Disease Notes

Identification of Virulence in *Puccinia substriata* var. *indica* to Rr_1 in Pearl Millet. J. P. Wilson, USDA-ARS Forage and Turf Unit, University of Georgia, Coastal Plain Experiment Station, Tifton 31793. Plant Dis. 77:100, 1993. Accepted for publication 10 August 1992.

Two genes for rust resistance in pearl millet (*Pennisetum glaucum* (L.) R. Br.) are known, but only Rr_1 (1) is effective in the United States and was first used commercially in a hybrid released in 1988. In January 1992, pearl millet plants in the greenhouse were inoculated with urediniospores (2×10^4 spores per milliliter) of *Puccinia substriata* Ellis & Barth. var. *indica* Ramachar & Cummins collected from a susceptible cultivar in the field at Tifton, Georgia, in 1991. One uredinium was observed on a pearl millet selection known to have Rr_1. Urediniospores increased from that uredinium, designated isolate PS92-1, and the 1991 field-derived inoculum were used to inoculate seedlings of hybrids Tifleaf 1 (rr_1rr_1) and Tifleaf 2 (Rr_1rr_1) and inbreds Tift 23DB (rr_1rr_1) and Tift 85DB (Rr_1Rr_1). Cultivars with Rr_1 were resistant to the field inoculum, but all cultivars were susceptible to PS92-1. This first report of virulence in *P. s. indica* to Rr_1 provides an early warning of a potential shift in virulence in the pathogen population.

Reference: (1) W. W. Hanna et al. J. Hered. 76:134, 1985.

***Gaeumannomyces graminis* var. *graminis* Infecting Zoysiagrass in Illinois.** H. T. Wilkinson and R. T. Kane, Department of Plant Pathology, University of Illinois, Urbana 61801. Plant Dis. 77:100, 1993. Accepted for publication 13 July 1992.

Zoysiagrass (*Zoysia japonica* Steud. 'Meyer 51') showed leaf yellowing and thinning, retarded leaf extension, root mass reduction, and root and stolon rotting in the spring of 1990 and 1991. Areas of diseased turf did not form distinct patches, covered less than 1 m^2 to more than several square meters, and developed in moist soil at 18–20 C. Spring "green-up" and resumption of active plant growth were delayed several weeks. Root, rhizome, and crown tissues were colonized by a *Gaeumannomyces*-like fungus presumed to be *G. graminis* (Sacc.) Arx & D. Olivier var. *graminis* on the basis of mycelial characteristics and formation of lobed hyphopodia in culture and on infected roots (1). The teleomorph was not observed on grass or wheat (*Triticum aestivum* L. 'Daws') that was naturally or artificially inoculated with the fungus or on agar cultures. Zoysiagrass inoculated with the fungus and incubated at 16 C produced roots that were tan-brown and fewer in number than those of uninoculated plants. The pathogen was reisolated from infected roots of zoysiagrass and wheat after surface disinfestation.

Reference: (1) J. Walker. Trans. Br. Mycol. Soc. 58:427, 1972.

Identification of Corn Stunt Spiroplasma in Maize from Argentina. S. L. Lenardon, Ohio State University/OARDC, Wooster 44691, and Instituto de Fitopatologia y Fisiologia Vegetal, INTA, 5014 Cordoba, Argentina; I. G. Laguna, Instituto de de Fitopatologia y Fisiologia Vegetal; D. T. Gordon, Ohio State University/OARDC; G. A. Truol and J. Gomez, Instituto de Fitopatologia y Fisiologia Vegetal; and O. E. Bradfute, Ohio State University/OARDC. Plant Dis. 77:100, 1993. Accepted for publication 31 August 1992.

Severely stunted maize (*Zea mays* L.) plants were found in experimental and commercial plantings in the states of Tucuman and Santiago del Estero (north central Argentina), a relatively new subtropical maize-growing area north of the traditional Argentinean corn belt. The incidence of disease in maize varied from 10 to 70%, with the most susceptible maize hybrids derived from the parental line LH35. The symptoms—chlorotic streaks originating at the base of young leaf blades, reddening of older leaf margins, progressive shortening of upper internodes, and proliferation of ears—were similar to those described for corn stunt caused by corn stunt spiroplasma (CSS), *Spiroplasma kunkelii* Whitcomb et al (1). CSS infection was confirmed in these samples by: 1) a positive reaction in $F(ab')_2$-ELISA using antiserum to a U.S. isolate of CSS; 2) the presence of abundant spiroplasmas as observed by dark-field light microscopy; 3) the appearance of many, wall-less prokaryote cells (single membrane bound bodies with ribosomes and nucleoplasm net of presumed DNA fibrils) in phloem sieve elements as observed by electron microscopy; and 4) experimental transmission of the pathogen by *Dalbulus maidis* (DeLong & Wolcott). The serological results suggested a close relationship between the Argentinean and U.S. isolates. This is the first report of CSS infection of maize in Argentina.

Reference: (1) R. F. Whitcomb et al. Int. J. Syst. Bacteriol. 36:170, 1986.

First Report of *Sphaerellopsis filum* Colonizing Rust of Bird's-foot Trefoil in the United States. K. T. Leath, USDA-ARS, Regional Pasture Research Lab, and R. Rodriguez and B. W. Pennypacker, Department of Plant Pathology, Pennsylvania State University, University Park 16802. Plant Dis. 77:100, 1993. Accepted for publication 24 August 1992.

Rust (*Uromyces* sp.) of bird's-foot trefoil (*Lotus corniculatus* L.) was first reported in the United States (central Pennsylvania) in 1985 (1), then again in 1987, 1989, and 1991 when many rust pustules were blackened in areas of primary and secondary sporulation. Pycnidia were present within rust pustules, and *Sphaerellopsis filum* (Biv.-Bern. ex Fr.) Sutton was isolated by plating surface-disinfested leaf tissue on water agar. *S. filum* grew on potato-dextrose, lima bean, and carnation leaf agars but sporulated best on V8 juice agar. *S. filum* was reactivated after 4 yr of storage on silica gel beads at −20 C. Rust pustules of *U. trifolii-repentis* Liro ex Liro var. *fallens* (Arth.) Cummins on white clover (*Trifolium repens* L.), *U. trifolii-repentis* on red clover (*T. pratense* L.), and *U. striatus* Schröt. var. *medicaginis* (Pass.) Arth. on alfalfa (*Medicago sativa* L.) were colonized by the isolate of *S. filum* from bird's-foot trefoil.

Reference: (1) K. E. Zeiders. Plant Dis 69:727, 1985.

Limb Dieback of Flowering Dogwood Caused by *Colletotrichum acutatum*. D. O. Chellemi and G. Knox, North Florida Research and Education Center, Route 3, Box 4370, Quincy, FL 32351; and M. E. Palm, USDA/APHIS, Systematic Botany and Mycology Laboratory, Room 329, B-011A, BARC-West, Beltsville, MD 20705. Plant Dis. 77:100, 1993. Accepted for publication 17 September 1992.

In February and March of 1991, leaf symptoms ranging from irregularly shaped, brown necrotic lesions to complete necrosis and abscission were observed in 3- to 4-m tall containerized dogwood (*Cornus florida* L.) trees obtained from a nursery in northern Florida. Defoliation of entire limbs was also observed. Cross sections of affected limbs revealed necrotic pith tissue. Tissue plated on potato-dextrose agar (PDA) yielded *Colletotrichum acutatum* J. H. Simmonds (2), *Epicoccum nigrum* Link, and *Pestalotiopsis* sp. Pathogenicity of isolates was determined by inoculating *C. florida* plants with an 8-mm agar plug containing mycelium from 7-day-old colonies. A T-budding technique was used to place plugs underneath the bark. The graft was sealed with Parafilm for 2 wk and plants were placed in the greenhouse and maintained under normal horticultural conditions. Fifty days after inoculation, only plants inoculated with *C. acutatum* showed dieback symptoms similar to those in the original trees. Necrotic stem tissue from symptomatic inoculated plants plated on PDA consistently yielded *C. acutatum*. This is the first report of *C. acutatum* as a pathogen of dogwood in the United States. Recognition of this disease is important because symptoms can be easily mistaken for those of dogwood anthracnose caused by *Discula destructiva* Redlin (1). A voucher culture has been deposited in the Gainesville herbarium (FLAS F55978).

References: (1) S. Redlin. Mycologia 83:633, 1991. (2) J. Walker et al. Mycol. Res. 95:1175, 1991.

First Report of Banana Bunchy Top Virus in Pakistan. S. Khalid, Plant Virology Laboratory; M. H. Soomro, CDRI, PARC, P.O. Box 1031, Islamabad, Pakistan; and R. H. Stover, Research Department, Box 1776, Gulfport, MS 39501. Plant Dis. 77:101, 1993. Accepted for publication 25 June 1992.

An unknown disease was observed in 1988 for the first time on banana, an important fruit crop introduced in 1913 to Sindh, Pakistan. The disease was observed first in coastal areas of Sindh Province, then in northern areas, where it caused heavy losses. A survey of three to six fields at various locations in each of the six major banana-growing districts in July 1991 revealed that one-half of the banana plantations had been destroyed. The disease was prevalent in Thatta, Karachi, Hyderabad, Badin, and Mirpur Khas districts. Symptoms resembled those of banana bunchy top virus, including bunching and brittleness of leaves and dot-dash dark green streaks on petioles and lamina parallel to veins. The method of Wu and Su (1) was used to purify the virus, and electron microscopy detected virus particles 20–22 nm in diameter. An ELISA kit for banana bunchy top virus (Bananase-96, General Biology Corporation, Taiwan) was used to confirm the etiology. Thus, the disease was identified on the basis of symptoms, particle morphology, and serology (DAS-ELISA).

Reference: (1) R. Y. Wu and H. J. Su. J. Phytopathol. 128:153, 1990.

First Report of *Armillaria ostoyae* on *Pinus koraiensis* in the Russian Far East. Gregory Filip, Department of Forest Science, Oregon State University, Corvallis 97331; Geral MacDonald, USDA Forest Service, Intermountain Research Station, Moscow, ID 83843; and Anatoly Sapozhnikov and Vera Harberger, Far East Forestry Research Institute, Khabarovsk, Russia. Plant Dis. 77:101, 1993. Accepted for publication 9 September 1992.

In August 1991, we visited mixed hardwood-conifer forests 200 km northeast of Vladivostok, Russia. Occasional tree mortality was noted in *Abies nephrolepsis* (Trautv.) Maxim, *Picea glehnii* (Friedr. Schmidt) M.T. Mast., and *Pinus koraiensis* (Siebold & Zucc.). On a dead sapling of *P. koraiensis* we observed resinosis at the root collar and mycelial fans beneath the bark resembling those of *Armillaria* spp. One isolate was obtained from the mycelial fans and challenged with diploid testers of North American Biological Species (NABS) of *Armillaria*. The unknown isolate was found to be compatible with *A. ostoyae* (Romagnesi) Herink (NABS 1). This is the first report of *A. ostoyae* in the Russian Far East, although the genus has been reported from the area.

Detection and Recovery of Tomato Ringspot Virus from Diseased Peach by Graft Inoculations to *Prunus tomentosa*. Y.-P. Zhang and J. K. Uyemoto, USDA-ARS, Department of Plant Pathology, University of California, Davis 95616. Plant Dis. 77:101, 1993. Accepted for publication 24 September 1992.

Strains of tomato ringspot virus (TmRSV) cause different diseases in *Prunus* species, e.g., prune brown line (PBL), Prunus stem pitting (PSP), and peach yellow bud mosaic (PYBM). During 1989, surveys in an Empress plum/Lovell peach (1.9 ha) orchard and a September Red nectarine/Nemaguard peach (4 ha) orchard detected 12% PBL (plum) and 14% PSP (nectarine). As TmRSV was suspected in each instance, cambial scrapings of root bark from four PBL trees and a healthy tree were extracted in phosphate, carbonate, and nicotine-based buffers. The phosphate- and carbonate-buffered extracts were tested by ELISA for TmRSV (1), and all extracts were rubbed onto corundum-dusted cotyledons of cucumber seedlings and leaves of *Chenopodium quinoa* Willd. Similar analyses were made with PSP extracts. All assays were negative. However, TmRSV was transmitted to the herbaceous indicators from peach (*Prunus persica* (L.) Batsch) from an orchard with PYBM. To ascertain the presence of TmRSV in the plum and nectarine trees, bark patches from four to six collections of peach roots from PBL and PSP trees were grafted onto potted seedlings of Nanking cherry (*P. tomentosa* Thunb.) (2). In addition, root bark of PYBM trees was grafted onto *P. tomentosa*. After 4–6 wk, all *P. tomentosa* inoculated with diseased collections, but none inoculated with three healthy collections and none of the ungrafted seedlings, developed leaf chlorosis, ring spots, and/or a chlorotic mottle. Leaf extracts of symptomatic *P. tomentosa* were rubbed onto cucumber cotyledons, and all proved infectious. Extracts prepared from symptomatic *P. tomentosa* and cucumber tested positive for TmRSV by ELISA. Similar healthy controls were negative. These results confirmed that *P. tomentosa* is a sensitive indicator host for detecting low titers of TmRSV in diseased orchard trees, and inoculation of this host is the method of choice for TmRSV detection and recovery.

References: (1) J. W. Hoy and S. M. Mircetich. Phytopathology 74:272, 1984. (2) S. M. Mircetich and E. L. Civerolo. Phytopathology 62:1294, 1972.

First Report of Tomato Spotted Wilt Virus on Bedding Plants in Georgia. J. M. Ruter, Department of Horticulture, and R. D. Gitaitis, Department of Plant Pathology, University of Georgia, Coastal Plain Experiment Station, Tifton 31793. Plant Dis. 77:101, 1993. Accepted for publication 21 August 1992.

Symptomatic plants from bedding plant growers and public landscapes in five south Georgia counties (Coffee, Colquitt, Grady, Harris, and Tift) were sampled April through June 1991. Approximately 7% of the samples tested positive for the impatiens serotype of tomato spotted wilt virus (TSWV-I) and 6% tested positive for the lettuce serotype (TSWV-L). Infected plants were detected by enzyme-linked immunoabsorbent assays of replicated whole-leaf tissue samples. Testing positive for TSWV-I were *Catharanthus roseus* (L.) G. Don., *Chrysanthemum leucanthemum* L., *Digitalis purpurea* L., *Eustoma grandiflorum* (Raf.) Shinn., *Gerbera jamesonii* H. Bolus ex J.D. Hook., *Gomphrena globosa* L., *Impatiens wallerana* J.D. Hook. 'New Guinea', *Petunia* × *hybrida* Hort. Vilm.-Andr., *Phlox divaricata* L., *P. drummondii* Hook., and *Plectranthus australis* R. Br. Testing positive for TSWV-L were *Ageratum houstonianum* Mill., *Gazania* spp., *Tithonia rotundifolia* (Mill.) S.F. Blake, and *Viola* × *wittrockiana* Gams. Plants testing positive for both serotypes were *I. wallerana* and *Nicotiana alata* Link & Otto. Whether landscape plants had been infected in the greenhouse before being placed in the landscape could not be determined.

***Bipolaris sacchari* on *Panicum maximum* in Florida.** R. M. Sonoda and B. M. Turner, University of Florida, IFAS, Agricultural Research and Education Center, Fort Pierce 34954; and T. S. Schubert, Bureau of Plant Pathology, Florida Department of Agriculture and Consumer Services, Gainesville 32602. Plant Dis. 77:101, 1993. Accepted for publication 22 September 1992.

Heavy leaf spotting of guineagrass (*Panicum maximum* Jacq.) was observed in the fall of 1990 in several citrus groves in St. Lucie County, Florida. *P. maximum* is a noxious weed in Florida citrus groves but is widely used as a pasture grass in the American tropics. Lesions on leaves were usually 1–2 mm in diameter and nearly black and occasionally coalesced into large, dark necrotic areas. Incidence of leaf spot was especially high during the summer rainy season. Repeated isolations from leaf lesions consistently yielded *Bipolaris sacchari* (E.J. Butler) Shoemaker. In greenhouse tests, seedlings arising from seeds collected from *P. maximum* in groves in St. Lucie County and inoculated with $5–7 \times 10^5$ conidia per milliliter of *B. sacchari* were all severely affected; 25–40% of seedlings inoculated at the two- to three-leaf stage were killed. Surviving seedlings had lesions, but newly emerged leaves were free from disease and grew normally. *B. sacchari* was reisolated from lesions on inoculated plants. Inoculated seedlings of a *P. maximum* seed lot obtained from a Florida seed company were lesion-free, and inoculated seedlings of a *P. maximum* var. *trichoglume* seed lot from Texas had lesions but survived. *B. sacchari* was detected on *P. maximum* seeds we collected from citrus groves but not on seeds from the commercial sources. This is the first report of *B. sacchari* affecting *P. maximum*.