Disease Notes

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First Report of Diseases on Lisianthus in Argentina. S. Wolcan, L. Ronco, E. Dal Bo, G. Lori, and H. Alippi, CIC-CONICET, Laboratorio de Fitopatología, Facultad de Ciencias Agrarias y Forestales UNLP, 60 y 119, 1900 La Plata, Buenos Aires, Argentina. Plant Dis. 80:223, 1996; published on-line as D-1995-1207-01N, 1995. Accepted for publication 21 November 1995.

During the late 1980s lisianthus (*Eustoma grandiflora* (Raf.) Shinn.) was introduced in Argentina as an alternative cut flower. Greenhouse production is located in La Plata and Florencio Varela, not far from Buenos Aires. Climatic conditions, especially high relative humidity, enhance some diseases resulting in losses of economic significance. From 1988 to 1994 four diseases were detected for the first time in Argentina. This is the first record for two of these diseases on lisianthus: (i) Tomato spotted wilt virus (TSWV), which was detected in 1994. The symptoms included stunting and light brown necrotic rings and spots on the lower leaves. The response of indicator hosts and enzyme-linked immunosorbent assay using impatiens necrotic spot virus, TSWV, and groundnut ringspot virus antibodies demonstrated that TSWV was the causal agent. (ii) Stem rot (*Sclerotinia sclerotiorum* (Lib.) de Bary), which causes a soft rot with white mycelium on the stem and black sclerotia inside the pith. The fungus was isolated and Koch's postulates were fulfilled. The diseases previously reported in other countries are gray mold (*Botrytis cinerea* Pers.:Fr.) (1), whose symptoms are crown and basal leaf rot with grayish mycelium and spore masses over the surface, and downy mildew (*Peronospora chlorae* de Bary) (1), which produces the typical white mycelial patches on the leaves.

Reference: (1) B. Loschenkohl. Gartner Tidende 104:219, 1988.

First Report of Crucifer Bacterial Leaf Spot Caused by *Pseudomonas syringae* pv. *maculicola* in Argentina. A. M. Alippi and L. Ronco, Laboratorio de Fitopatología, Facultad de Ciencias Agrarias y Forestales, Universidad Nacional de La Plata, Calles 60 y 119, c.c. 31, 1900 La Plata, Argentina. Plant Dis. 80:223, 1996; published on-line as D-1995-1212-01N, 1995. Accepted for publication 6 December 1995.

In April 1995 (austral autumn), typical bacterial spot symptoms were observed on brussels sprouts leaves (*Brassica oleracea* L. var. *gemmifera* DC. cv. Oliver) in a commercial field in La Plata, Argentina. Affected plants had small brown spots with irregular edges surrounded by chlorotic haloes. The spots were approximately 1 mm in diameter and covered most of the leaf surface. The spots enlarged and coalesced, forming large necrotic areas limited by the main veins. In some plants, leaves appeared deformed and broken, giving a ragged appearence. Disease incidence approached 100%. No pathogenic fungi were associated with symptomatic plants. Bacteria consistently isolated from lesions formed white, glistening, convex colonies on sucrose peptone agar (SPA) and a water-soluble, green fluorescent pigment on King's medium B. Bacteria were aerobic, gram-negative, non-spore-forming rods, averaging 0.67 × 2.18 µm. In levan–oxidase–potato rot–arginine dihydrolase–tobacco hypersensitivity (LOPAT) tests, all eight strains induced a hypersensitive response in tobacco plants, did not cause soft rot of potato tubers, and were positive for levan and negative for oxidase and arginine dihydrolase. Acid was produced aerobically from sucrose and d-mannitol but not from d-(+)salicin, d-(–)arabinose, or sorbitol. Variable results were obtained with inositol. The strains did not hydrolyze starch and exhibited an oxidative metabolism of glucose. Colonies developed at 30°C but not at 41°C. Strains were positive for catalase and indole production. They did not utilize Tween 80 nor reduce nitrates to nitrites. Coronatine production was determined using *Escherichia coli* (ATCC 25922) as indicator strain added to *Pseudomonas* minimal medium (PMS) agar at 10^7 CFU/ml (2). Zones of growth inhibition were observed around all the cultures tested. Pathogenicity was verified on greenhouse-grown broccoli (*Brassica oleracea* L. var. *italica* cv. Atlantic), cauliflower (*B. oleracea* var. *botrytis* cv. Snow March), brussels sprouts cv. Oliver and tomato (*Lycopersicon esculentum* Mill. hybrid LSL TT-6) by both spray and infiltration inoculation with bacterial suspensions (10^9 and 10^6 CFU/ml, respectively) (1). Symptoms on inoculated brussels sprouts were identical to those observed on brussels sprouts in the field, and bacteria recovered from infected leaves had physiological characteristics identical to those used as inoculum. The microorganism was identified as *Pseudomonas syringae* pv. *maculicola* (1,2). The disease is also known as pepper or peppery leaf spot. This is the first report of bacterial leaf spot of crucifers in Argentina.

References: (1) M. Hendson et al. J. Appl. Bact. 73: 455, 1992. (2) W. L. Wiebe and R. N. Campbell. Plant Dis. 77: 414, 1993.

First Report of *Dothichiza caroliniana* on Southern Highbush Blueberry in Georgia. R. E. Baird, RDC, Plant Pathology Dept. and J. M. Ruter, Horticulture Dept., CPES, Tifton, GA 31793. Plant Dis. 80:223, 1996; published on-line as D-1995-1208-01N, 1995. Accepted for publication 4 December 1995.

Southern highbush blueberry (*Vaccinium corymbosum* L.) plants (US 41 × G-362) grown at the Coastal Plain Experiment Station (CPES), Tifton, GA. were observed to be defoliating on 2 August 1995. The leaves had lesions up to 4 mm in diameter with dark reddish borders on the adaxial leaf surface. Expanding outward from the original lesion were secondary infections that partially or entirely surrounded the initial infection. Black pycnidia within each of the lesions were visible with a 10× hand lens and were identified as those of *Dothichiza caroliniana* Demaree & M. S Wilcox based on the conidia and conidiogenous cells. Isolates of the fungus were obtained from the diseased tissue to confirm the pathogen's identity. In a previous study, *D. caroliniana* was reported to cause "double spot" on Southern highbush blueberry in North Carolina. To confirm pathogenicity of *D. caroliniana*, isolates Doth. 1 and 2, obtained from diseased blueberry tissue at CPES, were inoculated onto four replicate Southern highbush blueberry plants (US 41 × G-362). The isolates were cultured on potato-dextrose agar and 5-mm mycelial plugs taken from growing margins were placed onto leaves either nonwounded or punctured with a needle. Noninoculated controls were included for comparison. Plants were incubated for 14 days in moist chambers at 24 to 37°C and protected under a shade cloth from direct sunlight. All wounded and nonwounded inoculated leaves with either isolate had foliar symptoms resembling the lesions previously observed at CPES. Reisolation of the fungus from the necrotic tissues confirmed pathogenicity. The noninoculated leaves did not develop foliar symptoms. This represents the first report of *D. caroliniana* in Georgia.

First Report of Gray Mold Blight Caused by *Amphobotrys ricini* on Crown of Thorns in Thailand. N. Sanoamuang. Department of Plant Pathology, Faculty of Agriculture, Khon Kaen University, 40002, Thailand. Plant Dis. 80:223, 1996; published on-line as D-1996-0105-01N, 1996. Accepted for publication 2 January 1996.

In August 1994, a grower of crown of thorns (*Euphorbia milii* Des Moul. var. *splendens* (Bojer ex Hook.) Ursch & Leandri) in Khon Kaen Province, in northeastern Thailand, reported severe problems with disease symptoms typical of gray mold blight on blossoms and leaves. The problem became widespread in the following year (August and September 1995) among many commercial growers in the same province, as well as in Bangkok, Nakhonpratom, and Samutsakhon in central Thailand, and Chiengmai, Lampang, and Prae in northern Thailand. The symptoms included rot on flowers, blight on leaves, and dieback of stems, which the fungus invaded through the petiole. Pieces of infected flowers, leaves, and stems were surface sterilized for 5 min in NaOCl and plated onto water agar. The emerging mycelia were transferred onto potato dextrose agar. *Amphobotrys ricini* (Buchwald) Hennebert (syn. *Botrytis ricini* Buchwald, perf. *Botryotinia ricini* (Godfrey) Whetzel) (1,2) was the only fungus isolated from diseased pieces. Inoculation by placing a drop of conidial suspension (1 × 10^5 conidia/ml) of *Amphobotrys ricini* onto wounded flowers, leaves, and stems under very moist condition reproduced the symptoms observed in the commercial operations, thus completing Koch's postulates. This is the first report of *Amphobotrys ricini* on crown of thorns.

References: (1) F. Faretra et al. J. Gen. Microbiol. 134: 2543, 1988. (2) G. L. Hennebert. Persoonia 7:183, 1973.

(*Disease Notes* continued on next page)

Disease Notes (*continued*)

Occurrence of a New Powdery Mildew Fungus (*Erysiphe* sp.) on Tomatoes in Hungary. L. Kiss, Plant Protection Institute of the Hungarian Academy of Sciences, P.O. Box 102, Budapest, H-1525 Hungary. Plant Dis. 80:224, 1996; published on-line as D-1995-1219-01N, 1995. Accepted for publication 6 December 1995.

Powdery mildew on different cultivars of tomato (*Lycopersicum esculentum* Mill.) has been observed repeatedly since 1993, both in the field and in the greenhouse in Hungary. Mildew colonies of white color appeared on the upper and occasionally on the lower surfaces of the leaves. The small initial colonies enlarged quickly and merged to cover large leaf areas within 5 to 6 days. In the greenhouse, the infected leaves of cv. K262 withered within 7 to 9 days after the first symptoms appeared. Spread of infection was noticeable both in the field and in the greenhouse. The disease required chemical control in the greenhouse. Based on the characteristics of the anamorph, the pathogen was identified as an *Erysiphe* sp. Its ectophytic mycelium produced conidia in chains. Conidia contained no fibrosin bodies. Germ tubes with unlobed apexes arose from one end of conidia. Cleistothecia were not found, so a more exact identification of the species was not possible. Development of symptoms on tomato inoculated with the pathogen was similar to that of naturally infected plants. In contrast, inoculations did not result in any symptom on cucumber (*Cucumis sativus* L.) or tobacco (*Nicotiana tabacum* L.) plants. Infection of tomato crops with *Erysiphe* sp. was reported recently from Canada (1) and Greece (2). The disease has also been observed in other European countries (2). We report here for the first time its occurrence in Central Europe.

References: (1) R. R. Bélanger and W. R. Jarvis. Plant Dis. 78:640, 1994. (2) D. J. Vakalounakis and A. Papadakis. Plant Pathol. 41:372, 1992.

First Report of *Heterodera glycines* on Soybean in South Dakota. J. D. Smolik, J. L. Jones, and D. L. Gallenberg, Plant Science Department, South Dakota State University, Brookings, 57007; and J. P. Gille, Union County Extension Office, Elk Point, 57025. Plant Dis. 80:224, 1996; published on-line as D-1995-1222-01N, 1995. Accepted for publication 21 December 1995.

Soybean fields in 12 eastern South Dakota counties were surveyed for the soybean cyst nematode (*Heterodera glycines* Ichinohe) during the 1995 growing season. The 255 fields included in the survey had a 10- to 15-year history of soybean production (primarily in rotation with corn), and were selected with the aid of local extension service agents. In the initial phase of the survey, *H. glycines* was detected in a single field of the 23 sampled in Union County, which is located in the extreme southeastern corner of South Dakota. Twenty-two additional fields within 2 to 3 km of the original field were assayed for *H. glycines*. The nematode was confirmed in 10 (45%) fields. Nematode identification was based on cyst morphology (2), presence of males, and reproduction on soybean in greenhouse studies. Reproduction of the original *H. glycines* isolate on the race differentials (1) was consistent with the definition of race 3.

References: (1) A. M. Golden et al. Plant Dis. Rep. 54:544, 1970. (2) R. H. Mulvey and A. M. Golden. J. Nematol. 15:1, 1983.

Blackeye Cowpea Mosaic Potyvirus (BlCMV) on Yard-long Bean in the Mariana Islands. G. C. Wall and C. A. Kimmons, CALS/AES, University of Guam. Plant Dis. 80:224, 1996; published on-line as D-1996-0108-01N, 1996. Accepted for publication 5 January 1996.

A mosaic disease of *Vigna unguiculata* (L) Walp. subsp. *sesquipedalis* (L.) Verdc., common on Guam and Saipan, was shown to be caused by the blackeye cowpea mosaic potyvirus (BlCMV) via ring interface, Protein A sandwich–enzyme-linked immunosorbent assay (PAS-ELISA), and host range studies. The local BlCMV isolate induced mottle on *V. unguiculata* cv. California Blackeye and vein-banding symptoms on *Nicotiana benthamiana*; no downward cupping of leaves was observed on these hosts. Ring interface tests included antisera for BlCMV, cowpea chlorotic mottle virus (CCMV), cowpea severe mosaic virus (CSMV), southern bean mosaic virus cowpea strain (SBMV-CP), and tobacco mosaic virus (TMV) legume strain. ELISAs included antisera and antigens for BlCMV-W, bean common mosaic virus (BCMV), and watermelon mosaic virus 2 (WMV2), plus antiserum for BlCMV. Test samples gave positive results only with antisera for BlCMV-W and BlCMV (obtained from L. Bos, Research Institute for Plant Protection, Wageningen, The Netherlands, and C. W. Kuhn, University of Georgia, respectively). Sap inoculation onto 1-week-old seedlings of cvs. Local Red and Burpee asparagus bean reproduced the symptoms observed in the field. Nonpersistent aphid transmission was demonstrated with apterous *Aphis craccivora*. Seed transmission was detected when seed from infected plants was grown in cages. Symptoms developed on the first true leaf in 37% of emerging seedlings and BlCMV was confirmed by ELISA.

First Report of Banana Streak Virus in Farmers' Fields in Benin, Ghana, and Nigeria, West Africa. C. Pasberg-Gauhl, F. Gauhl, and P. Schill, International Institute of Tropical Agriculture (IITA), PMB 5320, Ibadan, Nigeria; B. E. L. Lockhart, Department of Plant Pathology, University of Minnesota, 495 Borlaug Hall, 1991 Upper Buford Circle, St. Paul 55108, USA; K. Afreh-Nuamah and J. K. Osei, University of Ghana, Agricultural Research Station, POB 43, Kade, Ghana; and K. Zuofa, Rivers State University of Science and Technology, PMB 5080, Port Harcourt, Nigeria. Plant Dis. 80:224, 1996; published on-line as D-1996-0108-02N, 1996. Accepted for publication 4 January 1996.

During 1993 to 1994, surveys were conducted in farmers' fields in Benin, Ghana, and Nigeria to document the occurrence and frequency of viral leaf streak in local cultivars of banana and plantain (*Musa* sp.). Viral leaf streak of *Musa* is caused by banana streak virus (BSV), a mealybug-transmitted badnavirus (1). Symptoms of BSV infection in *Musa* are sometimes similar to those caused by cucumber mosaic virus (CMV), and the two diseases have sometimes been confused. Leaf samples from symptomatic plants were indexed by double antibody sandwich–enzyme-linked immunosorbent assay (DAS-ELISA) using crude extracts, and by immunosorbent electron microscopy (ISEM) using partially purified extracts (1). Antiserum to BSV was prepared as described (1), and antiserum to CMV (ATCC PVAS 30) was obtained from the American Type Culture Collection, Rockville, MD. In Benin, BSV was identified in different plantain and banana landraces from four villages, where symptomatic plants had been reported. In Ghana, two plantain landraces, Apantu (False Horn) and Asamienu (True Horn), were found to be infected with BSV in two of the 25 farms inspected between Kade and Dormaa Ahenkro at the Cote d'Ivoire border. In Nigeria, BSV was identified in three out of 60 farms visited. False Horn and French Horn plantain landraces were infected with BSV in farmers' homestead gardens located in one village in Imo State and two villages in Rivers State, southeast Nigeria. In all farms in the three countries symptomatic plants were 1 to 2% of the population except one farm in Benin, where symptomatic plants were 15%. This is the first report positively identifying BSV in farmers' fields in Benin, Ghana, and Nigeria. None of the symptomatic plants were infected with CMV as determined by DAS-ELISA and ISEM.

Reference: (1) B. E. L. Lockhart et al. Phytopathology 82:691, 1992.

First Report of Banana Streak Virus Disease in Malawi. D. R. Vuylsteke, International Institute of Tropical Agriculture, P.O. Box 7878, Kampala, Uganda; C. T. Chizala, Mkondezi Experimental Station, P.O. Box 133, Nkhata Bay, Malawi; and B. E. Lockhart, Department of Plant Pathology, University of Minnesota, St. Paul 55108, USA. Plant Dis. 80:224, 1996; published on-line as D-1996-0108-03N, 1996. Accepted for publication 15 December 1995.

Symptoms resembling those of viral leaf streak of banana, caused by banana streak badnavirus (BSV) (2), were observed in February 1995 on three of 22 cultivars of banana (*Musa* spp.) maintained in duplicate field collections at Baka, Karonga, and Mwangulukulu, Songwe, northern Malawi. These collections were established in January 1991 from local cultivars. The accessions showing symptoms were a plantain (*Musa* AAB group), cv. Kambani (AB), and the putative AA cv. Ndyali Uluwa. Leaf symptoms ranged from initial chlorotic streaks to later brown and black chlorotic streaks. Leaf samples were indexed by electron microscopy (EM) and immunoelectron microscopy using partially purified preparations and by double antibody sandwich–enzyme-linked immunosorbent assay (DAS-ELISA) using crude extracts. All 3 symptomatic banana cultivars tested positive for BSV by the three indexing methods used, confirming the occurrence of BSV in Malawi. The identification of BSV in local banana cultivars in Malawi corroborates published reports that BSV occurs in all banana-producing areas of East and Southern Africa including Uganda, Pemba, Zanzibar, Tanzania, Rwanda, Kenya, Madagascar, and South Africa (1).

References: (1) A. J. Dabek and J. M. Waller. Trop. Pest Manage. 36:157, 1990. (2) B. E. L. Lockhart. Phytopathology 76:995, 1986.