Disease Notes

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First Report of Botrytis Blight, Caused by *Botrytis cinerea*, on *Hibiscus* in South Africa. L. Swart and P. Langenhoven, Agricultural Research Council, Private Bag X1, Elsenburg, 7607, South Africa. Plant Dis. 84:487, 2000; published on-line as D-2000-0209-01N, 2000. Accepted for publication 8 February 2000.

Roselle (*Hibiscus sabdariffa* L.) is an annual herb grown in China, Thailand, Mexico, and Africa. Different plant parts are used for cold and hot beverages, food ingredients, edible oil, and medicinal properties. In May 1999, a disease was observed in a commercial field of 6-month-old *H. sabdariffa* plants in Eshowe, KwaZulu-Natal, South Africa. Stems of diseased plants had brown, sunken lesions covered with green-gray spore masses. Infected stems collapsed. Lesions initiated on stems expanded rapidly under cool, humid conditions. In some cases, lesions developed on the flower stalk and expanded to the calyx, causing death of the calyx. Leaves had no lesions or sporulation, but as stem blight progressed, leaves wilted and fell off. *Botrytis cinerea* Pers.:Fr. (1) was consistently isolated from affected stem and flower stalk tissues. The pathogen produced profuse conidia and mycelia on the surface of dead and infected stems and calyxes, which resulted in a moldy gray appearance. The average size of conidia produced on naturally infected stems ranged from 5.5 to 8.0 × 6.0 to 13.0 µm (average 6.5 × 9.2 µm). On potato dextrose agar (1-month-old culture), conidia ranged from 5.0 to 9.5 × 6.5 to 12.5 µm (average 7.3 × 8.7 µm) based on 50 spore measurements. Microsclerotia were round or irregular and ranged from 1.2 to 3.0 × 1.0 to 2.5 mm (average 2.1 × 2.0 mm). Koch's postulates were confirmed by spraying potted, 6-month-old *H. sabdariffa* plants with a spore suspension (1×10^5 conidia per ml). Inoculated plants were enclosed in transparent plastic bags for 7 days at 15 and 20°C (night and day) in a glasshouse. Typical symptoms developed on stems and calyxes within 7 days after inoculation. *B. cinerea* was reisolated from affected tissues. Botrytis gray mold blight has been recorded on *H. rosa-sinensis* L. and *Hibiscus* sp. in Florida (2), but this is the first report of Botrytis blight on *Hibiscus* spp. in South Africa. Because the disease can result in plant death, Botrytis blight may have a significant impact on the establishment and yield of this crop in the field, especially under cool, wet growing conditions.

References: (1) M. B. Ellis. 1971. Dematiaceous Hyphomycetes. CAB, Kew, Surrey, England. (2) D. F. Farr et al. 1989. Fungi on Plants and Plant Products in the United States. The American Phytopathological Society, St. Paul, MN.

First Report of *Ovulariopsis* on *Lupinus havardii*. S. P. Fernández-Pavía, Department of Entomology, Plant Pathology and Weed Science, New Mexico State University, Las Cruces 88003; and M. Valenzuela-Vázquez, Department of Agronomy and Horticulture, New Mexico State University, Las Cruces 88003. Plant Dis. 84:487, 2000; published on-line as D-2000-0128-01N, 2000. Accepted for publication 20 December 1999.

In 1998 and 1999 a severe powdery mildew was observed in Las Cruces, NM, on Big Bend Bluebonnets (*Lupinus havardii*) grown in the greenhouse for cut flowers and vase life studies. An undescribed powdery mildew has been reported on *L. havardii* (2), but it has been observed only occasionally on leaves and has not cause a severe problem. The powdery mildew observed in Las Cruces began in March and caused severe infection from May through July. The disease spread rapidly due to movement of the pathogen during pruning operations and the close proximity of plants. Plants were heavily infected when no fungicide was applied. Plants were sprayed with the fungicide azoxystrobin, with best control obtained at 687 mg/liter of water. When an infected plant was used as a source of inoculum, disease spread rapidly to healthy plants placed around the infected plant. Infected leaves had chlorotic lesions that later became necrotic. Mycelia, conidiophores, and conidia of the pathogen were observed on leaves and occasionally on petioles and stems. Ellipsoid cylindrical-to-clavate conidia were hyaline, one-celled, and measured 49 to 68.1 µm × 12.2 to 14.7 µm. Conidia were produced on upright, simple conidiophores measuring 171 to 245 µm × 4.9 to 7.3 µm. Fibrosin bodies and cleistothecia were not found. The fungus was identified as an *Ovulariopsis* sp. (1). This is the first documented report of an *Ovulariopsis* sp. on *L. havardii*.

References: (1) U. Braun. Beih. Nova Hedwigia 89:1, 1987. (2) W. A. Mackay and T. D. Davis. HortScience 33:348, 1998.

First Report of *Hendersonula toruloidea* as a Foliar Pathogen of Strawberry-tree (*Arbutus unedo*) in Europe. P. C. Tsahouridou and C. C. Thanassoulopoulos, Aristotelian University, Faculty of Agriculture Plant Pathology Laboratory, P.O. Box 269, 540 06 Thessaloniki, Greece. Plant Dis. 84:487, 2000; published on-line as D-2000-0203-02N, 2000. Accepted for publication 2 February 2000.

During spring 1997 and 1998 in the area of Chalkidiki, in northern Greece, leaves of wild strawberry-tree (*Arbutus unedo*) were heavily spotted. Small, necrotic brown spots with light gray centers appeared on leaves, and when intense spotting was present, strong defoliation was observed. Isolations from leaves on potato dextrose agar consistently yielded a fungus that was identified as *Hendersonula toruloidea* (2). Pathogenicity tests on wild strawberry-tree plants were performed, yielding symptoms identical to those originally observed, and *H. toruloidea* was isolated consistently from inoculated leaves. No cankers appeared on the twigs of the plants, which is a consistent symptom caused by this fungus on strawberry-tree in the United States. Leaf spotting caused by *H. toruloidea* has been observed in *Musa* and *Rhus* spp. (1). This is the first report of *H. toruloidea* causing leaf spotting and defoliation of strawberry-trees in Europe.

References: (1) D. F. Farr et al. 1989. Fungi on Plants and Plant Products in the United States. The American Phytopathological Society, St. Paul, MN. (2) R. M. Nattrass. Br. Mycol. Soc. Trans. 18:189, 1945.

Races of *Phytophthora sojae* on Soybean in Illinois. R. A. Leitz, Department of Crop Sciences; G. L. Hartman, USDA, ARS, and Department of Crop Sciences; and W. L. Pedersen and C. D. Nickell, Department of Crop Sciences, University of Illinois, Urbana 61801. Plant Dis. 84:487, 2000; published on-line as D-2000-0203-01N, 2000. Accepted for publication 26 January 2000.

Phytophthora root rot of soybean (*Glycine max* (L.) Merr.), caused by *Phytophthora sojae* M. J. Kauffmann & J. W. Gerdemann, has been isolated throughout the soybean-producing regions of the United States. There are more than 39 identified races of *P. sojae* pathogenic on soybean, and 13 host resistance alleles have been identified at 7 loci (1). None of these alleles confers resistance to all races of *P. sojae*. The most commonly used resistance allele, *Rps1k*, confers resistance to the greatest number of races (2). The objective of this study was to identify races of *P. sojae* in Illinois soybean fields to determine whether the currently used resistance alleles are effective against the *P. sojae* races found in Illinois. Soybean breeders must be aware of the existence and distribution of races to incorporate appropriate sources of genetic resistance into cultivars. From 192 soil samples collected throughout Illinois in 1997, 33 isolates were obtained and identified to race by inoculating *Rps* isolines of soybean cv. Williams. A new race with virulence to the *Rps1d* and *Rps7* alleles, designated as race 54, accounted for 48% of the isolates. Another new race with virulence to *Rps1d*, *Rps3a*, *Rps3c*, *Rps4*, *Rps5*, *Rps6*, and *Rps7* alleles, designated race 55, was identified in one sample. One isolate, identified as race 41, was obtained from a diseased plant with the *Rps1k* allele. Another isolate, identified as race 43, was obtained from a diseased plant with the *Rps1c* allele. Based on virulence patterns of *P. sojae*, most of the isolates obtained from Illinois soils were races 1, 3, and 4 or variants of these races, such as race 54, with added virulence to the *Rps1d* allele.

References: (1) A. F. Schmitthenner. 1999. Compendium of Soybean Diseases. 4th ed. G. L. Hartman, J. B. Sinclair, and J. C. Rupe, eds. The American Phytopathological Society, St. Paul, MN. pp. 39-42. (2) A. F. Schmitthenner, M. Hobe, and R. G. Bhat. Plant Dis. 78:269, 1994.

(*Disease Notes* continued on next page)

First Report of *Tobacco streak virus* in Strawberry in the Eastern United States. S. C. Hokanson, USDA-ARS Fruit Laboratory, Beltsville, MD 20705; R. R. Martin, USDA-ARS Horticultural Crops Research Laboratory, Corvallis, OR 97330; and J. L. Maas, USDA-ARS Fruit Laboratory, Beltsville, MD 20705. Plant Dis. 84:488, 2000; published on-line as D-2000-0207-01N, 2000. Accepted for publication 1 February 2000.

In a 1998 virus survey (2) conducted on 23 commercial strawberry (*Fragaria* × *ananassa* Duchesne) production farms in the state of Maryland, leaf samples from 1,100 randomly sampled plants were sent to the U.S. Department of Agriculture laboratory in Corvallis, OR, for testing by enzyme-linked immunosorbant assays (ELISA). The viruses identified were *Strawberry mild yellow edge*, *Strawberry crinkle*, *Strawberry veinbanding*, *Strawberry mottle*, and *Tomato ringspot viruses*, all of which are known in the eastern United States. *Tobacco streak virus* (TSV) also was identified in 17 of the samples: 12 originated from a 1-year-old planting of 'Sweet Charlie' and 5 from another farm, of which 4 were from a 2-year-old 'Sweet Charlie' planting and 1 was from a 2-year-old 'Delmarvel' planting. Triple antibody sandwich ELISA was used to detect TSV following the procedures described by Finn and Martin (1), except that leaves from test plants were homogenized (1:20, wt/vol, in blocking buffer) and flat bottom microtiter plates (Nunc, Roskilde, Denmark) and goat anti-mouse (polyvalent) alkaline phosphatase conjugate were used in the assays. The absorbance of each well at 405 nm (A_{405}) was read in an ELISA plate reader. Reactions were considered positive if the A_{405} values were greater than five times the values of healthy samples. The A_{405} values of healthy samples ranged from 0.0 to 0.04, with values greater than 0.20 considered positive for TSV. An independent determination of TSV was made in plants shipped from Florida to Maryland in 1999. In this instance, leaf samples from 'Sweet Charlie' plants were sent by the Maryland Department of Agriculture to Agdia Inc. (Elkhart, IN), where samples tested positive for TSV.

References: (1) C. E. Finn and R. R. Martin. Plant Dis. 80:769, 1996. (2) S. C. Hokanson, et al. Adv. Strawberry Res. In press.

Lupins, a New Host of *Phytophthora erythroseptica*. A. Trapero-Casas, A. Rodríguez-Tello, and W. J. Kaiser, Departamento de Agronomía, ETSIAM, Universidad de Córdoba, Apartado 3048, 14080 Córdoba, Spain. Plant Dis. 84:488, 2000; published on-line as D-2000-0126-01N, 2000. Accepted for publication 20 January 2000.

Several lupin (*Lupinus*) species are native to southern Spain (2). The white lupin, *Lupinus albus* L., is the most important crop, and its seeds are used for human consumption and animal feed. Accessions of three indigenous species, *L. albus*, *L. angustifolius* L., and *L. luteus* L., and an introduced species from South America, *L. mutabilis* Sweet, were planted during October in replicated yield trials in acidic soils (pH 6.5) in the Sierra Morena Mountains (elevation 350 m) north of Córdoba. Root and crown rot disease was widespread and very serious on the indigenous lupins, particularly in several patches of white lupin cultivars. Infected plants were devoid of feeder rootlets, and the tap roots, crowns, and lower stems were necrotic and turned dark brown to black. Rotted roots were colonized heavily by fungal oospores. Many affected plants wilted and died before flowering. A *Phytophthora* sp. was isolated consistently from the necrotic roots and crowns of symptomatic white lupins. The same fungus also was isolated from the necrotic root tissues of the other indigenous lupin species. Isolates of the fungus from diseased white lupins were homothallic and produced oospores rapidly and abundantly on corn meal and V8 agars. Antheridia were amphigynous, and aplerotic oospores ranged from 22 to 32 µm (average 27 µm). Nonpapillate, ovoid-obpyriform sporangia were produced only in water on simple sympodial sporangiophores. Cultures on V8 agar grew at 5 to 30°C (optimum ≈25°C). The species was identified as *Phytophthora erythroseptica* Pethybr. based on morphology of oospores, sporangia, and other cultural characteristics (1). Koch's postulates were fulfilled by planting seeds of white lupin cv. Multulupa in sterile potting soil infested with a blended culture on V8 agar from a white lupin isolate of *P. erythroseptica* and reisolating the fungus after 28 days from lesions that developed on the roots and crowns of inoculated plants incubated in a greenhouse at 16 to 26°C. The fungus was not isolated from white lupins seeded in potting soil inoculated with sterile V8 agar. In pathogenicity tests, two isolates of *P. erythroseptica* from white lupins caused severe symptoms on the roots and crowns of inoculated white lupin cv. Multulupa similar to those observed on white lupins naturally infected in field trials. These isolates also caused root and crown rots on inoculated *L. luteus* and *L. angustifolius*. The fungus did not infect the roots or crowns of tarwi (*L. mutabilis* cv. SCG 20), alfalfa (*Medicago sativa* cv. Moapa), bean (*Phaseolus vulgaris* cv. Contender), chickpea (*Cicer arietinum* cv. Blanco Lechoso), faba bean (*Vicia faba* cv. Arboleda), lentil (*Lens culinaris* cv. local), pea (*Pisum sativum* cv. Lancet), soybean (*Glycine max* cv. Akashi), or subterranean clover (*Trifolium subterraneum* cv. Seaton-park). The tests were repeated, and the results were similar. This is the first report of *P. erythroseptica* infecting *Lupinus* spp.

References: (1) D. C. Erwin and O. K. Ribeiro. 1996. Phytophthora Diseases Worldwide. The American Phytopathological Society, St. Paul, MN. (2) B. Valdés et al. 1987. Flora Vascular de Andalucía Occidental. Ketres, Barcelona, Spain.

A New Bipartite Geminivirus (Begomovirus) Causing Leaf Curl and Crumpling in Cucurbits in the Imperial Valley of California. P. Guzman, M. R. Sudarshana, Y.-S. Seo, and M. R. Rojas, Department of Plant Pathology, University of California, Davis 95616; E. Natwick, T. Turini, and K. Mayberry, University of California Cooperative Extension, Holtville 92250; and R. L. Gilbertson, Department of Plant Pathology, University of California, Davis 95616. Plant Dis. 84:488, 2000; published on-line as D-2000-0218-02N, 2000. Accepted for publication 9 February 2000.

During fall 1998, volunteer watermelons (*Citrullus lunatus* L. (Thunb.) Matsum. & Nakai) showing leaf curl, crumpling, and yellowing symptoms were found in a commercial honeydew melon (*Cucumis melo* L. subsp. *melo* Inodorus group) field in the Imperial Valley of California. The plants were infected with a begomovirus (family *Geminiviridae*, genus *Begomovirus*) based on (i) a positive response in squash blots probed with a general begomovirus DNA probe (1) and (ii) amplification of DNA-A (≈1.2 kb) and DNA-B (≈1.4 kb) fragments by polymerase chain reaction (PCR) with degenerate DNA-A (PAL1v1978/PAR1c496) and DNA-B (PBL1v2040/PBR1c970) primers, respectively (3). The DNA-A and -B fragments were cloned and sequenced (GenBank accession nos. AF224760 [DNA-A] and AF224761 [DNA-B]). The DNA-A and -B fragments had a nearly identical (99.5%) common region (CR) of 186 (DNA-A) and 187 (DNA-B) nucleotides, indicating they were from the same begomovirus. Database searches conducted with these sequences revealed no high degree of sequence identity (i.e., >90%) with other begomoviruses, including *Squash leaf curl virus* (SqLCV [2]) from southern California. The partial AC1 sequence (669 nt) was most identical to *Tomato severe leaf curl virus* (ToSLCV) from Guatemala (83%) and SqLCV (81%), the partial AV1 sequence (135 nt) was most identical to *Tomato golden mosaic virus* from Brazil (84%) and SqLCV (81%), and the CR was most identical to *Squash yellow mottle virus* from Costa Rica (81%), ToSLCV (81%), and SqLCV (77%). The partial BV1 sequence (465 nt) was most identical to *Bean calico mosaic virus* and SqLCV (72%), and the partial BC1 sequence (158 nt) was most identical to SqLCV (75%). Watermelon seedlings bombarded with a DNA extract from infected watermelon volunteers developed crumpling and distortion symptoms, whereas seedlings bombarded with gold particles alone developed no symptoms. Geminivirus infection in symptomatic seedlings was confirmed by PCR. These results suggest a new begomovirus caused the disease symptoms in the watermelon volunteers. Leaf crumpling and curling symptoms were not observed in spring melons in the Imperial Valley in 1999, but on 2 July and 17 August 1999, cantaloupe (*C. melo* L. subsp. *melo* Cantalupensis group), muskmelon (*C. melo* L. subsp. *melo* Cantalupensis group), and watermelon plants with leaf crumpling and yellowing were found. These plants were infected with the new begomovirus based on sequence analysis of PCR-amplified DNA-A fragments (97 to 98% identity for CR and partial AC1 sequence). A survey of fall melons, conducted 23 to 24 September 1999, revealed widespread symptoms of leaf curl and crumpling on new growth of muskmelon plants in all seven commercial fields examined (estimated incidence 25 to 50%) and on watermelon volunteers. No such symptoms were observed on leaves of honeydew melons. Symptomatic muskmelon and watermelon leaves, collected from eight locations throughout the Imperial Valley, were infected with the new begomovirus based on sequence analysis of PCR-amplified DNA-A fragments. Thus, a new begomovirus has emerged in the Imperial Valley; the name *Cucurbit leaf crumple virus* (CuLCrV) is proposed.

References: (1) R. L. Gilbertson et al. Plant Dis. 75: 336, 1991. (2) S. G. Lazarowitz and I. B. Lazdins. Virology 180:58, 1991. (3) M. R. Rojas et al. Plant Dis. 77:340, 1993.

First Report of *Phyllachora ambrosiae* in Europe Causing Epidemics on Common Ragweed. L. Vajna, G. Bohár, and L. Kiss, Plant Protection Institute of the Hungarian Academy of Sciences, P. O. Box 102, Budapest, H1525, Hungary. Plant Dis. 84:489, 2000; published on-line as D-2000-0216-01N, 2000. Accepted for publication 9 February 2000.

Common ragweed (*Ambrosia artemisiifolia* var. *elatior* (L.) Descourt.) was introduced to Europe from North America during the nineteenth century. Since the early 1990s, it has become the most widespread and most important allergenic weed in Hungary. In July 1999, during the annual survey of fungal diseases of ragweed in Hungary, plants exhibiting irregular brown spots surrounded by yellowish halos with small black spherical bodies on the upper surface of leaves, especially along the vessels, were collected from three roadside sites. Light microscopy revealed intracellular hyphae in the cells of leaf tissues, including the vessels, and perithecia (186 to 262 µm in diameter) containing paraphyses and asci (93 × 15 µm) with eight hyaline, unicellular ascospores (14 × 7.5 µm). Hyphae also were observed in asymptomatic leaf tissues and the petioles of infected plants. Mature perithecia commonly found in the necrotic spots also were present in asymptomatic, green leaf tissues. Based on the literature (1,2) and on the morphological examination of two herbarium specimens, BPI 636220 and BPI 636225, borrowed from the U.S. National Fungus Collection, the fungus was identified as *Phyllachora ambrosiae* (Berk. & M.A. Curtis) Sacc., a holobiotrophic pathogen of ragweed in North and South America. This is the first report of *P. ambrosiae* on ragweed in Europe. To confirm pathogenicity, leaves of five potted ragweed plants, grown from seed in pots, were inoculated with 0.1 ml of an aqueous suspension containing 5×10^5 ascospores per ml. Inoculated plants were placed in a moist chamber for 48 h and kept in the greenhouse at 20 to 25°C. Noninoculated plants served as controls. Two weeks after inoculation, yellowish spots, which later became brown and necrotic, and perithecia appeared on each of the inoculated leaves. Infected leaves died 3 to 4 weeks after inoculation. Symptoms were similar to those seen in the field. The fungus in tissues of inoculated plants was morphologically identical to the original fungus on plants with spontaneous infections. Control plants did not develop symptoms. To determine the distribution of *P. ambrosiae* in Hungary, a total of 500 ragweed plants were collected at random from 21 locations in all regions of the country between August and October 1999. Symptoms characteristic of *P. ambrosiae* infections and perithecia of the fungus were found in 92% of all 500 collected plants. From mid-September, all ragweed plants examined had dead leaves and inflorescences. Perithecia of *P. ambrosiae* were found in leaves, stems, and flowers.

References: (1) P. A. Saccardo. 1883. Sylloge Fungorum. Patavii (Padova), Sumptibus Aucteris. (2) F. Theissen and H. Sydow. 1915. Ann. Mycol. 13:431.

First Report of Downy Mildew (Caused by *Peronospora destructor*) of Onion in Georgia. D. B. Langston, Jr. and D. R. Sumner, Department of Plant Pathology, University of Georgia, Coastal Plain Experiment Station, Tifton 31793. Plant Dis. 84:489, 2000; published on-line as D-2000-0131-02N, 2000. Accepted for publication 21 January 2000.

In February 1999, localized areas in a commercial field of Vidalia sweet onions in Toombs County, GA, exhibited symptoms that included elongated pale to light tan lesions on older leaves as well as some totally collapsed leaves. A dark, sooty to purple-gray fungal growth also was observed on affected leaves. Both symptoms and signs were observed during a period of wet, cool weather. Microscopic observation of affected tissues revealed nonseptate mycelia and dichotomously branched sporangiophores, which tapered to short sterigmata, giving rise to pyriform to fusiform sporangia. Based on these observations, the disease was determined to be downy mildew of onion caused by *Peronospora destructor* (Berk.). The dimensions of 25 sporangia averaged 25.1 ± 3.8 × 64.2 ± 4.3 µm, falling within the range of those currently reported for *P. destructor* (1). The disease was isolated to the field in which it was initially reported and did not cause extensive damage. Its failure to progress and spread may have been due to the warm, dry conditions that prevailed subsequent to symptom detection. This is the first report of *P. destructor* in Georgia.

Reference: (1) H. F. Schwartz and S. K. Mohan. 1995. Diseases of aerial parts caused by fungi. Pages 20-24 in: Compendium of Onion and Garlic Diseases. The American Phytopathological Society, St. Paul, MN.

First Report of the Telial Stage of *Gymnosporangium exiguum* on Ashe Juniper Adjacent to Hawthorn with Rust in Southwest Texas. M. C. Black, Department of Plant Pathology and Microbiology, Texas A&M University Agricultural Research and Extension Center, Uvalde 78802-1849; and L. F. Grand and C. S. Vernia, Department of Plant Pathology, North Carolina State University, Raleigh 27695-7616. Plant Dis. 84:489, 2000; published on-line as D-2000-0221-01N, 2000. Accepted for publication 17 February 2000.

The telial stage of *Gymnosporangium exiguum* (2) on Ashe juniper (*Juniperus ashei*) was observed in Bandera County, TX, in April and May 1999 after rain events. Symptomatic plants with multiple lesions were found at low frequencies in dense *J. ashei* populations. Orange telia formed on scales and bark and on 2- to 3-mm-diameter twigs and became nearly inconspicuous when dry. No hypertrophy was observed. Previously reported telial hosts include *J. californica* and *J. excelsa* cv. Stricta in California; *J. mexicana* and *J. scopulorum* in Oklahoma; *J. virginiana* in Texas; and *J. deppeana* var. *pachyphloea* in Oklahoma and Texas (1). An aecial stage identified as *G. exiguum* has been observed for many years on native hawthorns (*Crataegus crus-galli*, *C. greggiana*, *C. mollis*, *C. stevensiana*, *C. tracyi*, *C. turnerorum*, *C. viridis* var. *desertorum*, and several natural hybrids) in Bandera, Bexar, Edwards, Gillespie, Kendall, Kimble, Real, and Uvalde counties, Texas. Prominent roestelioid aecia were observed on hawthorn leaves, petioles, fruits, peduncles, thorns, and, less often, on twigs. In two experimental plantings of hawthorns in Bandera County, rust severity was rated as low to moderate in six populations of *C. greggiana* and hybrids; moderate in two populations each of *C. stevensiana* and *C. tracyi*; moderate to severe in three populations of *C. crus-galli* and hybrids; and severe in one population each of *C. mollis* and *C. viridis* var. *desertorum*. *G. exiguum* was previously reported on a *Crataegus* sp. in Texas and on *Heteromeles arbutifolia* in California (1). Flowers, fruits, plant forms, and drought tolerances are characteristics of some endemic hawthorns that provide landscape and wildlife advantages. *G. exiguum* causing rust disease may limit the ornamental potential of highly susceptible hawthorn species in southwest Texas. Inconspicuous infections on susceptible ornamental *Juniperus* spp. also could have phytosanitary implications. Voucher specimens (aecia and telia) are on deposit in the Mycological Herbarium, Department of Plant Pathology, North Carolina State University, Raleigh.

References: (1) D. F. Farr et al. 1989. Fungi on Plants and Plant Products in the United States. The American Phytopathological Society, St. Paul, MN. (2) F. D. Kern. 1973. A Revised Taxonomic Account of *Gymnosporangium*. The Pennsylvania State University Press, University Park.

New Natural Hosts of *Tomato spotted wilt virus*. C. Jordá, I. Font, and A. Lázaro, Department Vegetal Production, Plant Pathology (Agrónomos), Universidad Politécnica, Cno. de Vera 14, Valencia, Spain; M. Juarez and A. Ortega, Department Vegetal Production, Universidad Miguel Hernández, Orihuela, Alicante, Spain; and A. Lacasa, Centro de Investigación y Desarrollo Agrario, Murcia, Spain. Plant Dis. 84:489, 2000; published on-line as D-2000-0204-03N, 2000. Accepted for publication 3 February 2000.

Tomato spotted wilt virus (TSWV) has caused epidemics in recent years in many crops throughout the Mediterranean Region. Tomato, pepper, and lettuce are the crops most affected in Spain. To determine the reservoir hosts for the virus in the area, 210 samples from 95 species of plants were collected and tested for TSWV by double-antibody sandwich enzyme-linked immunosorbent assay with commercial antisera (Loewe Biochemica, Germany: BR-01, serogroup I or TSWV-L). Twenty-one species tested positive, and among them were thirteen newly identified hosts for TSWV (1). Weed species were among the 13 new hosts and included *Diplotaxis erucoides* (L.) DC., *Beta maritima* L., *Phragmites communis* Trin., *Malva sylvestris* L., *Sonchus arvensis* L., *Sorghum halepense* L., *Panicum repens* L., *Atriplex patula* L., *Coronopus squamatus* (Forssk.) Ascherson, *Cuscuta* sp., *Xanthium spinosum* L., *Suaeda vera* J.F., and *Ecballium elaterium* (L.) A. Rich. Most of these plants were asymptomatic hosts, but the *Sonchus* sp. showed typical symptoms of TSWV, such as yellows, bronzing, ring spots, necrosis, curling of young leaves, and growth reduction. *D. erucoides*, *B. maritima*, *M. sylvestris*, *X. spinosum*, and *E. elaterium* showed chlorosis and growth reduction.

Reference: (1) C. Jorda et al. 1998. Anexo no. 3. Pages 381-386 in: The Health of Tomato Crops. Phytoma-España S. L., Valencia, Spain.

(*Disease Notes* continued on next page)

Occurrence of a New Pathotype of *Lettuce mosaic virus* on Lettuce in Brazil. O. Stangarlin, M. A. Pavan, and N. da Silva, Faculdade de Ciéncias Agronómicas, Campus de Botucatu, UNESP, P.O. Box 237, 18603-970, Botucatu, São Paulo, Brazil. Plant Dis. 84:490, 2000; published on-line as D-2000-0203-03N, 2000. Accepted for publication 31 January 2000.

Since 1970 lettuce mosaic has not been an important disease of lettuce in Brazil, due to the growing of cultivars that contain gene *g*, derived from cv. Gallega de Invierno, for tolerance. Recently, however, a widespread, serious outbreak of lettuce mosaic occurred in the State of Sao Paulo. Both lettuce cultivars that lack and those that contain gene *g* have been affected, suggesting the emergence of a new pathotype of *Lettuce mosaic virus* (LMV). Commercial lettuce fields were visited, and 20 samples were collected for virus identification by bioassay on differential hosts, serological tests, and electron microscopy. Of these, 12 were infected only by LMV, and 8 contained mixed infections of LMV and a possible new sequivirus, *Lettuce mottle virus*. Seedlings of susceptible cv. White Boston were inoculated with LMV from tolerant cultivars, and plants were allowed to flower. Seeds were collected and sown, and seedlings with mosaic symptoms were recovered. Twenty monolesional isolates, obtained by passing the virus three times through *Chenopodium amaranticolor*, were inoculated individually on lettuce differential cvs. Salinas and White Boston (susceptible) and cvs. Salinas 88, Vanguard 75, Ithaca, Malika, and Gallega de Invierno (tolerant) to previously described pathotypes of LMV (1). Considering the susceptibility of all test differentials, we concluded that a LMV pathotype IV exists that has overcome tolerance conferred by genes *m* and *g* and is responsible for the new outbreak of LMV in Brazil. This is the first report of LMV-IV in Latin America.

Reference: (1) D. A. C. Pink et al. Plant Pathol. 41:5, 1992.

First Report of Bacterial Spot of Lettuce Caused by *Xanthomonas campestris* pv. *vitians* in Turkey. F. Sahin, Atatürk University, Biotechnology Research and Application Center, Erzurum, Turkey. Plant Dis. 84:490, 2000; published on-line as D-2000-0211-01N, 2000. Accepted for publication 9 February 2000.

During spring 1999, lettuce (*Lactuca sativa*) plants grown at Oltu in the eastern Anatolia region of Turkey were observed with numerous lesions typical of bacterial leaf spot. Lesions on leaves were irregular, small, pale green to black, water-soaked, and 2 to 5 mm in diameter. Coalescing lesions sometimes caused defoliation of older leaves. Isolations made from diseased leaves on yeast dextrose carbonate agar yielded nearly pure cultures of a yellow pigmented bacterium typical of a xanthomonad. Five bacterial strains were purified and used for further tests. The strains reacted positively with a *Xanthomonas*-specific monoclonal antibody, X1, in indirect enzyme-linked immunosorbent assays (1). Fatty acid analysis identified the strains as *X. campestris* pv. *vitians* (proposed name *X. axonopodis* pv. *vitians*), with greatest similarity indices of 29 to 71% (2). Pathogenicity of strains was confirmed on 5-week-old lettuce plants (cv. Darkland) sprayed with bacterial suspensions containing 10^8 CFU/ml of sterile water. Inoculated and sterile water-sprayed control plants were covered with polyethylene bags for 48 h at 25°C, after which bags were removed and plants were maintained in the greenhouse. Water-soaked spots similar to those in the field were observed on inoculated plants within 5 to 7 days. No symptoms developed on control plants. The bacterium was reisolated from inoculated plants and identified as *X. campestris* pv. *vitians*. This is the first report of bacterial leaf spot of lettuce in Turkey.

References: (1) A. M. Alvarez et al. Phytopathology 84:1449, 1994. (2) Vauterin et al. Int. J. Syst. Bact. 45:472, 1995.

Stem Blight of *Eustoma grandiflorum* Caused by *Sclerotium rolfsii*. R. J. McGovern, University of Florida-IFAS, GCREC, Bradenton 34203; H. Bouzar, Sakata Seed America Inc., Salinas, CA 95038; and B. K. Harbaugh, University of Florida-IFAS, GCREC, Bradenton 34203. Plant Dis. 84:490, 2000; published on-line as D-2000-0204-02N, 2000. Accepted for publication 1 February 2000.

During a 4-week period in May through June 1996, 15% of 50 mature lisianthus (*Eustoma grandiflorum*) 'Maurine Blue' and 'Maurine White' plants exhibited stem blight in a landscape planting in west-central Florida. Initial disease symptoms included stem necrosis at the soil line, and yellowing and tan discoloration of leaves. As blighting of the stem progressed, infected plants wilted and died. Symptomatic stem sections from three plants were surface-disinfested in 0.5% NaOCl and placed on acidified 25% potato dextrose agar (APDA). *Sclerotium rolfsii* Sacc. was isolated from all three diseased stems. Pathogenicity of each of three *S. rolfsii* isolates was confirmed using two lisianthus 'Flamenco Blue' plants grown in 10.2-cm-diameter plastic pots containing a peat-based medium. Sclerotia produced on APDA were sprinkled on the soil surface around each plant base; 50, 100, and 5 sclerotia from isolates A, B, and C, respectively, were used (isolate C grew more slowly and produced fewer sclerotia than either A or B). Two noninoculated lisianthus served as controls. Plants were maintained in a greenhouse at minimum and maximum temperatures of ≈24 and 35°C, respectively. Plants inoculated with sclerotia from isolates A and B developed blight symptoms within 6 days. One of two plants inoculated with isolate C developed blight symptoms within 17 days, and the other remained symptomless, as did the control plants. Infection by *S. rolfsii* was confirmed by reisolation from symptomatic tissue. This is the first report of stem blight of lisianthus caused by *S. rolfsii*.

Spread of *Tomato yellow leaf curl virus* Sar from the Mediterranean Basin: Presence in the Canary Islands and Morocco. F. Monci and J. Navas-Castillo, CSIC, 29750 Algarrobo, Costa, Málaga, Spain; J. L. Cenis and A. Lacasa, CIDA, 30150 La Alberca, Murcia, Spain; A. Benazoun, Institut Agronomique et Vétérinaire Hassan II, B.P. 121, Ait melloul, Agadir; and E. Moriones, CSIC, 29750 Algarrobo-Costa, Málaga, Spain. Plant Dis. 84:490, 2000; published on-line as D-2000-0131-01N, 2000. Accepted for publication 28 January 2000.

Severe outbreaks of tomato yellow leaf curl disease occurred during summer and autumn 1999 in tomato (*Lycopersicon esculentum* Mill.) crops in the Vecindario Region of Gran Canaria (Canary Islands, Spain) and Agadir (southwestern Atlantic coast of Morocco). Symptoms of the disease included upward curling of leaflet margins, reduction of leaflet area, and yellowing of young leaves, as well as stunting and flower abortion. High populations of whiteflies, *Bemisia tabaci* Gen., were present on tomatoes in Agadir, and analysis of adult individuals by random amplified polymorphic DNA-polymerase chain reaction (RAPD-PCR) identified them as the biotype Q. Samples were collected from symptomatic tomato plants: 5 plants from Gran Canaria and 22 from three areas in Agadir, (7 from Agadir/1, 12 from Agadir/2, and 3 from Agadir/3) in the Koudya Region. Samples were analyzed for *Tomato yellow leaf curl virus* (TYLCV) Sar or Is (genus *Begomovirus*, family *Geminiviridae*) infection by squash blot hybridization under high stringency conditions with digoxigenin-labeled DNA probes specific to TYLCV-Sar or -Is, as described previously (1,3). The TYLCV-Sar probe hybridized to the five samples from Gran Canaria, and the TYLCV-Is probe hybridized to the 22 samples from Agadir. The TYLCV-Sar probe also hybridized to the three samples from Agadir/3. Primer pairs MA-14/MA-15 and MA-30/MA-31, designed for specific amplification of the intergenic region (IR) of TYLCV-Sar or -Is reported from Spain, respectively (1), were used in PCR to amplify one sample each from Gran Canaria, Agadir/1, and Agadir/3. A fragment of the expected size was obtained from the samples from Gran Canaria and Agadir/3 using MA14/MA15 (342 bp) and from the two samples from Agadir using MA30/MA31 (357 bp). PCR products were directly sequenced (GenBank Accession nos. AF215819 to AF215822). The nucleotide sequences of the IR fragments amplified from the Gran Canaria and Agadir/3 sample using MA-14/MA-15 indicated their closest relationship (99.0 and 96.7% identity, respectively) was to the corresponding region of a TYLCV-Sar isolate reported from Spain (GenBank Accession no. L27708). The nucleotide sequences of the IR fragments amplified from the Agadir/1 and Agadir/3 samples using MA-30/MA-31 indicated their closest relationship (98.1% identity) was to the corresponding region of the TYLCV-Is isolate reported from Spain (GenBank Accession no. AF071228). Based on the hybridization and sequence data, we conclude that the symptomatic plants from Gran Canaria were infected by TYLCV-Sar, those from Agadir/1 and Agadir/2 were infected by TYLCV-Is, and those from Agadir/3 had mixed infections with TYLCV-Is and TYLCV-Sar. The presence of TYLCV-Is in Morocco has been described recently (2). However, this is the first report of TYLCV-Sar in the Canary Islands and Morocco and extends its geographic range beyond the Iberian Peninsula and Italy.

References: (1) J. Navas-Castillo et al. Plant Dis. 83:29, 1999. (2) M. Peterschmitt et al. Plant Dis. 83:1074, 1999. (3) S. Sánchez-Campos et al. Phytopathology 89:1038, 1999.

Outbreaks of Stem and Leaf Blight of *Eustoma grandiflorum* Caused by a *Phomopsis* sp. in Florida. R. J. McGovern, T. E. Seijo, and B. K. Harbaugh, University of Florida-IFAS, Gulf Coast Research and Education Center, Bradenton 34203; and T. S. Schubert, Florida Department of Agriculture and Consumer Services, Division of Plant Industry, Gainesville 32614. Plant Dis. 84:491, 2000; published on-line as D-2000-0204-01N, 2000. Accepted for publication 1 February 2000.

Between November 1997 and May 1998, numerous lisianthus (*Eustoma grandiflorum*) cultivars exhibited severe stem and leaf blight at two potflower production sites in Hillsborough and Dade counties, FL. Blight occurred in mature plants and ranged in incidence from 3 to 5% in Dade County and from 40 to 80% in Hillsborough County. Initial stem necrosis was rapidly followed by leaf blight and production of numerous dark pycnidia in diseased tissue. As stem blight progressed, infected plants collapsed and died. Pycnidia contained biguttulate, 7.2 × 2.2-µm spores typical of *Phomopsis* alpha conidia; beta conidia were not observed. A *Phomopsis* sp. was isolated consistently when pycnidia from symptomatic stems were placed on acidified 25% potato dextrose agar after surface-disinfestation in 0.5% NaOCl; only alpha conidia were observed in culture. Pathogenicity was confirmed using a suspension of hyphae, pycnidia, and conidia made by comminuting one 95-mm-diameter acidified carnation leaf agar plate containing a 4-week-old colony of the *Phomopsis* sp. in 100 ml of deionized water. Six plants of lisianthus 'Maurine Blue' (three wounded at the crown, three nonwounded) each were inoculated with 10 ml of the fungal suspension. An equal number of noninoculated lisianthus (three wounded, three nonwounded) served as controls. After inoculation, plants were maintained in a greenhouse with average high and low temperatures of 38 and 25°C, respectively. Stem and leaf blight symptoms were observed in two of three wounded plants and in all nonwounded plants within 11 and 15 days after inoculation, respectively. Infection by a *Phomopsis* sp. was confirmed by reisolation from symptomatic tissue. Although this *Phomopsis* sp. has been detected previously in lisianthus exhibiting leaf and stem lesions (1), this report establishes the ability of the of the fungus to act as a primary pathogen and to cause extensive losses in this crop.

Reference: (1) Alfieri et al. 1994. Diseases and Disorders of Plants in Florida. Bull. No. 14. Division of Plant Industry, Gainesville, FL.

First Report of *Tomato spotted wilt virus* in Common Agapanthus. C. R. Wilson, A. J. Wilson, and S. J. Pethybridge, Tasmanian Institute of Agricultural Research, University of Tasmania, GPO Box 252-54, Hobart, TAS 7001, Australia. Plant Dis. 84:491, 2000; published on-line as D-2000-0203-04N, 2000. Accepted for publication 28 January 2000.

Common agapanthus (*Agapanthus praecox* subsp. *orientalis*), native to South Africa, is a popular ornamental flowering bulb species belonging to the Amaryllidaceae and is commonly found in residential gardens. Roots from some *Agapanthus* sp. also are used in traditional medicine in Africa. Common agapanthus collected from a residential property in Hobart, Tasmania, Australia, showed leaf symptoms of concentric ring and line patterns, irregular chlorotic blotches, and streaks. Symptomatic plants were severely stunted and failed to flower. Symptomatic leaves prematurely senesced, but young foliage subsequently produced was symptomless. Similar symptoms have been reported in other members of the Amaryllidaceae and are associated with infection by *Tomato spotted wilt virus* (TSWV; e.g., *Nerine* and *Hippeastrum* spp.) or *Cucumber mosaic virus* (CMV; e.g., *Hippeastrum* sp.) (2). The presence of TSWV and absence of CMV in symptomatic plants of common agapanthus was determined by enzyme-linked immunosorbent assay. Confirmation of TSWV infection was provided by reverse-transcription polymerase chain reaction assay with primers specific to the nucleocapsid protein gene of TSWV, with nucleic extracts from symptomatic plants producing an expected ≈800-bp amplicon (1). This is the first report of TSWV infection of any species within the Amaryllidaceae in Australia and the first report of the occurrence of TSWV in common agapanthus.

References: (1) R. K. Jain et al. Plant Dis. 82:900, 1998. (2) G. Loebenstein et al. 1995. Virus and Virus-like Diseases of Bulb and Flower Crops. John Wiley & Sons, Chichester, U.K.

Bean Anthracnose: Virulence of *Colletotrichum lindemuthianum* Isolates from Burundi, Central Africa. J. Bigirimana, R. Fontaine, and M. Höfte, Laboratory of Phytopathology, Ghent University, Coupure Links 653, B-9000 Gent, Belgium. Plant Dis. 84:491, 2000; published on-line as D-2000-0207-02N, 2000. Accepted for publication 3 February 2000.

The diversity of *Colletotrichum lindemuthianum* is a major limiting factor in control of anthracnose on bean (*Phaseolus vulgaris*), and race characterization of this pathogen is an important tool in breeding programs. Race characterization has been carried out on isolates from North, Central, and South America; Europe; and Asia, but little or no information exists on the diversity of *C. lindemuthianum* in Africa. In this work, 12 isolates from the major bean-growing areas of Burundi, Central Africa, were characterized. Their virulence was tested on 12 bean differential cultivars (1) and on 4 bean cultivars commonly grown in Burundi: 2 from local germ plasm (Muyinga-1 and Urubonobono) and 2 from Colombia (A 321 and Calima). Detached unifoliate bean leaves from 8-day-old plants were placed on a humid surface in trays and sprayed until runoff with a suspension of 10^6 spores ml^{-1}. Trays covered with transparent plastic sheets to keep a minimum relative humidity of 92% were incubated at 20°C. Seven days after inoculation, symptoms were evaluated for severity on a scale of 1 to 9. Leaves scored as 1 to 3 were considered resistant. Races were characterized according to a numerical binary system (1). Nine races were identified: 9, 69, 87, 384, 385, 401, 448, 449, and 485. Seven of these races (9, 69, 87, 384, 401, 448, and 485) were described for the first time in Africa. Races 401 and 485 have not yet been reported in the literature. The most susceptible differential cultivars were Michelite, PI 207262, To, and Mexico 222. Muyinga-1, Urubonobono, and A 321 were sensitive to nine, six, and five races, respectively. There is a high diversity of *C. lindemuthianum* in Burundi, and the local germ plasm tested is very susceptible to the characterized races. Breeding programs in Burundi should focus on lines and cultivars, such as Tu, AB 136, G 2333, and Calima, that are resistant to all the races characterized in this study.

Reference: (1) M. A. Pastor-Corrales. Phytopathology 81:694, 1991.

***Pittosporum tobira*: A New Host for *Tomato spotted wilt virus*.** A. Gera, A. Kritzman, and J. Cohen, Department of Virology, Agricultural Research Organization, The Volcani Center, Bet Dagan 50250, Israel. Plant Dis. 84:491, 2000; published on-line as D-2000-0218-01N, 2000. Accepted for publication 15 February 2000.

In July 1998, *Pittosporum tobira* shrubs, grown in a nursery in the Sharon Valley of Israel, developed foliar ring spots, mild mosaic, and tip necrosis. Of 15 samples tested for the presence of *Tomato spotted wilt virus* (TSWV) with a commercially available enzyme-linked immunosorbent assay (ELISA) kit (Loewe Biochemica, Otterfing, Germany), 14 were positive for TSWV. Virus in crude sap extracted from symptomatic tissue was mechanically transmitted to *Emilia* spp., *Petunia hybrida*, *Nicotiana glutinosa*, *N. benthamiana*, and *N. rustica* plants, which developed symptoms characteristic of TSWV infection (1). ELISA tests of leaf sap extracted from naturally infected *P. tobira* and mechanically inoculated indicator plants gave a strong positive reaction to TSWV. Leaf samples of *P. tobira* were analyzed by transmission electron microscopy in leaf-dip preparations and thin sections of leaf tissues. Virus particles typical of a tospovirus were observed only in samples taken from symptomatic leaves. Primers specific to the nucleocapsid gene of TSWV were used in a reverse transcription-polymerase chain reaction (RT-PCR) assay to verify the presence of TSWV. RT-PCR gave an expected PCR product of ≈850 bp. The amplicon was cloned in the pGEM-T vector, and the recombinant clone was sequenced. The sequence of the cloned PCR product confirmed the identity of TSWV, verifying TSWV infection of *P. tobira*. This is the first report of infection of *P. tobira* by TSWV.

Reference: (1) Y. Antignus et al. Phytoparasitica 25:319, 1997.

(*Disease Notes* continued on next page)

First Report of Web Blight on Verbena Caused by *Rhizoctonia solani*. G. E. Holcomb, Department of Plant Pathology and Crop Physiology, Louisiana State University AgCenter, Baton Rouge 70803; and D. E. Carling, University of Alaska, Palmer Research Center, Palmer 99645. Plant Dis. 84:492, 2000; published on-line as D-2000-0223-01N, 2000. Accepted for publication 14 February 2000.

Web blight was observed on verbena (*Verbena* × *hybrida*) during July 1999 in a cultivar trial planting at Burden Research Plantation in Baton Rouge, LA. Foliage blight, stem lesions, and branch death were common symptoms on 12 of 24 cultivars in the trial. Plant death occurred in cvs. Babylon Florena (one of four plants), Purple Princess (two of four plants), and Taylortown Red (two of four plants). Isolations from infected leaves and stems on acidified water agar consistently yielded a fungus with the mycelial and cultural characteristics of *Rhizoctonia solani*. Pathogenicity tests were carried out by placing 5-day-old fungal mycelial plugs, grown on acidified potato dextrose agar, at the base of healthy verbena stems and holding plants in a dew chamber at 26°C. After 3 days, foliage blight and stem lesions appeared on inoculated plants, and plants were moved to a greenhouse where temperatures ranged from 23 to 32°C. Seven of nine inoculated plants died after 7 days; noninoculated plants remained healthy. The fungal pathogen was reisolated from all inoculated plants. The fungus was identified as *R. solani* anastomosis group (AG)-1 IB based on multinucleate condition, type of sclerotia produced, and ability to anastomose with *R. solani* tester isolates of AG-1 IB. This is the first report of web blight on verbena.

First Report of Gray Leaf Spot on Perennial Ryegrass in Indiana. P. Harmon, K. Rane, G. Ruhl, and R. Latin, Department of Botany and Plant Pathology, Purdue University, West Lafayette, IN 47907-1155. Plant Dis. 84:492, 2000; published on-line as D-2000-0224-01N, 2000. Accepted for publication 22 February 2000.

Pyricularia grisea, the causal agent of gray leaf spot on turfgrass, was isolated from symptomatic perennial ryegrass (*Lolium perenne*) leaves collected from a golf course in north-central Indiana in August 1999. Gray leaf spot is an emerging threat to stands of perennial ryegrass in the mid-Atlantic and Midwestern United States (1). Symptoms were first evident in taller (6 cm) mown, rough areas surrounding golf course fairways. Field symptoms included diffuse patches (1 to 4 m in diameter) of thin, yellow-tan turf. Within larger affected areas, some of the turf was dead and matted. Close inspection revealed the presence of typical tan-gray lesions with brown margins and fish hook-like distortion of infected leaf blade tips. Incubation of affected turf in a saturated environment at 23°C for 16 h resulted in production of numerous three-celled, pear-shaped conidia characteristic of those produced by *P. grisea*. A pure culture of the isolate was grown on V8-juice agar in darkness at 29°C. After 10 days, the culture was exposed to continuous light for 4 days at 23°C to induce sporulation. Conidia were washed from the colony surface with sterile distilled water. Two-week-old perennial ryegrass plants in 8-cm-diameter pots were inoculated with the conidial suspension. Typical gray leaf spot symptoms resulted after incubation of inoculated plants at 27°C for 72 h in a saturated atmosphere. Uninoculated control plants exposed to the same environmental conditions remained healthy. This is the first report of gray leaf spot on perennial ryegrass in Indiana.

Reference: (1) P. J. Landschoot and B. F. Hoyland. Plant Dis. 76:1280, 1992.

A Foliar Disease of European Hackberry Endemic in Sicily. S. O. Cacciola, Istituto di Patologia vegetale, University of Palermo, Viale delle Scienze 2, 90128 Palermo, Italy. Plant Dis. 84:492, 2000; published on-line as D-2000-0224-02N, 2000. Accepted for publication 22 February 2000.

European hackberry (*Celtis australis* L.; Ulmaceae), a semideciduous tree or shrub that produces small edible berries was originally grown in Italy to produce charcoal and timber and was particularly suitable for making whipstocks, carriage wheel spokes, and hoe handles. European hackberry is currently used for reforestation and as shade trees in parks and roadside plantings. Recently, a foliar disease caused by the dematiaceous hyphomycetous fungus *Sirosporium celtidis* (Biv.-Bern. ex Sprengel) M.B. Ellis on hackberry saplings in a nursery was observed in the Piedmont Region (northern Italy) by Giannetti et al. (2), who referred to it as a rare disease. However, during a survey in the nature reserve of the Anapo River Valley, in the Sicily Region (southern Italy), where European hackberry and a closely related species (*C. tournefortii* Lam.) grow naturally, most hackberry plants were found to be infected by *S. celtidis*, with variable intensity. During autumn, symptoms appeared on lower leaf surfaces as reddish brown to dark black-brown subcircular velvety spots (up to 10 to 15 mm wide) surrounded by narrow paler margins that were evenly distributed over the leaf surface and later confluent. Nonspecific symptoms on upper leaf surfaces were visible only in advanced stages and consisted of necrotic areas, usually apical or marginal, that were at first red-brown and later turned gray. A few trees were prematurely defoliated. Usually, however, severely affected leaves were necrotic, withered, and curled but remained attached. Spots on lower leaf surfaces were covered by mycelium, conidiophores, and conidia that corresponded to the description of *S. celtidis* published by Ellis (1). Conidia were straight, flexuous, occasionally markedly curved or coiled, cylindrical or obclavate, smooth, wrinkled or verrucose, subhyaline to golden or reddish brown, typically multicellular with 1 to 32 transverse septa, and occasionally had longitudinal or oblique septa that were often constricted, more than 100 µm long and up to 5 to 8 µm thick, with an inconspicuous scar at the base. From 1997 to 1999, infection by *S. celtidis* in the Anapo River Valley occurred each year, probably favored by the moist environment. *S. celtidis*, first described in Sicily as early as 1815 (1), has been recorded on various hackberry species in many countries, including the United States (3). Apparently this pathogen is of little economic and ecological significance in natural ecosystems; however, the fungus could become a serious problem in nurseries (2).

References: (1) M. B. Ellis. 1963. Mycological Papers, No. 87. Commonw. Mycol. Inst. Kew, England. (2) G. Giannetti et al. Inform. Fitopatol. 49:39, 1999. (3) D. H. Linder. Ann. Mo. Bot. Garden 18:31, 1931.