Disease Notes

Fire Blight Caused by *Erwinia amylovora* on Mayhaw in Georgia. S. M. McCarter, Department of Plant Pathology, University of Georgia, Athens 30602, and J. A. Payne, USDA Fruit and Tree Nut Laboratory, Byron, GA 31008. Plant Dis. 77:1262, 1993. Accepted for publication 10 August 1993.

Mayhaw (*Crataegus aestivalis* (Walter) Torr. & A. Gray), a member of the family Rosaceae, is a small (8- to 10-m-tall) tree native to the lower southern states. Culture of this species has increased in recent years because its fruit has culinary uses and the plant itself is potentially useful for lakeside and wet-area landscaping in coastal areas (1). In recent years we have noticed a shoot blight typical of fire blight in mayhaw plantings in early spring. Streak-plate isolations made on general (nutrient-yeast-dextrose agar) and selective (Miller-Schroth) media from freshly killed shoots yielded colonies typical of *Erwinia amylovora* (Burrill) Winslow et al, and laboratory tests confirmed its identity. Koch's postulates were fulfilled. In growth chamber tests at 25–28 C, symptoms typical of those observed in the field were produced in 5–7 days when young, succulent shoots of *C. aestivalis* were inoculated either by stem injection or by puncturing, followed by a 48-hr high-moisture period (shoots enclosed in plastic bags). This is the first report of *E. amylovora* attacking *C. aestivalis*, although other hawthorn species have shown various degrees of susceptibility. Fire blight may become a significant disease of *C. aestivalis* as it becomes more intensively cultivated.

Reference: (1) J. A. Payne et al. HortScience 25:246, 1990.

Distribution of *Xylella fastidiosa* in Oak, Maple, and Sycamore in South Carolina. J. H. Blake, Department of Plant Pathology and Physiology, Clemson University, Clemson, SC 29634. Plant Dis. 77:1262, 1993. Accepted for publication 13 August 1993.

Bacterial leaf scorch caused by the xylem-limited bacterium *Xylella fastidiosa* Wells et al can kill affected host plants within 2–3 yr (1). To determine the distribution of this potentially serious pathogen on shade trees in South Carolina, samples of oak (*Quercus* spp.), maple (*Acer* spp.), and sycamore (*Platanus occidentalis* L.) with various ailments were submitted to the Plant Problem Clinic by county agents during late summer in 1991. Each sample was examined for symptoms of bacterial leaf scorch (1) and then tested for the presence of the bacterium by ELISA kits (Agdia, Inc., Elkhart, IN). Positive and negative controls were collected from trees tested the previous year. Among 111 samples from 19 counties, scorch symptoms were observed on 29, 17, and 7% of the oaks, sycamores, and maples, respectively. ELISA results on the 111 samples were positive for the bacterium in 29, 35, and 26% of the respective hosts. The pathogen was detected in 11 of the 19 counties from which samples were collected, ranging from the western edge of the state to the Atlantic coast. Bacterial leaf scorch is potentially an important contributor to shade tree decline in South Carolina.

Reference: (1) B. C. Raju and J. M. Wells. Plant Dis. 70:182, 1986.

Occurrence of *Rhizoctonia solani* AG-7 in Arkansas. C. S. Rothrock, S. A. Winters, and P. M. Kinney, Department of Plant Pathology, University of Arkansas, Fayetteville 72701; and D. E. Carling, Department of Plant Pathology, University of Alaska Fairbanks, Palmer 99645. Plant Dis. 77:1262, 1993. Accepted for publication 6 August 1993.

Rhizoctonia solani Kühn (teleomorph = *Thanatephorus cucumeris* (A.B. Frank) Donk) AG-7 was identified at Colt and Stuttgart, Arkansas, in 1991 and 1992 at field sites with a history of soybean and rice production; identification was by anastomosis with an AG-7 isolate (1529) from Japan. The pathogen was isolated from soil using the soil-pellet method with Ko and Hora or tannic acid-benomyl medium or using a beet seed baiting technique. *R. solani* AG-7 comprised 13% of the *Rhizoctonia* spp. isolated from rice seedlings at Stuttgart and 9% of the *Rhizoctonia* spp. isolated from soybean seedlings at Colt. Cultures were buff to dark brown on PDA, with mycelium generally appressed to the agar surface, and exhibited less aerial growth than the isolate from Japan. Several isolates were tested for pathogenicity by placing a plug of inoculum adjacent to seedlings or infesting sterilized soil with sand-cornmeal or chopped potato-soil inoculum. Hypocotyl discoloration and cortical lesions developed on cotton with isolates of AG-7, but these isolates were not as pathogenic as an AG-4 isolate. *R. solani* AG-7 did not cause significant discoloration or lesions on wheat, rice, radish, or soybean. Some death of shoot apices on emerging soybean seedlings did occur in infested soil. This is the first report of *R. solani* AG-7 outside of southeast Asia (1).

Reference: (1) Y. Homma et al. Ann. Phytopathol. Soc. Jpn. 49:184, 1983.

Sinaloa Tomato Leaf Curl Virus, a Newly Described Geminivirus of Tomato and Pepper in West Coastal Mexico. J. K. Brown, A. M. Idris, and D. C. Fletcher, Department of Plant Sciences, University of Arizona, Tucson 85721. Plant Dis. 77:1262, 1993. Accepted for publication 24 August 1993.

A previously undescribed virus disease occurred in tomato (*Lycopersicon esculentum* Mill.) and pepper (*Capsicum annuum* L.) plantings in Sinaloa, Mexico, in 1989, and the disease is now widespread throughout the region. Affected tomato plants exhibited foliar curling, chlorosis, and purpling and shortened internodes, whereas leaves of pepper showed a splotchy green mottle; these symptoms differ from those described previously for other viruses in the region. The virus is experimentally transmissible from tomato to tomato, pepper, eggplant (*Solanum melongena* L.), and *Malva parviflora* L. by the whitefly *Bemisia tabaci* (Gennadius) and by mechanical means from tomato to tobacco. A positive reaction was obtained in DNA-DNA dot blot hybridization assays conducted under moderately stringent conditions (final wash in 0.1× SSC, 52 C, 30 min) using individual and cocktail (mixture) DNA A-component probes to several well-characterized whitefly-transmitted geminiviruses. Virus probes to New World whitefly-transmitted geminiviruses (AbMV, BGMV-PR, SLCV-E, TMoV, and TPV) cross-reacted with viral DNA preparations from experimentally and field-inoculated tomato, whereas probes to several Old World geminiviruses (ACMV, TYLCV-Is, and TYLCV-Th) did not. Hybridization results suggest that this virus is genetically similar to other previously characterized geminiviruses identified thus far in the region and that the new disease is likely caused by an indigenous geminivirus, and not by an introduced or exotic viral pathogen. The unique foliar purpling in tomato and a host range that includes pepper, tomato, and eggplant distinguish this virus from other whitefly-transmitted geminiviruses. These data indicate that this is a previously undescribed geminivirus of solanaceous crops in west coastal Mexico; the virus is tentatively designated Sinaloa tomato leaf curl virus (STLCV).

First Report of Choanephora Leaf Blight of Soybean in Mississippi. K. W. Roy, Mississippi State University, Mississippi State, MS 39762. Plant Dis. 77:1262, 1993. Accepted for publication 2 June 1993.

Choanephora leaf blight of soybean (*Glycine max* (L.) Merr.), caused by *Choanephora infundibulifera* (Curr.) Sacc., was observed in two fields in Tunica County, Mississippi, in 1991 and in three fields in Madison Parish, Louisiana, in 1992. Only a small percentage of plants were affected. Fields were near the Mississippi River and had recently received heavy rainfall. Most symptomatic leaves were wilted and darkened, and many had fallen from petioles. Older leaves near the soil were most affected, but some younger leaves also appeared grayish or gray-brown. Dead pods on some plants may or may not have resulted from infection. Isolations from surface-disinfested leaves yielded *C. infundibulifera*. The fungus was grown at 24 C on potato-carrot agar for increase of sporangiospores. In the greenhouse, inoculation of soybean cv. Bragg leaves at growth stage R5 reproduced symptoms observed in the field. The disease has occurred in other humid regions of the United States.

First Report of Angular Leaf Spot, Caused by *Xanthomonas fragariae*, on Strawberry in North Carolina. D. F. Ritchie, C. W. Averre, and R. D. Milholland, Department of Plant Pathology, Box 7616, North Carolina State University, Raleigh 27695. Plant Dis. 77:1263, 1993. Accepted for publication 18 August 1993.

Symptoms of angular leaf spot of strawberry (*Fragaria* × *ananassa* Duchesne) have been observed in commercial fields in North Carolina since 1991, being most evident from early autumn to late spring. Angular, water-soaked lesions on the abaxial leaf surface with abundant bacterial exudate under saturated moisture conditions matched symptoms described previously (1). *Xanthomonas fragariae* Kennedy and King was readily isolated from diseased tissue by dilution plating on Wilbrink's medium (10 g sucrose, 5 g peptone type 3, 0.5 g K_2HPO_4, 0.25 g $MgSO_4$, 0.25 g $NaNO_3$, and 15 g agar per 1 L distilled water). Pinpoint-sized colonies were observed 4–5 days after incubation at 24 C, with typical pale yellow, mucoid xanthomonad-type growth after 10–14 days. Fourteen isolates from seven fields were gram-negative and nonmotile, failed to grow at 36 C, were not proteolytic on milk agar, and caused angular leaf spot symptoms on inoculated leaves of cv. Chandler after 10–14 days in saturated humidity at 15–20 C. *X. fragariae* was readily reisolated from these lesions. The increased occurrence of angular leaf spot in North Carolina strawberry fields is associated with importation of nursery plants from regions where the environmental conditions are more conducive for this disease.

Reference: (1) B. W. Kennedy and T. N. King. Phytopathology 52:873, 1962.

Black Leg of Canola (*Brassica napus*) Caused by *Leptosphaeria maculans* in North Dakota. H. A. Lamey, Department of Plant Pathology, North Dakota State University, Fargo 58105, and D. E. Hershman, University of Kentucky, Princeton 42445. Plant Dis. 77:1263, 1993. Accepted for publication 18 August 1993.

Black leg caused by *Leptosphaeria maculans* (Desmaz.) Ces. & De Not. (anamorph: *Phoma lingam* (Tode:Fr.) Desmaz.) is a major disease of canola (*Brassica napus* L.). Black leg incidence was 8–68% in 23 northeastern North Dakota canola fields surveyed in 1991. *L. maculans* was isolated from stubble collected from six fields and tested for pathogenicity on cotyledons of differential canola cultivars Westar, Quinta, and Glacier (1). Isolates from four fields reacted as the high-virulence pathogenicity group PG2, and incidence in those fields was 28–68%. Isolates from the other two fields were in the low-virulence pathogenicity group PG1. This is the first report of virulent *L. maculans* on canola in North Dakota and the second report in the United States; PG4 was found on canola in Kentucky (2). Since PG4 is common in Europe and Australia and PG2 is common in Canada, the two outbreaks may have been from separate introductions.

References: (1) A. Mengistu et al. Plant Dis. 75:1279, 1991. (2) A. Mengistu et al. Plant Dis. 74:938, 1990.

Leaf Blight of *Lespedeza* spp. Caused by *Cladosporium vignae*. J. M. McKemy, R. T. Gudauskas, and G. Morgan-Jones, Department of Plant Pathology, and D. L. Turner, Department of Agronomy and Soils, Auburn University, Auburn, AL 36849. Plant Dis. 77:1263, 1993. Accepted for publication 20 August 1993.

During August 1989 a severe leaf blight developed in plantings of *Lespedeza bicolor* Turcz. and *L. thunbergii* (DC.) Nakai 'Am Quail' on a farm near Auburn, Alabama. Symptoms were conspicuous, irregularly spreading, light to dark brown necrotic blotches; heavily diseased leaves dropped prematurely. *Cladosporium vignae* M.W. Gardner (1) was isolated consistently from diseased leaves. Pathogenicity was established by spraying healthy Am Quail plants in the greenhouse (14-hr day, 27–32 C; 10-hr night, 18–21 C) with an aqueous suspension of conidia from a 2-wk-old culture of *C. vignae* on potato-dextrose agar; control plants were sprayed with sterile water. All plants were covered with plastic bags for 24 hr after inoculation. Symptoms similar to those observed in the field appeared in 5–10 days on leaves inoculated with *C. vignae*, which was reisolated from the necrotic tissue. This is the first report of *C. vignae* as a pathogen of *Lespedeza* spp. Voucher cultures have been deposited in the Auburn University Herbarium (AUA 2813) and the American Type Culture Collection (ATCC 90242).

Reference: (1) G. Morgan-Jones and J. McKemy. Mycotaxon 43:9, 1992.

Isolation and Identification of *Phymatotrichum omnivorum* from Kenaf in the Lower Rio Grande Valley of Texas. C. G. Cook, USDA-ARS, Subtropical Agricultural Research Laboratory, Weslaco, TX 78596; and J. L. Riggs, Department of Plant Pathology and Microbiology, Texas A&M University, College Station 77843. Plant Dis. 77:1263, 1993. Accepted for publication 31 August 1993.

In June 1992, kenaf (*Hibiscus cannabinus* L. 'Everglades 71') showed leaf wilting in field plots at the USDA north farm in Weslaco, Texas. As the growing season progressed, the diseased area increased and dead plants were observed. Diseased samples were obtained and the bark was stripped to reveal a reddish lesion located above the crown. Cross sections of the area above the necrotic tissue were surface-disinfested and plated on water agar amended with 50 ppm of streptomycin sulfate. Mycelial growth resulting from the diseased tissue was replated on potato-dextrose agar and identified as *Phymatotrichum omnivorum* Duggar (= *Phymatotrichopsis omnivora* (Duggar) Hennebert). Sclerotia were produced by placing agar disks on a sorghum substrate in sterile soil cultures and incubating the cultures for 6 wk at 28 C. Kenaf was inoculated in the greenhouse with sclerotia retrieved from wet-sieving the soil cultures. The greenhouse was maintained at 28 C, and plants were watered when topsoil dried and started cracking. The pathogen was reisolated from infected 9-wk-old plants with symptoms characteristic of Phymatotrichum root rot, i.e., rapid wilting and a lesion at the crown of the root. Microscopy revealed large septate hyphae with cruciform branching characteristic of *P. omnivorum*. This is the first report of Phymatotrichum root rot infection of kenaf.

***Astrodochium coloradense*: A Leaf Fungus Associated with Premature Fall Coloration of Largetooth Aspen in Nova Scotia, Canada.** K. J. Harrison, Forest Insect and Disease Survey, Natural Resources Canada, P.O. Box 4000, Fredericton, NB, Canada E3B 5P7. Plant Dis. 77:1263, 1993. Accepted for publication 30 July 1993.

Unexplained leaf yellowing and premature fall coloration of largetooth aspen (*Populus grandidentata* Michx.), first noticed in Hants County in 1986, occurred again in Hants and Annapolis counties, Nova Scotia, Canada, in August 1989. Specimens collected in 1989 were identified in 1990 as *Asteroma* sp. by mycologists at the Centre for Land and Biological Resources Research (CLBRR), Ottawa, and at the International Mycological Institute (IMI), Egham, England, and were retained as DAOM 211157 and 212558 and IMI 338338 and 338339, respectively. In 1992, these specimens were redetermined to be *Astrodochium coloradense* Ell. & Ev. by John Bissett of CLBRR (*personal communication*) in cooperation with Lori Carris of Washington State University. In 1991 and 1992, symptoms again developed on largetooth aspen in Nova Scotia. Samples collected in August from symptomatic trees were confirmed as *A. coloradense* by John Bissett (*personal communication*), and specimens were retained as DAOM 215962–215966 and IMI 356831–356835. These included the first records from Kings and Queens counties, Nova Scotia. *A. coloradense* was originally described on *P. angustifolia* E. James ex Torr. collected in Colorado (1), but until this report of its occurrence in four counties in southwestern Nova Scotia, it had not been reported from Canada or the United States since 1897.

Reference: (1) J. B. Ellis and B. M. Everhart. Am. Nat. 31:430, 1897.

(Disease Notes continued on next page)

First Report of European Larch Canker on Prince Edward Island, Canada. R. A. Simpson and K. J. Harrison, Disease Identification Officers, Forest Insect and Disease Survey, Natural Resources Canada, Fredericton, NB, Canada E3B 5P7. Plant Dis. 77:1264, 1993. Accepted for publication 30 July 1993.

European larch canker, caused by *Lachnellula willkommii* (R. Hartig) Dennis, was first reported in New Brunswick and Nova Scotia, Canada, on eastern larch (*Larix laricina* (Du Roi) K. Koch) in 1980 (1). At that time, the disease was widespread throughout the southern half of New Brunswick and in a few areas in Nova Scotia. The disease was found on European larch (*L. decidua* Mill.) in New Brunswick in 1991 (L. P. Magasi, *personal communication*). Between 1980 and 1991, more than 235 natural stands and plantations in Prince Edward Island were surveyed for European larch canker; all were negative (L. P. Magasi, *personal communication*). In 1992, the disease was found in Prince County, Prince Edward Island, in a young plantation of European larch and also about 3 km away in natural regeneration of eastern larch. It was detected on only one branch of one tree at each location. The oldest canker, on European larch, was 4 yr old. No additional larch cankers were found in the area surrounding the individual infected trees. The infected branches were destroyed, and further surveys are planned to maintain the quarantine zone.

Reference: (1) L. P. Magasi and S. E. Pond. Plant Dis. 66:339, 1982.

First Report of Pea Seedborne Mosaic Virus in Brazil. A. N. Dusi, T. Nagata, and N. Iizuka, Centro Nacional de Pesquisa de Hortaliças, CNPH/EMBRAPA, C.P. 0218, 70359-970, Brasilia (DF), Brazil. Plant Dis. 77:1264, 1993. Accepted for publication 24 August 1993.

Potyviruses were isolated from a field-grown pea cultivar (*Pisum sativum* L. 'Triofin') in Dourados, Mato Grosso, Brazil, in 1989 and from a pea breeding line with similar symptoms in Brasilia, DF, in 1991. Both isolates induced mosaic and leaf distortion on pea cultivars Triofin, Bolero, and Torta Flor Roxa but not on Alaska 81, which is resistant to pea seedborne mosaic virus (PSbMV). The isolates also induced systemic infection in lentil (*Lens culinaris* Medik.) and chlorotic local lesions on *Chenopodium quinoa* Willd. that matched the descriptions for PSbMV. The virus was transmitted by four of 37 seeds obtained from diseased pea plants and also nonpersistently by *Myzus persicae* (Sulzer). Both isolates reacted strongly with PSbMV antiserum in NCM-ELISA and weakly with papaya ringspot virus and potato virus Y antisera. These tests confirmed the cause of the disease as PSbMV, detected for the first time in Brazil.

First Report of Passiflora Leaf Mottle Disease Caused by a Whitefly-Transmitted Geminivirus in Puerto Rico. J. K. Brown, Department of Plant Sciences, University of Arizona, Tucson 85721; J. Bird, College of Agricultural Sciences, University of Puerto Rico, Rio Piedras 00928; and D. C. Fletcher, Department of Plant Sciences, University of Arizona, Tucson 85721. Plant Dis. 77:1264, 1993. Accepted for publication 24 August 1993.

A previously undescribed viruslike disease of passionvine (*Passiflora edulis* Sims f. *flavicarpa* Degener) was observed in passionvine plantations for the first time in Puerto Rico in 1991. Disease symptoms in passionvine were severe curling, distortion, and mottling of leaves and fruit and reduced yields and fruit quality. The virus was experimentally transmitted by the whitefly *Bemisia tabaci* (Gennadius) from symptomatic passionvine to bean and from bean to bean but not from infected bean to passionvine. The virus was transmitted by grafting from passionvine to passionvine, and subsequent symptoms in graft-inoculated plants were like those observed in field-infected passionvine. The virus was not transmissible by sap inoculation between passionvine seedlings, through seed of infected passionvine plants, or by any of three aphid species tested. Dot blot and Southern hybridization analyses of total DNA extracts from symptomatic passionvine and bean conducted under moderately stringent conditions (final wash in 0.1× SSC, 50 C, 30 min) were positive for the presence of whitefly-transmitted geminivirus. In dot blot hybridization assays, DNA A-component probes to several previously characterized New World whitefly-transmitted geminiviruses (BGMV, SLCV, TOMoV, and TPV) gave positive reactions to DNA extracts from infected plants but not to extracts from healthy controls. No cross-hybridization was observed to DNA probes for several Old World whitefly-transmitted geminiviruses (ACMV, ICMV, TYLCV-TH, and TYLCV-IS). Southern analysis of total DNA preperations from symptomatic passionvine or bean revealed a DNA band(s) that comigrated with squash leaf curl virus (SLCV) control geminivirus DNA (2.6 kb) in 1.2% agarose gels (TAE). This is the first report of a whitefly-transmitted geminivirus infecting *P. edulis*; the disease is tentatively designated Passiflora leaf mottle (PLM).

Rooted Air-Layered Cuttings from Blight-Affected Orange Trees Free of Blight-Specific Proteins. H. K. Wutscher, USDA-ARS, Horticultural Research Laboratory, Orlando, FL 32803, and K. S. Derrick, University of Florida Citrus Research and Education Center, Lake Alfred 33850. Plant Dis. 77:1264, 1993. Accepted for publication 25 August 1993.

Air-layered cuttings were initiated in March 1992 on four 7-yr-old cv. Valencia and one 22-yr-old cv. Hamlin orange (*Citrus sinensis* (L.) Osbeck) on rough lemon (*C. limon* (L.) N.L. Burm.) rootstock, trees with visible symptoms of citrus blight that had given positive diagnostic tests (high zinc levels in the wood and reduced water uptake in trunk injections). The air-layered cuttings were removed from the mother trees after 5 mo. Leaves of a single rooted cutting tested 1 mo later gave a weak positive reaction for blight-specific protein (1), while each of the mother trees tested strongly positive. After the rooted cuttings were grown in sterile commercial potting medium in the greenhouse for 9 mo, blight-specific proteins were not detected in the leaves of any of the cuttings, whereas all the mother trees in the field were still positive. Apparently, the inciting factor for blight-specific proteins originated in parts of the tree other than the 5-mm-diameter branches used for the cuttings, because there was transmission with root grafts (2).

References: (1) K. S. Derrick et al. Proc. Fla. State Hortic. Soc. 105:26, 1992. (2) D. P. H. Tucker et al. Plant Dis. 68:979, 1984.

First Report of Sudden Death Syndrome of Soybeans Caused by *Fusarium solani* in Kansas. D. J. Jardine, Department of Plant Pathology, Kansas State University, Manhattan 66506-5502, and J. C. Rupe, Department of Plant Pathology, University of Arkansas, Fayetteville 72701. Plant Dis. 77:1264, 1993. Accepted for publication 19 August 1993.

Soybeans (*Glycine max* (L.) Merr.) with leaf symptoms typical of sudden death syndrome at the R5 (beginning seed) stage of development were found in a Doniphan County field in northeastern Kansas in August of 1992. Leaf symptoms ranged from scattered, interveinal, chlorotic spots to necrosis except for the midvein and major lateral veins, which remained green. Severely affected leaflets dropped off, leaving the petioles attached. Cysts of the soybean cyst nematode (*Heterodera glycines* Ichinohe) were found on the roots of affected plants. *Fusarium solani* (Mart.) Sacc. was isolated from the roots of diseased plants placed on acidified water agar. Colonies were transferred to potato-dextrose agar, and positive identification was made using colony and spore morphology. Ten-day-old soybean seedlings of cv. Lee 74 were inoculated by dipping roots in a spore suspension with 10^6 macroconidia per milliliter of a single isolate. Plants were placed in sterile soil and grown in the greenhouse, where symptoms typical of sudden death syndrome were observed within 3 wk. *F. solani* was reisolated from the plants, completing Koch's postulates. This is the first report of sudden death syndrome in Kansas and represents the westernmost discovery of the disease.