* SANGUINO, A. y TOKESHI, H. Vácuo e *Ustilago scitaminea* alterando a brotação de cana de açúcar. Brasil Açucareiro 87(6):30-35. 1976. (288)

Os autores estudaram o efeito do vácuo e *Ustilago scitaminea* Sidow na brotação de cana-de-açúcar variedade NA 56-79 (suscetível) e CB 41-76 (resistente). Foi determinado os efeitos em tres períodos de brotação e o experimento constava de 4 tratamentos e 8 repetições analisadas estatisticamente. Dos resultados chegou-se às conclusões: a) nos testes de resistência de cana-de-açúcar a *Ustilago scitaminea* o uso de vácuo é prejudicial à brotação e crescimento dos brotos emergidos da cana; b) na inoculação por imersão o fungo parece não ter efeito prejudicial na brotação; c) na variedade de NA 56-79, o vácuo + fungo foi mais prejudicial que só vácuo, mas na variedade CB 41-76 o efeito foi reverso; d) o inóculo parece estimular o vigor inicial da brotação quando comparado com parcelas não inoculadas.

SANKPAL, S. D. y NIMBALKAR, J. D. Physiological studies in smut infected sugarcane var. Co. 740. Indian Journal of Experimental Biology 18(1): 95-96. 1980. (289)

- SARMA, M. N. y RAO, S. V. R. Some observations on sugarcane rust in Andhra Pradesh (India). Sugarcane Pathologists' Newsletter no. 22:13-14. 1979. (290)

The incidence of sugarcane rust on locally grown vars. is described with special reference to seasonal and climatic factors. Results of fungicide tests are presented but offer little prospect of economic returns. (Review of Plant Pathology 59:3393)

- SARWAR, M. y JAGIRDAR, H. A. Reaction of different varieties of sugarcane to whip-smut in Sind. Pakistan Journal of Science 27(1/6):31-32. 1975. (291)

Of 76 varieties inoculated with *Ustilago scitaminea* during 1960 to 1968, Co402, Co622, PR1000, L38, Q49, NCo310 and 16538 showed the most resistance, although none showed complete resistance. (Plant Breeding Abstracts 48:7810)

- * SATHE, A. V. Nomenclatural revision of the common rust fungus affecting sugar-cane. Current Science 40(2):42-43. 1971. (292)

A revised nomenclature for the common rust on sugar cane is presented. The name *Puccinia melanocephala* is proposed as the acceptable name for common rust of sugar cane. (Plant Breeding Abstracts 42:960)

- SATO, T. Histological observations of smut sori (*Ustilago scitaminea* Syd.) on young leaves of sugarcane plant. Proceedings of the Association for Plant Protection of Kyushu no. 23:32-33. 1977. (293)

- * SAXENA, K. M. S. y SINGH, K. The mating pattern in *Ustilago scitaminea*. Indian Phytopathology 19(3):286-289. 1966. (294)

Fourteen single sporidial isolations of *Ustilago scitaminea* collected from two far apart localities and from different sugarcane varieties were made at random from a mass of sporidia and grown on agar medium containing yeast extract, peptone, KH_2PO_4 and trace elements. On this medium the sporidia multiplied rapidly and grew into yeast-like colonies. When paired in all possible combinations on agar medium, the compatible combinations showed abundant fusion of sporidia and resulted in distinct mycelium. The results show that there are only two mating types in *U. scitaminea*.

- SAXENA, S. K. y KHAN, A. M. Effect of carbon sources on germination of chlamydospores of *Ustilago scitaminea* Syd. Mycopathologia et Mycologia Applicata 43(3-4):317-322. 1971. (295)

In further studies, chlamydospores from sugarcane from Aligarh and Coimbatore germinated better in galactose than

in mannitol whereas collections from other localities germinated better in mannitol. C sources also influenced type of germination. In media where germination was high (glucose, arabinose, xylose, sucrose and rhamnose) epibasidia with 4 sporidia were typical whereas in less favourable media mycelial branches were formed in place of sporidia. (Review of Plant Pathology 51:623)

- * SAXENA, S. K. y KHAN, A. M. Effect of host diffusates on germination of chlamydospores of (*Ustilago scitaminea* Syd. Journal of the Indian Botanical Society 50(1):53-56. 1971. (296)

Exudates from the buds of seven sugar-cane varieties stimulated the germination of chlamydospores of *U. scitaminea* from seven different localities. Different collections of chlamydospores differed in germination percentage. (Plant Breeding Abstracts 42:3074)

- * _____ y KHAN, A. M. Studies on sugarcane smut caused by *Ustilago scitaminea* Syd. II. Effect of relative humidity on spore germination. Journal of the Indian Botanical Society 43(1):61-68. 1964. (297)

The germination of chlamydospores of different collections of *Ustilago scitaminea* Syd. was optimum in 100 per cent relative humidity at 25° and 30°C. with no germination in 90 per cent relative humidity at any of the temperatures tested. However, significant differences were observed in the percentage germination of different collections at different relative humidities and temperatures.

When inoculated setts of sugarcane were exposed for eight hours at 100 per cent relative humidity and 25°-30°C. sufficiently high infection occurred though for optimum infection it took 24 hours.

- * _____ y KHAN, A. M. Studies on sugarcane smut caused by *Ustilago scitaminea* Syd. I. Effect of temperature on spore germination. Journal of the Indian Botanical Society 42(2):195-203. 1963. (298)

The chlamydospores of *Ustilago scitaminea* Syd. from seven different localities germinated at temperatures ranging between 15° and 40°C. The optimum temperature for all the collections ranged between 25° and 30°C. The chlamydospore collections showed significant differences in the percentage and rate of germination at various temperatures. Aligarh and Punjab were fast germinators while Coimbatore and Cuddalore were slow germinators at all the temperatures. In tests made in controlled temperature tanks and in the field, infection was more severe between 25° and 30°C. the range of temperature optimum for chlamydospore germination.

- * SCANDALIARIS, J. y MARIOTTI, J. Variedades de caña de azúcar para la provincia de Tucumán. Argentina. Estación Experimental Agrícola de Tucumán. Boletín no. 130. 1978. 15 p. (299)

La renovación periódica de variedades en el cultivo comercial de caña de azúcar, tiene como objetivo fundamental alcanzar

niveles de mayor productividad; ésto se logra directamente por el aumento de la capacidad de producción e indirectamente a través de una mayor resistencia a enfermedades y plagas y adopción de nuevos métodos de manejo. En relación a las variedades cultivadas en Tucumán su calificación en cuanto a resistencia es la siguiente:

<u>Variedades</u>	<u>Estría roja ("Polvillo")</u>	<u>Mosaico</u>	<u>Carbón</u>
Tuc. 67-24		Resistente	Moderadamente susceptible
Tuc. 67-27		Altamente resistente	Altamente resistente
Tuc. 68-18	Susceptible	Muy altamente resistente	Resistente
Tuc. 68-19	Resistente	Altamente resistente	Susceptible
N.A. 56-30	Susceptible	Medianamente susceptible	Medianamente resistente
N.A. 56-62	Susceptible	Susceptible	Resistente
N.A. 56-79	Susceptible	Susceptible	Susceptible
N.A. 63-30		Altamente susceptible	
NCo. 310	Resistente	Susceptible	Susceptible
C.P. 48-103	Resistente	Resistente	Resistente

La variedad Tuc. 68-19, una de las tres variedades de mayor nivel de producción, resulta ser sensible al carbón. Es necesario mantener los cultivos comerciales en constante observación. (CV.)

- * SENEVIRATNE, S. N. DE S. Leaf scald of sugar-cane in Ceylon. Tropical Agriculturist 118(3):109-116. 1962. (300)

Symptoms of bacterial leaf scald of sugar-cane in Ceylon, caused by *Xanthomonas albilineans*, include white- or cream-striped leaves, complete chlorosis of leaves, withering from the tip downward combined with a scorched appearance of the leaf, the development of nodal buds along the length of the stalk, shortened internodes, and stunted chlorotic shoots. A successful inoculation method has allowed of the division of the sugar-cane varieties used in Ceylon in 3 susceptibility groups. Although the occurrence of *X. albilineans* in Ceylon is still rather limited, it is considered as one of the 3 potentially dangerous diseases of sugar-cane, the other 2 being ratoon stunting diseases caused by a virus, and smut caused by the fungus *Ustilago scitaminea*. The use of resistant varieties is seen as the most satisfactory method of control. (Tropical Abstracts 20:878)

- SHARMA, B. L., BARTARIA, A. M. y JOSHI, L. K. Screening of sugarcane varieties against smut in Harsi Tract, Madhya Pradesh. JNKVV Research Journal 5(2):124-125. 1971. (301)

SHEN, I. S. Sugarcane breeding (between 1964 and 1976). *Taiwan Sugar* 23(2): 83-86. 1976. (302)

The two most recently bred varieties are F176 and F177. The former has a moderate number of tillers and has resistance to *Ustilago scitaminea*, *Sclerospora sacchari*, *Stagonospora sacchari*, mosaic virus and to ratoon stunting virus. The latter has many tillers and has resistance to *Leptosphaeria taiwanensis*, *Stagonospora sacchari*, *Colletotrichum falcatum* and *Sclerospora sacchari*. (Plant Breeding Abstracts 47: 2504)

SHINGTE, V. V. *et al.* Screening of sugarcane varieties against smut disease in Maharashtra State. *Indian Sugar* 29(2):81-85. 1979. (303)

Of 157 sugar cane cvs screened against smut in 3-year trials, MS.7054, MS.7067, MS.7201, CoM.7227, CoM.7144 and CoM.7152 were resistant. The highest yields were obtained from CoM.7227, followed by MS.7201. Data are also presented on their juice quality. (Horticultural Abstracts 50:6726)

SILVA, W. D. DA y SANGUINO, A. Evaluating reaction of American cane varieties to *Ustilago scitaminea* in Brazil. *Sugarcane Pathologists' Newsletter* no. 21:10-11. 1978. (304)

The results are presented of tests to evaluate the reactions of 276 cultivars. (Plant Breeding Abstracts 50:5321)

SIMBWA-BUNNYA, M. M. Varietal resistance to some diseases in Uganda. *Sugarcane Pathologists' Newsletter* no. 20:49. 1978. (305)

The results of trials for resistance to sugar cane mosaic, *Cercospora longipes*, *Ustilago scitaminea* and *Puccinia* sp. are presented. (Plant Breeding Abstracts 49:10328)

_____. y MYANJA KASIRYE, E. Resistance trial results. East African Agriculture and Forestry Research Organization, Kenya. Annual Report 1975. Nairobi, Kenya, 1977. pp. 112-116. (306)

These results showed that most of the EA sugar-cane varieties were very susceptible to the smut fungus disease (*Ustilago scitaminea*). Of the 12 EA varieties in the trial, only 1 (EA 69-34) was immune, 3 (EA 69-39, 69-40 and 69-63) were resistant and 8 were susceptible to extremely susceptible. EA 69-64 was even more susceptible than E 88/66, used in the test as the "susceptible control". Varietal susceptibility is tabulated. Though the EA series from Tanzania were not included in this study, it is expected that most of these clones will be in the "reject group rating" during the critical ratoon scoring. (Abstracts of Tropical Agriculture 3:18026)

- * SIMMONDS, N. W. Towards a strategy for sugar cane smut control in the West Indies. *International Sugar Journal* 78:329-330. 1976. (307)

The appearance of smut (*Ustilago scitaminea*) in Martinique and Guyana in 1974 is an indication that the disease will almost certainly spread rapidly throughout tropical America. The relative costs of replacing smut susceptible cvs. with resistant lines either without disturbing the normal replanting cycle or by a rapid replanting programme are discussed. The former strategy appears to be preferable. Preliminary calculations indicate that the long term costs of cane breeding will be far exceeded by the benefits from smut resistance alone. (Review of Plant Pathology 56:2651)

- SINGH, G. R. Infection uptake of sugar cane smut for accurate rating of varieties. *Indian Sugar* 27:591-595. 1978. (308)

Response to inoculation with *Ustilago scitaminea* was noted in eight varieties for six years. A three-year study of response to inoculation was found necessary for an accurate assessment of susceptibility. (Plant Breeding Abstracts 50:1397)

- SINGH, H. N., SINGH, S. B. y SHARMA, S. Co.S.770- an outstanding sugarcane variety for Uttar Pradesh. *Indian Sugar Crops Journal* 5(4):60-65. 1978. (309)

Sugarcane cv. Co.S.770 was compared with numerous cvs in standard variety trials during 1974-75, 1975-76 and 1976-77. The results are tabulated. Co.S.770 is a late cv. with high sugar production/unit area, moderately resistant to red rot and smut, resistant to wilt and moderately susceptible to albino. It is recommended for commercial cultivation. (Horticultural Abstracts 50:3802)

- SINGH, K., SINHA, O. K. y MISRA, S. R. A rapid technique for detecting smut infection in lateral buds of sugarcane. *Sugarcane Pathologists' Newsletter* no. 23:25. 1979. (310)

A staining method is outlined for detecting *Ustilago scitaminea* in meristematic tissue. (Review of Plant Pathology 59:5895)

- * _____, BUDHRAJA, T. R. y LAL, A. An evaluation of the negative-pressure technique for smut inoculation in sugarcane. *Indian Journal of Agricultural Sciences* 45(9):403-404. 1975. (311)

A negative-pressure technique was evaluated for the inoculation of smut disease in sugarcane caused by *Ustilago scitaminea* Sydow for large-scale varietal screening. This technique, involving forced infiltration of spore suspension between bud-scales, significantly increased the mean infection to 45.08% as against 16.9% with the conventional method of immersing setts in spore suspension. It also reduced the inter-year variability in these tests when compared with the conventional method.

SINGH, K. y MUTHAIYAN, M. C. Efficacy of fungicides against *Puccinia erianthi* Padw. and Khan causing rust of sugar cane. In Congress of the International Society of Sugarcane Technologists, 13th, Taiwan, 1968. Proceedings. s.l., s.e., 1969. pp. 1203-1207. (312)

The efficacy of certain Cu, S, Ni, thiram and thiocarbamate fungicides against the sugar cane rust organism, *P. erianthi*, was tested in laboratory and field experiments. The chemicals were effective in suppressing infection, and when applied after infection had taken place the number and size of the pustules were reduced. Both the viability and number of spores formed in such pustules were also diminished. The time for which a chemical was effective under field conditions was determined. A mixture of nickel sulphate and Ferbam was the most effective treatment in all tests. The results are discussed. (Horticultural Abstracts 41:2764)

* _____, BUDHRAJA, T. R. y LAL, A. Variations in the longevity of teleospores of *Ustilago scitaminea* Syd. Indian Phytopathology 19(4): 394-396. 1966. (313)

Longevity varied from 56 to 1,306 days, depending on the collection, locality, and sugarcane var., which may indicate the existence of physiologic strains within *U. scitaminea*. (Review of Applied Mycology 47:619)

_____. Mycology. Report of the Indian Institute of Sugarcane Research, Lucknow 1961-62:76-85. 1963; 1962-63:59-77. 1964. (314)

An improvement is reported in the technique of inoculation by the plug method used in studying red rot (*Colletotrichum falcatum*) whereby variation in lesion length is reduced. Highly significant differences were found in the linear spread of different isolates on Co. 622. A technique for nodal inoculation involved painting the nodes on pieces of cane with a spore suspension and then sealing these cuttings in polythene bags and incubating at c. 27°C. An investigation of the possible synergism between the wilt organism (*Cephalosporium sacchari*) and *G. tucumanensis* showed that the former travelled through all internodes visibly affected by red rot.

Inoculation of setts with *Ustilago scitaminea* by smearing with a spore suspension after removal of the outer bud scales, or by submerging in a spore suspension under reduced pressure for 10 min., gave more infection than immersion in a spore suspension under normal pressure. (Review of Applied Mycology 44: 820a)

* _____ y TIWARI, M. M. Sugarcane rust - Collateral hosts and physiologic specialisation. Indian Journal Sugarcane Research Development 8(3):275-276. 1964. (315)

It was found in Uttar Pradesh State (India), that different species of *Puccinia* which cause rust on various wild grasses may infect certain sugarcane clones and produce rust symptoms

identical to those of the original sugar-cane rust, *Puccinia erianthi*. Variety Co.475 suffered badly from rust in one locality while remaining free from it in a second locality; the opposite was true with Co.419. It appeared that there were at least 2 races of the fungus with different parasitic behaviour and different geographical distribution. Resistance to the fungus is possibly based upon the capacity of the host plant to react to the infecting hypha by producing a gummy substance which seals out the intruding organism; or perhaps the cells around the infecting hypha are killed and the fungus, being an obligate parasite, ceases to develop as a result of starvation. (Tropical Abstracts 20:405)

SINGH, S. Reactions of some Puerto Rican and Hawaiian parental varieties of sugarcane to smut in India. *Indian Sugar* 20(9):673-674. 1970. (316)

The reactions of 54 Puerto Rican and 40 Hawaiian sugar cane varieties to *Ustilago scitaminea* are classified. (Horticultural Abstracts 42:2657)

SINTESIS DE las experimentaciones sobre la caña de azúcar en Ferkessedougou (Costa de Marfil). Campaña 1976-1977. Doc. I.R.A.T. 1977. 19 p. (317)

Este informe expone los resultados que conciernen el calendario de cosecha, la selección varietal, la fertilización, el cultivo pluvial y las necesidades en agua. He aquí algunos resultados: salvo casos de fuerza mayor, hay que comenzar la corta desde el 1° de noviembre, e incluso fines de octubre para evitar los riesgos lluvia-cosecha; se cultivan cinco variedades sobre las 5986 Ha: NCo 310, NCo 376, M31.45, B 37.172 y Co 449 de las que las cosechas pueden repartirse complementariamente en el tiempo, de noviembre a marzo; las variedades NCo 310 y B 37.172 deben ser reemplazadas a causa de su sensibilidad al carbón (*Ustilago scitaminea*) y a los borers; las variedades Ragnar, Q 63, Q 82, Phil 53.33 y Eros presentan cualidades interesantes; la colección comprende 100 variedades de toda clase de orígenes; la fórmula de fertilización mineral más económica es 130 N - 70 P - 145 K; el cultivo pluvial es posible, según ciertas condiciones, con una variedad rústica NCo 376 (replantación cada 4 años, producción: 60 Tm/Ha, abonado: 105 N - 55 P); las necesidades en agua se han establecido en 8000 m³/Ha/año como media, es decir 16 mm de agua por tonelada de cañas. (Agritrop 2:536)

* SINTOMAS NO cartucho e/ou ápice do colmo. C.1: Carvão. In Brasil. Programa Nacional de Melhoramento de cana-de-açúcar. Guia para identificação de doenças e deficiências nutricionais da cana-de-açúcar no Brasil. Piracicaba, Brasil, 1977. p. 21. (318)

SMUT DISEASE and hot water treatment. *South African Sugar* 54(5):309. 1970. (319)

In a preliminary greenhouse trial, conducted in the Rep. of S. Africa, seed setts of the sugar-cane var. 64L.7, infected with smut disease (*Ustilago scitaminea*) were treated in hot

water (50.5°C) for 30 minutes, 1 hr, or 2 hrs. Cane grown from setts treated for 1 or 2 hrs did not show any smut symptoms, compared with 83% and 5.5% in the non-treated cane and the cane treated for 30 minutes, respectively. (Tropical Abstracts 26:458)

SMUT DISEASE - a warning. South African Sugar Journal 52(1):34-37. 1968. (320)

NCo310 is susceptible to *Ustilago scitaminea*, but more resistant than Co301, and NCo376 is resistant. (Plant Breeding Abstracts 38:6583)

SMUT DISEASE in Jamaica. Barbados Sugar Industry Review no. 30:10. 1976. (321)

This is the first report of the occurrence of smut disease on sugar-cane in Jamaica. The cane variety HJ5741 is highly susceptible to the disease. Since > 50% of the cane grown in the country is of this variety, farmers are advised to replace it with other varieties known to be resistant to the disease. (Abstracts on Tropical Agriculture 4:18451)

* SMUT IDENTIFIED in Jamaica. Sugar Journal 39(8):32. 1977. (322)

Sugar-cane smut disease, *Ustilago scitaminea*, was discovered in Jamaica in Nov. 1976, following its appearance in Guyana and Martinique in 1974, and in Trinidad in April 1976. (Abstracts on Tropical Agriculture 3:15103)

* SREERAMULU, T. y VITTAL, B. P. R. Spore dispersal of the sugarcane smut (*Ustilago scitaminea*). Transactions of the British Mycological Society 58(2): 301-312. 1972. (323)

The incidence of chlamydospores of *Ustilago scitaminea* Syd. in air within and above sugarcane plots planted with smut-inoculated setts was measured in three consecutive seasons by two Hirst traps with their orifices at 1.22 and 5.79 m above ground level. With the emergence of whips resulting from the primary infection, airborne inoculum increased sharply inside the crop between June and August. A second and larger peak appeared after October, coinciding with the second flush in whip production due to secondary infection. Spore concentrations recorded above the crop were 5-8 times lower than those inside and showed only one seasonal peak occurring after October. Both the numbers of dispersion units (spore clumps) and of total spores showed a day-time dispersal maximum, occurring before noon inside the crop, and at noon above the crop. Observations of the number of whips emerging from the smutted plants, the size and rate of increase in the whip lengths, and the rates at which spores were shed from the whips were related to changes in the catches of smut spores and to weather in 1967. Rapid shedding of spores from the whips was generally encouraged by dry and reduced by wet weather, and was affected by the intensity and duration of

rainfall. Maximal dispersal occurred at 22-24°C and 50-60% r.h. Simultaneous suction air sampling at different points in relation to the smutted field showed that dispersal normally occurs up to a distance of 20 to 40 m from a known source.

- * SREERAMULU, T. y VITTAL, B. P. R. Periodicity in the uredospore content of air within and above a sugarcane field. *Journal of the Indian Botanical Society* 50(1):39-44. 1971. (524)

Counts of uredospores of the sugarcane rust were taken from the catches on slides exposed in two Hirst spore traps located at 1.22 and 5.79 m.a.g.l. in a sugarcane field over a period of three consecutive crop seasons at the Sugarcane Research Station, Anakapalle, Andhra Pradesh, India. Though considerable seasonal and hourly variations were found in the catches within and above the crop height, the occurrence of periodicity patterns with distinct seasonal and diurnal peaks was noticed in each year. In general they appeared in the periods from October to February with a peak sometime in December-January. Diurnal periodicity curves derived from the data indicate that they may be uni-or bi-modal with maximal concentrations appearing normally during the daytime (with the daily peaks recurring between 10 A.M. and 2 P.M.). But data collected showed that extreme hour to hour variations and rapid changes occur at different times on many days with the time of highest catch showing erratic variation.

- SRINIVASAN, K. V. y ALEXANDER, K. C. Sources of resistance to red rot and smut in the species of *Saccharum*. *Sugarcane Pathologists' Newsletter* no. 6:6-7. 1971. (325)

In a collection of 1200 clones, one third of those of *S. barberi* and *S. spontaneum* were resistant to *Glomerella tucumanensis* while many of *S. spontaneum* and *S. officinarum* were resistant to *Ustilago scitaminea*. (*Plant Breeding Abstracts* 44:1864)

- ., ALEXANDER, K. C. y MUTHAIYAN, M. C. *Plant pathology*. Coimbatore, New Delhi. Sugarcane Breeding Institute Report 1962-63. 1965. pp. 39-45. (326)

Of 612 clones tested for resistance to red rot *Saccharum barberi* var. Matua Shaj was highly resistant, 4 other *barberi* clones were resistant, and 2 moderately so. Only 7 of 43 clones of *S. officinarum* were resistant to smut, contrary to general belief in the resistance of this *S. sp.* Progenies with the lines Co.419, Co.527, and B.O.17 among the parents were more often susceptible to rust. (*Review of Applied Mycology* 45:1173)

- STEINER, G. W. *et al.* Present state of smut in Hawaii. *Sugarcane Pathologists' Newsletter* no. 13/14:26. 1975. (327)

STEVENSON, G. C. Genetics and breedings of sugarcane. London, Longmans, 1965. 284 p. (328)

In this monograph, one of the Tropical Sciences Series, pp. 141-153 deal with the inheritance of resistance to *Xanthomonas vasculorum*, sugarcane mosaic virus, *Ustilago scitaminea*, *X. albilineans*, *Physalospora tucumanensis*, and *Sclerospora sacchari*. (Review of Applied Mycology 45:2233)

* SUGARCANE. Atividades do Instituto Biológico durante o ano de 1975. *O Biológico (Brasil)* 42(1/2):15. 1976. (329)

Of 162 clones tested, 82 were resistant to *U. scitaminea*. (Plant Breeding Abstracts 47:6167)

SUGARCANE PRODUCTION rises considerably in Thailand. *Crop Protection Courier* 14(2):20. 1974. (330)

Sugar cane is grown in many parts of Thailand and the current area is 256.000 ha. Yields are still low, averaging 50 tons of cane/ha. Pests and diseases are not yet a problem. Red rot (*Colletotrichum falcatum*) and pineapple disease (*Ceratostomella paradoxa*) occur only sporadically. There is some incidence of smut (*Ustilago scitaminea*), especially in ratoon crops. Borers (*Diatraea saccharalis*) attack some plantations. The major problem is weed infestation, which reduces production by 10-15%. Satisfactory control has been obtained with a mixture of metribuzin and 2,4-D, applied at the time when the rows meet. (Horticultural Abstracts 45:8979)

* SUGARCANE SMUT. Cause: *Ustilago scitaminea* Sydow. In Edgerton, C. W. Sugarcane and its diseases. Baton Rouge, Louisiana State University Press, 1958. pp. 117-121. (331)

TAIWAN. SUGAR RESEARCH INSTITUTE. Annual report 1976-77. Tainan, Taiwan, 1978. 65 p. (332)

Clones 67-9, 69-463, 70-4052, 70-5122 and 70-7501 performed particularly well in regional varietal tests and are recommended for release. The new variety F178 (69-5048), from the cross 59-113 x 58-2566 has been released. It shows profuse tillering, good ratooning and sparse flowering. The sucrose content is higher than that of F160. F178 is highly resistant to *Leptosphaeria taiwanensis* and *Ustilago scitaminea*, resistant to *Sclerospora sacchari* and *Stagonospora sacchari* and moderately resistant to *Physalospora tucumanensis*. Some plants of *Miscanthus floridulus* with resistance to *Sclerospora sacchari* and *U. scitaminea* have been crossed as male parents with the sugar-cane varieties F146 and F153. Two promising mutants with high sugar content have been induced in F160 by treatment with γ rays. Mutant 73-4082 matures early and is typhoon resistant. It is also more resistant to *Sclerospora sacchari* and *U. scitaminea* than F160. Mutant 73-4078 is more vigorous than F160 and more resistant to *Sclerospora sacchari*. Induced mutants of F146,

F173 and F177 have shown high resistance to *U. scitaminea* while forms with reduced leaf-sheath hairiness have been induced by γ irradiation of F172. Ten lines or varieties have shown considerable resistance to white-leaf disease. In artificial tests on 15 crosses, the percentage of seedlings eliminated after larval infestation by *Argyroplaca schistaceana* was lowest (10.8%) in F158 x F171. The proportion of the population with any particular percentage of damaged internodes twelve months after planting differed widely among the crosses. (Plant Breeding Abstracts 49: 1912)

- * TALBALLA, H. A. Smut on true seedlings of sugarcane. Plant Disease Reporter 53(12):992-993. 1969. (333)

El autor informa sobre las investigaciones realizadas sobre contaminación del "carbón" en semilla de caña de azúcar y el impacto que esto puede causar sobre la metodología de búsqueda de variedades resistentes al carbón. (CV)

- * TESTES DE carvão. Brasil Açucareiro 84(3):II-III. 1974. (334)

THOMPSON, G. M. Plant breeding pathology. In Mount Edgecombe, Natal. Experiment Station South African Sugar Association. Annual report 1970-1971. Mount Edgecombe, Natal, 1972. pp. 36-37. (335)

The survey on smut showed an increase from 0.6% in 1969 to 1% in 1971. Most of the affected cane was NCO 310. In the replacement programme NCO 334 is recommended as the only safe alternative to NCO 376. (Review of Plant Pathology 51:2807a)

_____. Smut disease and hot water treatment. Sugarcane Pathologists' Newsletter no. 5:48. 1970. (336)

Preliminary tests indicate that latent smut infections in seed cane can be controlled by the standard hot water treatment process against sugarcane ratoon stunting (2 hr at 50.5°C). (Review of Plant Pathology 50:933)

TILAK, K. V. B. R. Studies on the incidence of smut disease (*Ustilago scitaminea* Syd.) of sugarcane (*Saccharum officinarum* L.) grown on lateritic soil. Acta Agronomica Academiae Scientiarum Hungarica 17(3-4):299-302. 1968. (337)

Max. infection was seasonal and occurred in July-Aug., coinciding with the rainy season when the crop was 4 months old. The period also corresponds to initial formation of sugars in the stalk. N increased the level of infection, while P and K reduced disease incidence. (Review of Applied Mycology 47:3202)

- * TODD, E. H. y SUMMER, T. E. Sugarcane rust inoculation technique and varietal resistance ratings in Florida. Sugar Journal 42(9):17 1980. (338)

En 1979 U.S. Sugar Corporation descubrió roya en caña de azúcar en Florida. Las variedades comerciales atacadas eran la C.P.65-357, C.P.63-588 y C1.41-233. Se realizaron experimentos con técnicas de inoculación y durante 10 meses se realizaron observaciones de campo para establecer una clasificación varietal relacionada con la resistencia a la roya. (CV)

Variety	Rating*	Variety	Rating†
Cl. 41-191	2	Cl. 65-260	2
Cl. 41-223	4	Cl. 65-279	2-3
Cl. 49-200	1	Cl. 65-294	1
Cl. 50-381	3	Cl. 69-245	5
Cl. 52-39	0	Cl. 75-902	5
Cl. 54-312	1	C.P. 56-59	0
Cl. 54-334	2-3	C.P. 56-63	1
Cl. 54-336	2	C.P. 57-614	2
Cl. 54-378	2-3	C.P. 57-603	2-3
Cl. 54-405	1	C.F. 59-73	2-3
Cl. 54-1910	1	C.P. 62-374	0
Cl. 59-2	2	C.P. 63-306	2
Cl. 59-172	1	C.F. 63-588	3
Cl. 59-391	1	C.P. 65-357	3
Cl. 59-1052	1	C.F. 68-1026	0
Cl. 59-1167	1	C.P. 68-1067	2
Cl. 59-1332	0	C.P. 70-1133	1
Cl. 61-5	0	L. 61-49	3
Cl. 61-205	0	US 59-16-1	3
Cl. 61-620	0		

* Rating: 0-5; 0-2 resistant; 3-5 susceptible

Este cuadro fue tomado directamente de la publicación

- * _____ . Sugarcane smut in Florida. Sugar Journal 41(3):23. 1978. (339)

Sugarcane smut, caused by *Ustilago scitaminea* Syd., was discovered and confirmed on June 28, 1978, on U.S. Sugar Corporation property in an isolated area of experimental varieties near Clewiston, Florida. Infected plant symptoms as described by Alfieri, were typical in every respect. Microscopic examination of the fungus revealed unquestionable clusters of chlamydospores and many sporidia and left no doubt that the disease was indeed sugarcane smut. This discovery represents the first authenticated report of sugarcane smut in the continental United States, although its eventual arrival in the United States had been anticipated. A large smut infected area comprising approximately 400 acres was discovered on July 6 four to five miles from the site of the original discovery, and this later discovery totally obviated any opportunity to eradicate or contain the disease. At this time several other minor points of infection have been confirmed in scattered areas up to 7 miles from the site first discovered. The Research Department of U.S. Sugar Corporation,

in cooperation with the U.S.D.A. station at Canal Point, Florida, has initiated replicated tests to screen 450 commercial and experimental CL(Clewiston) and CP (Canal Point) sugarcane clones for resistance to the disease. Planting of the inoculated seedcane was completed on July 13, 1978, in a field contiguous to a confirmed site of heavy infection. The test field will be closely monitored, and infected stools will be removed and destroyed as whips (sporangiophores) appear. Information obtained from these tests will be used as a guide in adjusting fall and winter planting scheduled this year (1978) in the Florida sugarcane industry.

- * TOFFANO, W. B. Cruzamentos intra e interspecíficos com os fungos causadores de carvões *Ustilago scitaminea* Syd. e *Sorosporium reilianum* - McAlp. Arquivos do Instituto Biológico (Brasil) 44(1/2):1-9. 1977. (340)

Using monosporidic cultures of both species, inoculations were made in sugarcane and corn. *Ustilago scitaminea* infected sugarcane and corn and only corn was infected by *Sorosporium reilianum*. The interspecific crosses strongly infected corn but didn't infect sugarcane. The disease obtained showed intermediate symptoms of sugarcane and corn smut.

A sterile mycelia was isolated from the corn plants and only in one case there were chlamidospores that didn't cause any infection. When the crosses were inside the species it was possible to obtain the two original sexual groups. This didn't happen when the crosses were done by crossing the two different genera, when one sex disappeared. This was observed by back crosses.

The results showed a hybrid formation with special characteristic and statistically different from the pattern spores.

- * _____ . Estudo da inter-relação entre a resistência ao fungo (*Ustilago scitaminea* Syd. e o estado de maturação das gemas da cana-de-açúcar. Arquivos do Instituto Biológico (Brasil) 44(1-2):55-58. 1977. (341)

The author made comparative studies between the resistance to the fungus *Ustilago scitaminea* Syd. and the sugarcane bud age, in order to establish a criterium in the State of São Paulo, Brazil, for choosing the stalk region of the sugarcane plant for resistance tests to the smut pathogen. Two methods of inoculation were employed: the vacuum system and the method of cut immersion. The varieties inoculated were the C.B.45-3 and the Co.419. The results showed that the immature buds, from the sugarcane plant top were more susceptible than those from the base of the stalk. The results also confirmed that the Co.419 was more resistant than the C.B.45-3 variety, and that the immature buds need to be eliminated in the choice of cuts for the resistance tests.

- * TOFFANO, W. B. Influência de inoculações sucessivas de *Ustilago scitaminea* Syd. em cana-de-açúcar pelo método de vácuo sobre a germinação e a patogenicidade dos esporos. Arquivos do Instituto Biológico (Brasil) 44(1/2):27-31. 1977. (342)

The author made studies during 41 consecutive inoculations of the fungus *Ustilago scitaminea* Syd. on sugarcane cuts by the vacuum system. After each inoculation a sample of the spore suspension was observed and the percentage of spore germination was determined. 8.200 ml of a standard suspension of spores was prepared and 2.400 ml was put in the inoculum container for the first inoculation. Each inoculation spent around 140 ml and after each one the container was refilled with the standard suspension. Ten different varieties were inoculated, 4 times each one, in this sequence: - C.B.45-3, Co-331, Co-421, C.B.41-14, C.B.41-15, C.B.40-69, C.B.41-76, C.B.49-260, I.A.C.50-134. The pathogenicity was observed in the C.B.45-3 variety that was the only variety inoculated 5 times. The germination decreased but maintained a percentage that was enough to maintain an efficient degree of pathogenicity of the spores, that was not affected after 41 consecutive inoculations of sugarcane cuts.

- * _____ . Estudos comparativos dos métodos de inoculação do fungo *Ustilago scitaminea* Syd. para fins de seleção de variedades de cana-de-açúcar. Arquivos do Instituto Biológico (Brasil) 43(1/2):33-41. 1976. (343)

Four methods of inoculation of the fungus *Ustilago scitaminea* Syd., on sugarcane were compared: 1) immersion of the cuttings in a concentrate suspension of chlamidospores; 2) cuttings treatment by vacuum, before the inoculation with the same kind of suspension; 3) brushing the cutting buds with a high concentrate suspension of chlamidospores; 4) brushing the cutting buds with culture of sporidia with opposite sexual polarity.

The vacuum system gave a best percentage of infection than the three other methods, and among the last ones, no significant differences were observed.

- * _____ . Estudos sobre polaridade sexual e possíveis raças fisiológicas de *Ustilago scitaminea* Syd., no Estado de São Paulo. Arquivos do Instituto Biológico (Brasil) 43(3/4):65-79. 1976. (344)

Using two different chlamidospores samples, studies were made on physiologic races of *Ustilago scitaminea* Syd. in sugarcane. The two chlamidospores samples used were from the regions of Araraquara (var. CB 41-58) and Barra Bonita (var. Co.419) in the State of São Paulo, Brazil, the following five varieties were inoculated with chlamidospores and sporidia: Co.419, CB 41-76, CB 41-58 and IAC 52-474 and Co.290. Chlamidospore and sporidia from Co.419 infected all varieties, CB 41-58, gave similar results except for Co.419 and CB 41-76, which were not infected.

No infection was observed in those inoculations carried out with sporidia from the samples that were crossed.

The results indicated that there were differences in the pathogenicity from the two different regions. The inoculations with sporidia crossed between the two samples, suggested that possibility of recessivity, because they did not cause any infection.

- * TOFFANO, W. B. Influência da temperatura e da umidade na eficiência e nitidez do teste de Bauch realizado em *Ustilago scitaminea* Syd. Arquivos do Instituto Biológico (Brasil) 43(1/2):43-48. 1976. (345)

Sporidia of *Ustilago scitaminea* Syd. were separated and crosses were made among them and the pathogenicity of the different combinations was determined. The influence of temperature and humidity on the efficiency and clearness of the Bauch test, applied in *Ustilago scitaminea* Syd. were studied. The best temperature for the Bauch test in *Ustilago scitaminea* Syd. were 30.5°C and 31.5°C and we could fix it at 31°C, which is also advisable for the cutting incubation before and after their inoculation. The test can be done with good profits with the use of relatively large surfaces of media in Petri dish, without other complementary precautions related to temperature.

- _____. Varietal resistance to sugarcane smut in São Paulo, Brazil. Sugar-cane Pathologists' Newsletter no. 3:21. 1969. (346)

Tabulated results obtained over the past 20 years. (Horticultural Abstracts 41:2689)

- * _____. Novas observações sobre o carvão da cana de açúcar. O Biológico (Brasil) 32(8):171-178. 1966. (347)

Smut due to a fungus "*Ustilago scitaminea* Syd.", appeared in São Paulo, Brazil in 1946. At that time, this fungus caused great losses. In some individual blocks the loss was of more than 50%. Fortunately, these plantations were not located in the most important zones of the sugar cane areas. The control program in the whole State, confined the plantations to resistant varieties, with special laws forbidding the use of susceptible ones. In the last years, appeared a great number of new varieties, many of them smut fungus resistance tests, in spite of the penalties that could be applied. This paper reports the results of susceptibility test of 84 varieties and seedlings. Some of them were known varieties, from which we wanted to know the present behavior. Some were recently introduced in our state and others were lately introduced in Brazil. Among them is the *Saccharum spontaneum*, (Burma). All inoculation were made by the "vacuum system". Forty single node sets of each variety were employed and inoculated with concentrated spore suspension. The criterium of successful inoculation was the appearance of the smut whip. Studies were of the germination power of the spores before the inoculation. The single node sets were planted in separated pots and kept in the greenhouse.

- * _____. Resistência de variedades ao carvão da cana de açúcar ao inóculo de C.B.45-3. O Biológico (Brasil) 31(3):65-66. 1965. (348)

Con la finalidad de conocer el comportamiento de variedades todavía no certificadas en relación a su resistencia al "carbón" en 1963, se realizó una investigación cuyo resultado se presenta en esta comunicación. Las variedades resistentes resultaron ser las: C.B.36-24, I.A.C.55-26, C.B. 45-15, I.A.C. 48-65, I.A.C. 49-131,

C.B. 40-69, Co.413, C.B. 41-76, Co.419.

En relación a la variedad Co.419 que resultó resistente en el experimento, se aclara que se encontraron focos dispersos de esta variedad atacada en las zonas donde hay carbón y con la variedad C.B. 41-76, se debe ser cuidadoso, pues en el experimento se encontró un caso con carbón. (CV)

TOKASHIRI, I. Studies on the chemical control of sugarcane smut, 2: seedling disinfection. Proceedings of the Association for Plant Protection of Kyushu no. 24:32-35. 1978. (349)

- * TORIBIO, A. Note de synthèse sur le charbon de la canne à sucre. Nouvelles Agronomiques des Antilles et de la Guyane 1(3):175-185. 1975. (350)

Symptoms produced by *Ustilago scitaminea*, its biology, histopathology, epidemiology and control are discussed in the light of the literature. (Review of Plant Pathology 55:3277)

- * TUCUMAN. ESTACION EXPERIMENTAL AGRICOLA. Memoria Anual 1977. Tucumán. Estación Experimental Agrícola. Publicación Miscelánea no. 63. 1979. 147 p. (351)

Out of more than 25.000 plants representing the progenies of 46 intervarietal crosses, five were identified as promising in respect of quality and agronomic characteristics, after three cycles of selection. After two cycles of selection at four sites, 609 plants were judged to merit further investigation, out of 66.000 plants derived from 66 crosses. By differential use of four sorghum and four sugar cane varieties, four strains of sugar cane mosaic virus were distinguished in inocula prepared from infected plants of five varieties. In preliminary tests of new varieties, indications of varietal differences in resistance to *Ustilago scitaminea* were found. (Plant Breeding Abstracts 50:8987)

- * _____ . Memoria Anual 1972. Tucumán. Estación Experimental Agrícola. Publicación Miscelánea no. 50. 1973. 338 p. (352)

In the Plant Path. section (187-192) of this report from Argentina there is a brief outline of work on sugarcane mosaic virus and smut on sugarcane, identification of stubborn disease on citrus fruits by the fluorescence test, identification of patoto viruses (severe mosaic and rugose mosaic) and isolation of *Phytophthora cinnamomi* from soil under avocado. (Review of Plant Pathology 53:3726)

- * _____ . Memoria Anual 1971. Tucumán. Estación Experimental Agrícola. Publicación Miscelánea no. 46. 1972. 300 p. (353)

In the Plant Path. Section (173-179) of this report from Argentina there is a brief outline of work on testing sugarcane for resistance to sugar cane mosaic virus and determination of races, resistance of sugarcane vars. to smut, detection of and heat treatment

against sugarcane ratoon stunting virus, virus diseases of potato, *Capsicum* and tomato, citrus stubborn on greening disease and control of bacterial red streak of sugarcane. Tobacco rust and *Capsicum* rust, possibly caused by *A. jujuyense*, were recorded. (Review of Plant Pathology 52:1354)

- * TUCUMAN. ESTACION EXPERIMENTAL AGRICOLA. Memoria Anual 1969. Tucumán. Estación Experimental Agrícola. Publicación Miscelánea no. 33. 1970. 195 p. (354)

In the Plant Path. section (107-111) of this report from Argentina there is a brief outline of work done on testing for resistance to virus diseases and smut (*Ustilago scitaminea*) of sugarcane, thermal treatment of sugarcane ratoon stunting virus, bacterial diseases of sugarcane, potato diseases and maize lodging caused by *Fusarium* sp. and *Sclerotium* sp. (Review of Plant Pathology 50:2641)

- * _____ . Memoria Anual 1967. Tucumán. Estación Experimental Agrícola. Publicación Miscelánea no. 30. 1968. 136 p. (355)

In the Plant Pathology section (111-114) of this report from Argentina brief notes are given *inter alia* on mosaic virus (host resistance, field spread and losses), *Fusarium moniliforme* and smut of sugarcane. (Review of Plant Pathology 49:545)

- TYAGI, R. N. S. y GOYAL, K. N. Screening of sugar cane varieties against smut. Sugar News 8(1):46-47. 1976. (356)

In screening tests of 24 Coimbatore varieties for *Ustilago scitaminea*, seven were resistant and eight moderately resistant. (Plant Breeding Abstracts 47:10645)

- UEHARA, K. y YAMAUCHI, S. Effects of some factors to teliospore germination of *Ustilago scitaminea* Sydow. Bulletin of the Okinawa Agricultural Experiment Station no. 3:25-30. 1978. (357)

- USA PLAN to beat smut. South African Sugar Journal 61(9):468. 1977. (358)

Over 300 varieties and breeding lines from Louisiana and Florida are to be tested for resistance to *Ustilago scitaminea* in Jamaica. (Plant Breeding Abstracts 48:4513)

- * VEIGA, F. CB45-3: extraordinária variedade. Brasil Açucareiro 80(4):27-29. 1972. (359)

CB45-3 is widely grown in various parts of Brazil but it has been eliminated from São Paulo owing to its susceptibility to *Ustilago scitaminea*. In South Africa, CB45-3 is regarded as resistant, indicating that different strains of the fungus occur in the two countries. (Plant Breeding Abstracts 44:3305)

VELLOZO, L. G. DE C. O carvão da cana de açúcar. Curitiba, Brasil, Sociedade Rural do Paraná, 1948. 5 p. (360)

VENEZUELA. MINISTERIO DE AGRICULTURA Y CRIA. El carbón de la caña de azúcar (*Saccharum officinarum*). Caracas, 1978. 2 p. (361)

VERMA, K. P. y SHUKLA, R. K. Screening of promising genotypes of sugarcane against smut *Ustilago scitaminea* Sydow. in East U. P. Indian Sugar 29 (11):711-713. 1980. (362)

Of the 38 sugar cane cvs tested for resistance to *Ustilago scitaminea* 10 were resistant, 10 moderately resistant and the rest susceptible. The resistant cvs were Co.62399, Co.S.776, Co.S.799, Co.S.808, Co.S.836, Co.S.854, Co.S.855, Co.S.856, Co.S.858 and Bo.74. (Horticultural Abstracts 50: 9699)

VICTORIAS MILLING CO., NEGROS OCCIDENTAL, FILIPINAS. Smut: the dreaded disease of sugarcane and how to control it. Farm News 5(5):3, 7. 1976. (363)

Brief note on symptoms, resulting losses, transmission, occurrence, and control. (Abstracts on Tropical Agriculture 3:16484)

VIR, S. y BENI WAL, M. S. Screening of sugarcane clones for resistance to smut. Sugarcane Pathologists' Newsletter no. 20:11-13. 1978. (364)

The reactions of 71 commercial and promising clones to infection by *Ustilago scitaminea* are tabulated. (Review of Plant Pathology 58:1931)

VISWANATHAN, T. S. Behaviour of *Ustilago scitaminea* Syd. obtained from diverse localities in India. Mycopathologia et Mycologia Applicata 23(3):203-209. 1964. (365)

On the basis of the nuclear life cycle and the mode of chlamydospore germination, 2 physiologic str. of *U. scitaminea* in India were distinguished among 8 collections on sugarcane. (Review of Applied Mycology 44:1231)

VUONG-HUU-HAI y BA-DAOULE DIALLO. Los problemas fitosanitarios de la caña de azúcar en Dougabougou (Oficina de Niger, Mali). In Comisión Técnica de los Productos Comestibles y Oleaginosos, Célula de Fitopatología, Sotuba, Mali, 1978. Bamako, 1978. pp. 1-15. (366)

El carbón de la caña de azúcar (*Ustilago scitaminea*) causa destrozos notables sobre la variedad CO 419, que es la más sensible. Las variedades SC 57/423 y POJ 3016 son muy poco atacadas. El carbón de la inflorescencia (*Sphacelotheca* sp.) acaba de descubrirse.

Eldana saccharina walker, horadador de la caña de azúcar, provoca pérdidas sensibles. *Sesamia calamistis*, otro horadador, ataca las cañas jóvenes. La cochinilla harinosa *Saccharicoccus sacchari* está igualmente presente. (Agritrop 3:79-190)

- WALKER, D. I. T., MacCOLL, D. y RAO, P. S. Preliminary results from the use of Indian forms of *Saccharum spontaneum* in the West Indies. Proceedings of the 5th Joint Convention of the Indian Sugar Technologists' Association 1975:111-119. 1975. (367)

The F₁s from crosses of *S. spontaneum* X *S. officinarum* in which the chromosome number of *S. spontaneum* ranged from 2n = 40 to 2n = 136 were assessed for chromosome transmission, adaptability to drought and waterlogging, content of Brix and fibre and susceptibility to *Ustilago scitaminae*. Details are given of the flowering behaviour of nine groups of clones of *S. spontaneum*. (Plant Breeding Abstracts 49: 10323)

- * WALLER, J. M. Sugarcane smut (*Ustilago scitaminae*) in Kenya. II. Infection and resistance. Transaction of the British Mycological Society 54(3): 405-414. 1970. (368)

Ustilago scitaminae infects sugarcane plants through buds. Only spores germinating on immature tissues at the base of inner bud scales readily formed appressoria. On these tissues maximum appressorial formation occurred after 24 h at 31°C. Appressorial formation was unaffected by different host varieties and did not occur on wounded surfaces. Placing inoculum beneath outer bud scales caused more infection and decreased differences in varietal resistance. Germinating buds are most susceptible because of morphological changes and an increased area on which appressoria can be formed. Resistance in sugarcane varieties was correlated with a number of bud characters, particularly small size and slow germination. Screening varieties for resistance to smut is discussed.

- * _____ . Sugarcane smut (*Ustilago scitaminae*) in Kenya. 1. Epidemiology. Transactions of the British Mycological Society 52(1):139-151. 1969. (369)

The terminal smut whip, produced by modified activity of the apical meristems of diseased canes, releases inoculum over a period of about 3 months. The maximum rate of release (c8x10⁶ spores/day) occurs in the middle of this period. Although some deposition occurs on various cane surfaces including lateral buds, infection in the field is chiefly restricted to young tiller buds as they emergence through the soil. Irrigation substantially increases the severity of disease; the presence of liquid water appears to be necessary for spore germination. Fresh sugarcane debris and washings from sugarcane leaves increase spore germination at the surface of soils. Considerable germ-tube elongation occurs on cane surfaces and multiplication of inoculum through the production of secondary sporidia can occur on mature leaves and cut surfaces.

The period from infection to whip production is about 6 months under field conditions. Although multiplication of inoculum occurs during the life of the crop, a decreasing, tillering rate causes the crop to become more resistant so that epidemic increase tends to be linear.

It is considered that removal of diseased plants early in the crop cycle and the protection of young ratoon crops from infection are most important in checking the initial stages of an epidemic.

The disease is particularly favoured under conditions of surface irrigation in hot areas.

- * WALLER, J. M. Varietal resistance to sugar cane smut in Kenya. East African Agricultural and Forestry Journal 32:399-403. 1967. (370)

The reactions of 80 sugarcane vars. to *Ustilago scitaminea* were determined in the field at Nyanza and in laboratory tests, and the results are tabulated. Correlation was not very good, the *in vitro* test tending to underestimate field susceptibility. (Review of Applied Mycology 46:3189)

- * WATSON, D. R. W. Sugarcane rust in Tanganyika. Plant Disease Reporter 49:764. 1965. (371)

A severe infection by *Puccinia erianthi* occurred on leaves of the sugar cane variety Co.475 on 2 estates; this is the first record of the fungus for Africa. The variety appeared very susceptible and neighbouring varieties were unaffected. Two other varieties which later showed infection were H49-5 and B43-62. (Horticultural Abstracts 36:2185)

- WHEN-HSUI HSIEH, CHING-SHIOU LEE y SIU-LUN CHAN. Rust disease of sugarcane in Taiwan: the causal organism *Puccinia melanocephala* Sydow. Taiwan Sugar 24(5):416-419. 1977. (372)

Rust does not cause considerable losses in sugar-cane yield in Taiwan. However, the variety F176 was severely affected in the spring of 1977 and more than 400 ha of cane fields were infected. Experiments with uredospores of the causal fungus under different temperatures seemes to imply that a high temperature is one of the factors limiting the incidence of the disease. (Abstracts on Tropical Agriculture 4:19826)

- WHITEHEAD, C., ed. Variety studies - 2. Varieties and diseases. Microbiology. In Mount Edgecombe, Natal. Experiment Station of the South Africa Sugar Association. Annual report 1966-1967. Mount Edgecombe, Natal, 1967. pp. 24-30, 83-89. (373)

Data are presented on sugarcane mosaic virus resistance trials and a ratoon stunting virus tolerance trial. In studies on the effects of heat treatment against ratoon stunting on germination, considerable variation in the apparent reaction of vars. to the 2 forms of treatment (hot air and hot water) were observed. The effect varied from stimulatory to adverse.

In smut resistance trials single bud cuttings were enclosed in plastic bags and incubated at 31°C, for 4 hr before inoculation, and then overnight afterwards. In 1 technique, which proved the more promising for estimating resistance, the cuttings were sprayed with a suspension of

smut spores, in the other a spore suspension was injected into the bud with a hypodermic syringe. (Review of Applied Mycology 47:1259a)

- * WHITEHEAD, C. Sugarcane in South Africa - its production and management. Mount Edgecombe, Natal. Experiment Station of the South African Sugar Association. Bulletin no. 1. 1965. 24 p. (374)

The sect. on diseases (22-23, 3 fig.) notes that sugarcane mosaic is one of the major virus diseases in Natal, while ratoon stunting can also cause serious yield reduction; sugarcane streak (transmitted by *Cicadulina mbila*) and chlorotic streak viruses are unimportant. Smut (*Ustilago scitaminea*) is severe in drier areas; vars. now grown are resistant to red rot (*Physalospora tucumanensis*), but pineapple disease (*Ceratocystis paradoxa*) occurs in newly planted setts. Among bacterial diseases gumming (*Xanthomonas vasculorum*) is the most important. (Review of Applied Mycology 45:203)

- WHITTLE, A. M. Smut in the Caribbean. Technical Bulletin of the Sugar Association of the Caribbean no. 1:1-26. 1980. (375)

The distribution of *Ustilago scitaminea* on sugarcane since its discovery in the area in 1974 is outlined; countries already affected include Guyana, Jamaica, Trinidad, St. Kitts and Barbados. The control measures adopted are described, variety susceptibility ratings discussed and the impact of the disease in the Caribbean assessed. (Review of Plant Pathology 59:5893)

- _____. Thoughts on smut resistance testing. Sugarcane Pathologists' Newsletter no. 20:43-46. 1978. (376)

The problems in assessing varietal resistance to smut with differing results in different parts of the world are discussed. (Review of Plant Pathology 58:1938)

- WIEHE, P. O. The control of sugar cane diseases in Mauritius. Sugar Journal 28(10):41-42, 45-66. 1966. (377)

The reactions of the 11 major vars. in Mauritius to 6 diseases are recorded. *Xanthomonas vasculorum*, *X. albilineans*, *Ustilago scitaminea*, and *Physalospora tucumanensis* are controlled by the use of resistant vars., whilst sugarcane chlorotic streak and ratoon stunting viruses are partially controlled by heat treatment. *Ceratocystis paradoxa*, controlled by organo-Hg compounds, is also mentioned. (Review of Applied Mycology 45:3210)

- WISMER, C. A. y SRINIVASAN, K. V. Methods for testing the resistance of sugarcane to disease. V. Sugarcane smut. VI. Leaf scald. Sugarcane Pathologists' Newsletter 2:7; 24-25. 1969. (378)

Sugarcane cuttings were immersed in a suspension of teliospores (250 g spores/5 l water, 95% viability) before planting. The

5 grades of resistance were based on the percentage of plants developing smut whips. (Review of Applied Mycology 48:2531a)

YAMAUCHI, S. Epidemic of smut (*Ustilago scitaminea* Syd.) in Okinawa and its control. Sugarcane Pathologists' Newsletter no. 21:4-5. 1978. (379)

U. scitaminea recurred on sugarcane in Okinawa in 1972 after a lapse of 40 yr. The infected acreage has increased from 0.4% in 1972 to 22% in 1978. Control measures being employed are outlined. (Review of Plant Pathology 59:432)

_____, COMSTOCK, J. C. y STEINER, G. W. Invasion of the smut *Ustilago scitaminea* Sydow, on sugarcane tissue in relation to the resistance. Bulletin of the Okinawa Agricultural Experiment Station no. 3:31-38. 1978. (380)

_____. y UEHARA, K. Some unusual symptoms and formation of chlamidospore on the inflorescence and leaf with smut of sugarcane. Proceedings of the Association for Plant Protection of Kyushu no. 23:34-36. 1977. (381)

_____. Anatomical observations of sugarcane smut. 2. Bulletin of the Okinawa Agricultural Experiment Station no. 2:48-51. 1976. (382)

_____. On the anatomical observation of sugar cane smut. Kyushu Agricultural Research no. 36:113-114. 1974. (383)

* YOUNG KONG, V. M. Experiences with sugarcane smut in the Caribbean. Sugar Journal 40(5):25. 1977. (384)

With the discovery and continuing spread of smut (*Ustilago scitaminea*) in the Caribbean area and the failing attempt to contain or eradicate the disease by phytosanitary measures, emphasis is put on the breeding of resistant cane varieties and accelerated replanting programmes. (Abstracts on Tropical Agriculture 4:19398)

ZAMBIA. MINISTRY OF AGRICULTURE. RESEARCH BRANCH. Plant Pathology. Report 1966:36-46; 1967:95-109. Zambia, 1969? (385)

Rust (*Hemileia vastatrix*) occurred newly on coffee in the Northern Province in old established plantings. Sugarcane rust (*Puccinia erianthi*), a new record, was severe on B.4362 early in the year but cleared later, as did *Cercospora longipes* on NCo 310, NCo 290, and Co 1001. A bacterial disease (?*Pseudomonas* sp.) and *Cercospora carthami* were noted on safflower. (Review of Applied Mycology 48:3252b)

- * ZAVALA, S. El carbón de la caña de azúcar. IDIA (Argentina) no. 87:1-11. 1955. (386)

El autor informa sobre la aparición del "carbón" en la Argentina, su difusión en la provincia de Tucumán, los síntomas de la enfermedad, las características del patógeno y sobre los resultados de las pruebas de inoculación realizadas en la Estación Experimental de Villa Alberdi en Tucumán y hace las siguientes consideraciones finales:

- La enfermedad del "carbón" no reviste en la fecha el alto grado de peligrosidad que la caracterizó en los primeros años de su aparición en Tucumán.
- El reemplazo de las variedades susceptibles por otras resistentes, creadas en la Estación Experimental de Tucumán o introducidas del extranjero, ha solucionado el problema del "carbón", que por varios años constituyó una seria preocupación de los cañeros de esta provincia.
- El hongo causal de la enfermedad del "carbón" ataca a casi todas las variedades de caña de azúcar en cultivo y lo hace en forma esporádica, causando daños insignificantes.
- La enfermedad del "carbón" constituye en la actualidad un peligro latente y bien podría suceder que en cualquier circunstancia se exaltara la actividad del patógeno y volviera a provocar estragos similares a los ya conocidos.
- La enfermedad se presenta en forma benigna como lo hace en India, Filipina, Natal en que la existencia del patógeno se conoce desde muchos años.

- ZUMMO, N. Sugarcane diseases in Nigeria. Sugarcane Pathologists' Newsletter no. 17:52-53. 1976. (387)

A report on the currently prevalent diseases and their economic importance. Smut (*Ustilago scitaminea*) poses the most serious threat to sugar cane cultivation. (Horticultural Abstracts 47:10978)

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