Disease Notes

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First Report of Early Rot of Cranberry Caused by *Phyllosticta vaccinii* in Wisconsin. P. S. McManus, Department of Plant Pathology, University of Wisconsin, Madison 53706. Plant Dis. 82:350, 1998; published on-line as D-1997-1217-01N, 1997. Accepted for publication 16 December 1997.

Phyllosticta vaccinii Earle causes early rot of cranberry (*Vaccinium macrocarpon* Aiton) and previously was reported in fruit and leaves from Massachusetts and New Jersey, but not Wisconsin or Washington (2). This fungus previously was introduced into Wisconsin, apparently on planting stock, but did not persist in the field (2). In the present study, rotted fruit were collected in central Wisconsin in September 1997 from research plots adjacent to a commercial planting that had been started from field cuttings from New Jersey. *P. vaccinii* was isolated from 12 of 31 symptomatic berries, and its identity was verified by cultural and morphological characteristics (3). *P. vaccinii* was not isolated from rotted fruit from five other sites in central and northern Wisconsin. In three separate experiments, 10 to 25 cv. Stevens or Searles cranberry fruit were punctured with a needle, inoculated with 2 to 4 × 10^5 conidia from sporulating cultures of *P. vaccinii*, and incubated at 28°C in a moist chamber. After 5 to 14 days, soft, watery spots developed at the inoculation point on 8 to 22% of the fruit in different experiments, and *P. vaccinii* was reisolated from the lesions. Fruit that were punctured but not inoculated neither developed symptoms nor yielded *P. vaccinii*. Previous attempts at fulfilling Koch's postulates by inoculating mature fruit were unsuccessful (1). *P. vaccinii* is one of approximately 15 species of fungi involved in the cranberry fruit rot complex in the eastern U.S. where fungicides are applied to greater than 95% of cranberry acreage, usually three times per year, primarily to control preharvest fruit rots. In Wisconsin, however, preharvest fruit rots are insignificant; less than 25% of the acreage is treated with fungicides. The occurrence of early rot in Wisconsin and the threat of introducing pathogens on cranberry cuttings are troublesome in light of the Food Quality Protection Act of 1996, which threatens registration of fungicides used to control cranberry fruit rots.

References: (1) D. M. Boone. Pages 35-36 in: Compendium of Blueberry and Cranberry Diseases. F. L. Caruso and D. C. Ramsdell, eds. American Phytopathological Society, 1995. (2) G. J. Weidemann and D. M. Boone. Plant Dis. 67:1090, 1983. (3) G. J. Weidemann et al. Mycologia 74:59, 1982.

Report on First Detection of Anthracnose (*Colletotrichum gloeosporioides)* on Lupins in Poland. I. M. Frencel, Institute of Plant Genetics, Polish Academy of Sciences, Strzeszyñska 34, 60-479 Poznañ, Poland. Plant Dis. 82:350, 1998; published on-line as D-1997-1219-01N, 1997. Accepted for publication 5 December 1997.

A previously unreported lupin disease—anthracnose (*Glomerella cingulata* (Stoneman) Spauld. & H. Schrenk; anamorph *Colletotrichum gloeosporioides* (Penz.) Penz. & Sacc. in Penz.)—was first encountered in Poland in July 1995 on white lupin (*Lupinus albus* L.), grown in experimental fields of the Plant Breeding Station at Wiatrowo. Initially the disease was observed on a few plants or small clusters of plants distributed randomly within the field. Distinct symptoms of anthracnose, including bending of the plant terminal and pinkish-brown lesions on stems, were first observed at the early flowering stage. Diseased stems collapsed, displaying characteristic necrotic, crook-shaped distortions. Field surveys in 1996 indicated the rapid spread of the pathogen within white lupin inbred lines, apparently from natural infection in 1995. Later in the season, symptoms of anthracnose also appeared on yellow (*L. luteus* L.) and narrow-leafed (*L. angustifolius* L.) lupins in close proximity to white lupin plots. A fungal pathogen was consistently isolated by plating surface-disinfected symptomatic stem segments on water agar. After 7 to 10 days, heavy sporulation was observed from which a single-spore subculture was made on potato dextrose agar (PDA). Conidia were one-celled, hyaline, and oblong with obtuse or rounded ends, and were 16 to 20 µm in length, consistent with the conidial descriptions of *C. gloeosporioides* (1). Acervuli were mostly single and setae inconspicuous. Six fungal isolates were selected to complete Koch's postulates. Conidia from PDA cultures were suspended in sterile water agar and injected into surface wounds on the main stem of white lupin plants. Moist cotton was fastened to the inoculation area for 24 h, then plants were placed in a glasshouse. Within 5 to7 days, typical lesions resembling natural symptoms developed. Symptoms did not appear on control plants. The teleomorph stage of the pathogen was not observed in the field or on inoculated plants. The potential risk of lupin seed infection by *C. gloeosporioides* is indicated from our preliminary bioassays. Blotter tests were done by plating surface-disinfected seeds of three white lupin seed lot (super-elite) samples, collected from experimental fields in two consecutive years. The seed-borne infection by *C. gloeosporioides* in samples from 1996 ranged from 9 to 12%, in comparison with no detection of seed-borne infection in 1995 samples examined. In many phytosanitary inspections of seed production fields in 1997, a high level of anthracnose, including total epiphytotics and widespread disease in lupin crops countrywide, was observed. This is the first documented report of *C. gloeosporioides* causing anthracnose on lupins in Poland.

Reference: (1) J. A. von Arx. 1987. Plant Pathogenic Fungi. Beihefte zur Nova Hedvigia. Vol. 87. J. Cramer, ed. Berlin. pp. 218, 220.

Occurrence of Potato Tuber Necrotic Ringspot Disease (PTNRD) in Italy. L. Tomassoli and V. Lumia, Istituto Sperimentale per la Patologia Vegetale, Via C. G. Bertero, 22, 00156 Rome, Italy; and C. Cerato and R. Ghedini, Istituto Sperimentale per la Colture Industriali, Via di Corticella 133, 40129 Bologna, Italy. Plant Dis. 82:350, 1998; published on-line as D-1998-0126-01N, 1998. Accepted for publication 21 January 1998.

Potato tuber necrotic ringspot disease, caused by a tuber necrotic isolate of potato virus YN named PVYNTN, was originally described in Hungary in 1980; later on, the disease spread throughout northern and eastern Europe (1). Recently, the virus was reported in Portugal (2) on fresh-market potatoes. During the summer of 1997, the disease appeared in the north of Italy, causing serious damage in processing and fresh-market potatoes. After harvesting, we observed in most of the potato cultivars tubers showing the typical superficial necrotic rings and areas. These viral lesions were predisposed to secondary infection by fungi and bacteria. Moreover, PVYNTN causes degradation of tuber starch into simple carbohydrates. This metabolic activity resulted in undesirable browning in chips. In different areas of northern Italy, samples were collected from 48 stocks of cv. Hermes, the most important processing cultivar in Italy, and from 12 stocks of other potato cultivars (Ernterstolz, Liseta, Monalisa, Primura, Kennebec). The original seed of the stocks came from five different European countries: Austria, Italy, Scotland, Switzerland, and The Netherlands. Samples were serologically tested by indirect enzyme-linked immunosorbent assay with specific monoclonal antibodies to tobacco venial necrosis strain group of PVY. The results showed that 37 out of 60 analyzed stocks were infected by an isolate belonging to PVYN group, 7 stocks were infected by a common isolate of PVY, and 16 were PVY free. To distinguish the tuber-necrosis isolate (PVYNTN) from the PVYN isolates, reverse transcription–polymerase chain reaction (RT-PCR) and immunocapture-RT-PCR were carried out with specific primers for PVYNTN (3). Both tuber and leaf sap were tested. RT-PCR was performed on tuber sap and immunocapture-RT-PCR on leaf sap. Leaf and tuber sap of healthy, PVY-infected, and PVYNTN-infected tobacco was used in each experiment. At least two tubers from each of 32 PVYN-infected stocks were included in the molecular assay. All samples showed an amplified product of the characteristic size for PVYNTN (835 bp), whereas neither the healthy control nor the PVY sample gave a product. All tested cultivars were infected and all countries from which tuber seed came revealed infected stocks. The high proportion of samples in which PVYNTN was detected suggests that the virus is now endemic to potato-growing regions of northern Italy. The weather in these regions during 1997 was mild and drought in winter-spring and very warm in late summer; these conditions were ideal for disease diffusion by vectors and for symptom development. This is the first report of the occurrence of PVYNTN in Italy.

References: (1) C. Kerlan. Le Pomme de Terre Française 498:40, 1997. (2) M. C. Serra and H. L. Weidemann. Plant Dis. 81:694, 1997. (3) H. L. Weidemann and E. Maiss. Z. Pflanzenkrank. Pflanzenschutz 103:337, 1996.

(*Disease Notes* continued on next page)

Occurrence of Turnip Yellow Mosaic Virus on Oriental Cruciferous Vegetables in Southern Ontario, Canada. L. W. Stobbs, Agriculture and AgriFood Canada, Pest Management Research Center, Vineland, ON, Canada; R. F. Cerkauskas, Greenhouse and Processing Crops Research Center, Harrow, ON, Canada; T. Lowery, Summerland Research Station, Summerland, BC, Canada; and L. VanDriel, Agriculture and AgriFood Canada, Pest Management Research Center, Vineland, ON, Canada. Plant Dis. 82:351, 1998; published on-line as D-1997-1218-01N, 1997. Accepted for publication 17 December 1997.

Turnip yellow mosaic virus (TYMV) has been reported throughout Europe, New Zealand, and Australia. In 1994, this virus was identified in two field plantings of Bok Choi and one planting of Pak Choi *(Brassica campestris Chinensis* group var. *communis*) in Durham and Haldimand-Norfolk counties, respectively. In early October, approximately 25% of the plants were infected at each site. Both the striped flea beetle (*Phyllotreta striolata* (F.)) and the crucifer flea beetle (*P. Cruciferae* (Goeze)), reported vectors of the virus (1), were present at each site. Infected plants exhibited bright yellow to yellow-green mosaic mottling and often showed chlorotic lesions on the lower leaves. Vein clearing was also seen on several plants. Plants were often coinfected with turnip mosaic virus. Four symptomatic plants were taken from each field site for testing. Spherical virus particles (28 nm) were identified as TYMV by electron microscopy following post-antibody decoration and enzyme-linked immunosorbent assay with the TYMV Agdia test kit. Symptoms were reproduced on both Bok and Pak Choi by mechanical inoculation into healthy plants. Extended host range susceptibility tests with 14 differential hosts were consistent with those reported in the VIDE database (1). This virus, in the presence of the flea beetle vectors, may pose a threat to susceptible traditional cruciferous vegetables grown extensively in this area.

Reference: (1) A. A Brunt et al., eds. Plant Viruses Online: Descriptions and Lists from the VIDE Database. Version: 16th January 1997.

First Report of Moroccan Watermelon Mosaic Potyvirus in Zucchini in Italy. P. Roggero, G. Dellavalle, and V. Lisa, Istituto di Fitovirologia Applicata, CNR, Str. Delle Cacce 73, I-10135 Torino, Italy; and V. M. Stravato, Peto Italiana, Via Canneto di Rodi, Latina, Italy. Plant Dis. 82: 351, 1998; published on-line as D-1998-0107-01N, 1998. Accepted for publication 30 December 1997.

Unusual symptoms were observed in summer 1997 in field zucchini of several cultivars grown in central Italy. Symptoms included reduction in growth, severe mosaic, blistering and deformation of leaves, and malformation on fruits. Plants gave negative results in enzyme-linked immunosorbent assay (ELISA) for cucumber mosaic cucumovirus, squash mosaic comovirus, papaya ringspot, zucchini yellow fleck, zucchini yellow mosaic, and watermelon mosaic 2 potyviruses. Positive reactions were obtained in ELISA with a monoclonal antibody that reacts with many potyviruses (from J. Vetten, Braunschweig) and with polyclonal antibodies (Sanofi, France) to Moroccan watermelon mosaic potyvirus (MWMV). Field symptoms were reproduced in zucchini cvs. Genovese and Striato d'Italia by mechanical inoculation of samples from symptomatic field plants. *Chenopodium amaranticolor, C. quinoa,* and *Gomphrena globosa* gave local lesions, while *Citrullus lanatus* cv. Crimson Sweet, *Cucumis melo* cv. Top Mark, *C. metuliferus, C. sativus* cvs. Marketer, MM76, and Sweet Slice, and *Cucurbita maxima* reacted with systemic mosaic. *C. melo* cv. Doublon formed necrotic local lesions followed by systemic necrosis. No infection occurred in *Nicotiana benthamiana, N. clevelandii, N. glutinosa, Phaseolus vulgaris* cv. Black Turtle, *Pisum sativum* cv. Alaska, tobacco White Burley, and *Vigna unguiculata*. These data are in agreement with the known host range of MWMV. MWMV is a tentative species in the genus potyvirus, widely present in Africa and occasionally found in Spain (1,2). Further spread of this virus in the Mediterranean area will create new problems for commercial cucurbit production and breeding, and for diagnosis.

References: (1) E. Kabelka and R. Grumet. Euphytica 95:237, 1997. (2) N. M. McKern et al. Arch. Virol. 131:467, 1993.

First Report of Tomato Spotted Wilt Tospovirus Infection of Watermelon in Georgia. S. S. Pappu, H. R. Pappu, R. D. Gitaitis, and J. D. Gay, Department of Plant Pathology, University of Georgia, Coastal Plain Experiment Station, Tifton 31793. Plant Dis. 82:351, 1998; published on-line as D-1998-0109-01N, 1998. Accepted for publication 7 January 1998.

In 1996, volunteer watermelon plants in a tobacco field in Coffee County, GA, exhibited foliar symptoms that included necrotic ring spots and veinal necrosis. Watermelon plants from experimental plots of the Coastal Plain Experiment Station in Tifton, GA, similarly showed necrotic lesions, often resulting in necrotic ring spots during the late summer of 1997. Out of 16 samples tested for the presence of tomato spotted wilt tospovirus (TSWV) with a commercially available enzyme-linked immunosorbent assay (ELISA) kit (Agdia, Elkhart, IN), six were positive for TSWV. Primers specific to the nucleocapsid gene of TSWV were used in a reverse transcription–polymerase chain reaction assay (RT-PCR) (1) to verify the presence of TSWV. RT-PCR gave an expected PCR product of approximately 350 bp. The amplicon was cloned in pGEM-T vector and the recombinant clone was sequenced. The sequence of the cloned PCR product confirmed the identity of TSWV, thus verifying TSWV infection of watermelon. The potential impact of TSWV on watermelon crop in Georgia will be investigated. This is the first report of natural infection of watermelon by TSWV in Georgia.

Reference: (1) H. R. Pappu et al. Tobacco Sci. 40:74, 1996.

Natural Infection of Citronmelon with *Acidovorax avenae* subsp. *citrulli*. T. Isakeit, Department of Plant Pathology and Microbiology, Texas A&M University, Weslaco 78596; and M. C. Black, Department of Plant Pathology and Microbiology, Texas A&M University, Uvalde 78802; and J. B. Jones, GCREC, University of Florida, Bradenton 34203. Plant Dis. 82:351, 1998; published on-line as D-1998-0122-01N, 1998.

Citronmelon fruits (*Citrullus lanatus* var. *citroides* (Bailey) Mansf.) with lesions were collected from a cowpea field in Frio County, TX, in July 1997. The lesions were circular, necrotic, or water-soaked, approximately 3 mm in diameter, and did not extend into the flesh of the fruit. Nonfluorescent, gram-negative bacteria were consistently isolated from lesions. Six representative strains were identified as *Acidovorax avenae* subsp. *citrulli* (Aac), using Biolog GN MicroPlates and the MicroLog data base release 3.50 (0.533 to 0.813 similarity). Aac causes leaf and fruit lesions (bacterial fruit blotch, BFB) on watermelon (*C. lanatus* (Thunb.) Matsum. & Nakai). Strains were tested for pathogenicity on watermelon seedlings (cv. Royal Sweet) by daubing bacterial suspensions (approximately 10^8 CFU/ml) onto cotyledons of 1-week-old seedlings. Water soaking of cotyledons, followed by necrosis and seedling death, occurred within 5 days. These symptoms were indistinguishable from those caused by watermelon strains of Aac. Bacteria were reisolated from symptomatic seedlings. The source of the infection is not known. Watermelons had been grown in this field in 1996, but no BFB symptoms were observed. Citron fruit infected with Aac were found in nearby watermelon fields where BFB was present; the closest field was 50 m from the cowpea field. These observations suggest that citronmelon, a common weed in south Texas, has the potential to perpetuate Aac. This is the first documentation of a naturally occurring infection of citronmelon with Aac.

Western Dwarf Mistletoe Parasitizing Colorado Blue Spruce and Norway Spruce in California. R. L. Mathiasen, School of Forestry, Northern Arizona University, Flagstaff 86011; J. R. Allison, San Bernardino National Forest, 1824 Commercenter Circle, San Bernardino, CA 92408; and B. W. Geils, Rocky Mountain Research Station, 2500 Pine Knoll Drive, Flagstaff, AZ 86001. Plant Dis. 82:351, 1998; published on-line as D-1998-0123-01N, 1998. Accepted for publication 22 January 1998.

Western dwarf mistletoe (*Arceuthobium campylopodum* Engelm.), a common parasite of ponderosa pine (*Pinus ponderosa* Dougl. ex Laws.) and Jeffrey pine (*Pinus jeffreyi* Grev. & Balf.), was found parasitizing planted Colorado blue spruce (*Picea pungens* Engelm.) and Norway spruce (*Picea abies* (L.) H. Karsten) in Upper Cuddy Valley, CA (Kern County, T. 9 N., R. 21 W., Sec. 25). One tree greater than 6 m in height of each spruce species was infected and both trees were within 12 m of a Jeffrey pine severely infected with western dwarf mistletoe. Five to 10 branches were infected on each tree and a few of these had abundant mistletoe shoot production, which allowed identification of the parasite. This is the first report of western dwarf mistletoe on Colorado blue spruce. Although this is the first report of natural infection of Norway spruce in California, this mistletoe/host combination has been reported by Weir from artificial inoculation (2) and collected by Russell in central Washington (1). We recommend that these spruce species not be planted within 15 m of pines infected with western dwarf mistletoe. Specimens of western dwarf mistletoe on Colorado blue spruce and Norway spruce were collected and deposited at the Deaver Herbarium, Northern Arizona University, Flagstaff.

References: (1) F. G. Hawksworth and D. Wiens. 1996. Dwarf Mistletoes: Biology, Pathology, and Systematics. USDA Agric. Handb. 709. (2) J. R. Weir. Bot. Gaz. 56:1, 1918.