Disease Notes

First Report in Spain of Two Leaf Spots of Garlic Caused by *Stemphylium vesicarium*. M. J. Basallote, A. M. Prados, A. Pérez de Algaba, and J. M. Melero-Vara, Departamento de Protección Vegetal, C.I.D.A., Apdo. 4240, 14080 Córdoba, Spain. Plant Dis. 77:952, 1993. Accepted for publication 6 May 1993.

Disease surveys in 125 fields of garlic (*Allium sativum* L.) in southern Spain during 1989–1991 indicated that 31%, regardless of cultivar, were affected by dark purple and white leaf spots. Dark purple spots were characteristically eye-shaped (5–15 mm long), with a purplish black center surrounded by a straw-coloured halo. White spots were elliptical, distinctly sunken, and typically smaller (3–7 mm long) than dark purple spots. Both types of spots were indistinctly produced mainly on older leaves, and similar colonies of *Stemphylium vesicarium* (Wallr.). E. Simmons were isolated from them. Pathogenicity of 11 isolates of *S. vesicarium* was proved by spraying garlic and onion (*A. cepa* L.) plants with conidial suspensions of the fungus, followed by incubation at 18–22 C in a saturated atmosphere for 48 hr. After inoculation with isolates from either dark purple or white leaf spots, one or both lesion types were reproduced after 5–8 days in both plant species. Pseudothecia of *Pleospora* sp., the teleomorph of *S. vesicarium*, were observed in debris of overwintered garlic leaves affected by leaf spots. Field observations during the last 3 yr suggest that outbreaks of garlic leaf spots are favored by foggy and rainy weather in spring, followed by dry warm days.

Tospoviruses Associated with Scape Blight of Onion (*Allium cepa*) Seed Crops in Idaho. J. M. Hall, Department of Plant Pathology, North Carolina State University, Raleigh 27695-7616; K. Mohan and E. A. Knott, University of Idaho Research and Extension Center, Parma 83660; and J. W. Moyer, Department of Plant Pathology, North Carolina State University, Raleigh 27695-7616. Plant Dis. 77:952, 1993. Accepted for publication 18 April 1993.

A scape (seed stalk) blight of onion (*Allium cepa* L.) with unusual symptomatology has been observed in Idaho and Oregon since 1989. Symptoms of the disease include straw-colored, dry, necrotic, spindle- or diamond-shaped lesions on the scapes of onion plants grown for seed production. Some lesions have distinct green centers with chlorotic or necrotic borders; other lesions appear as concentric rings of alternating green and chlorotic/necrotic tissue. Lesions may be sufficiently numerous so as to girdle the scape. Although previous attempts to isolate a virus from infected plants have not been successful, enveloped virions typical of Tospoviruses have been observed in electron micrographs of symptomatic scape tissue (T. C. Allen, *personal communication*). We recently transmitted two distinct Tospovirus-like viruses from symptomatic scapes to *Nicotiana benthamiana* Domin. Serological tests revealed that one group of isolates obtained from three different fields reacted strongly with polyclonal and monoclonal antisera to impatiens necrotic spot virus (INSV, formerly tomato spotted wilt virus [TSWV-I]). The second isolate produced typical enveloped virions but did not react with any of the available antisera to TSWV-I or INSV. Koch's postulates have not been fulfilled because of the difficulty of transmission to onion.

First Report of *Cronartium ribicola* in North Dakota. M. A. Draper and J. A. Walla, Department of Plant Pathology, North Dakota State University, Fargo 58105. Plant Dis. 77:952, 1993. Accepted for publication 29 April 1993.

In mid-May 1992, a sample of an upper branch of limber pine (*Pinus flexilis* E. James), the only five-needle pine native to North Dakota, was submitted to the Plant-Pest Diagnostic Laboratory at North Dakota State University. The branch displayed on 1988 wood a sporulating aecial canker typical of those produced by *Cronartium ribicola* J. C. Fisch., the causal agent of white pine blister rust. Confirmation of *C. ribicola* was based on the characteristic orange aeciospores, mostly short ellipsoid, 19×22 μm, with coarsely verrucose walls and a conspicuous smooth spot. The 30-yr-old tree had been planted as a seedling on a site in urban Morton County, near the center of the state. When examined in June 1992, the tree bore no branch or stem cankers; however, the homeowner had removed upper branches with rust symptoms in recent years. Nearby *Ribes* spp. (alternate hosts) and an adjacent eastern white pine (*P. strobus* L.) did not show symptoms of infection. Surveys in North Dakota in 1992 and in previous years of planted stands of eastern white pine and native stands of limber pine did not detect *C. ribicola*. The nearest known occurrences of *C. ribicola* are in northwestern Minnesota and the Black Hills of South Dakota. This sample represents a substantially reduced separation between known *C. ribicola* populations in eastern and western North America. The specimen is retained by J. A. Walla.

Detection of Banana Bunchy Top Virus in Hawaii. J. S. Hu, M. Q. Xu, Z. C. Wu, and M. Wang, Department of Plant Pathology, University of Hawaii, Honolulu 96822. Plant Dis. 77:952, 1993. Accepted for publication 5 April 1993.

Banana bunchy top virus (BBTV) was detected in commercial banana (*Musa* spp.) plantations and residential areas on the island of Oahu by double antibody sandwich direct ELISA with a monoclonal antibody (3B4) to BBTV (provided by H. J. Su, National Taiwan University) and by dot blot assays with a ^{32}P-labeled cloned BBTV DNA probe (pBT338) (provided by J. L. Dale, Queensland University of Technology). Several banana cultivars, including Cavendish ('Williams'), Dwarf Brazilian, Cuban Red, Hapai, and Fei, were found infected, but typical symptoms of BBTV were observed only on diseased Cavendish and Dwarf Brazilian bananas. On the basis of the positive reactions in ELISA and dot blot assays, the Hawaiian BBTV isolates are related closely to the BBTV isolates from Taiwan and Australia. Young leaves from BBTV-infected bananas always tested BBTV-positive, regardless of symptom expression. BBTV could be detected from about 7 and 1 mg of leaf midrib tissues in dilutions in ELISA and dot blot assays, respectively. Virus titer in leaf midrib tissues exceeded that in leaf lamina tissues. Thus, the most reliable detection of BBTV from symptomless plants or from newly infected plants is from midrib tissue of young leaves. Alternate hosts of the BBTV vector, the banana aphid (*Pentalonia nigronervosa* Coquerel), were tested from locations where BBTV-infected bananas have been grown for years. Samples from 20 heliconia, 35 taro, and 15 ginger plants that were growing adjacent to BBTV-infected bananas tested negative for BBTV in ELISA and dot blot assays.

Hop Latent Viroid in Hop Germ Plasm Introduced into Brazil from the United States. M. E. N. Fonseca, V. L. A. Marinho, and T. Nagata, CENARGEN/EMBRAPA, CP 02372 70849-970, and E. W. Kitajima, Universidade de Brasilia, 70919-970 Brasilia (DF), Brazil. Plant Dis. 77:952, 1993. Accepted for publication 18 December 1992.

Seven hop (*Humulus lupulus* L.) cultivars introduced from the USDA-ARS National Clonal Germplasm Repository in Corvallis, Oregon, and analyzed at CENARGEN/EMBRAPA were found to be infected with the hop latent viroid (HLVd). HLVd was detected by return-polyacrylamide gel electrophoresis assay (2). The putative HLVd molecule migrated between citrus exocortis and avocado sunblotch viroids, which were used as markers. HLVd infection was confirmed by Northern blot analysis using probes of full-length hop stunt viroid cDNA and HLVd cDNA (provided by E. Shikata, University of Hokkaido, Sapporo, Japan). Under high stringency conditions, only HLVd was detected in Northern blots in the infected hop plants. Results of host range studies of the viroid were similar to those reported for HLVd (1). The results suggest that hop germ plasm from the United States may represent a potential source of worldwide dissemination of this viroid.

References: (1) H. Puchta et al. Nucleic Acids Res. 16:4197, 1988. (2) J. Schumacher et al. J. Phytopathol. 115:332, 1986.

Nonsusceptibility of Wheat and Peanut Cultivars to an Oklahoma Strain of Aster Yellows MLO. D. Errampalli and J. Fletcher, Department of Plant Pathology, Oklahoma State University, Stillwater 74078. Plant Dis. 77:953, 1993. Accepted for publication 19 April 1993.

Aster yellows (AY) mycoplasmalike organism (MLO) affects wheat in Canada, and peanut yellows diseases occur in the Far East. Wheat (*Triticum aestivum* L., *T. turgidum* L.) and peanut (*Arachis hypogaea* L.) were screened for susceptibility to AY-OC 1, the most prevalent AY strain collected during 1985–1989 from Oklahoma vegetable crops (1). AY-OC 1 was placed (as "OKAY1") in the type I AY strain cluster by RFLP analysis (2). Transmission tests were conducted on 7- to 8-day-old plants of *T. aestivum* cultivars Chisholm, Payne, TAM 101, Triumph 64, and Vona and 21- to 23-day-old plants of peanut cultivars Florunner, Okrun, Pronto, Tamnut, and Toalson, which are commonly grown in Oklahoma, and on plants of *T. aestivum* cultivars Lemhi and Selkirk and of *T. turgidum* cultivars Stewart, Ramsey, and Thatcher, which are commonly grown in Canada. Plants were exposed for 1 wk to 50 inoculative leafhoppers (*Macrosteles quadrilineatus* Forbes) and screened by symptomatology, Dienes's stain, electron microscopy, and back-inoculations to aster plants. None of 120 plants of each wheat cultivar and none of 60 plants of each peanut cultivar became diseased, but 95–96% of control aster plants became infected. The failure of AY-OC 1 to infect the Canadian wheat cultivars, reportedly susceptible to AY, suggests the possibility of different MLO strains or leafhopper biotypes in the two regions.

References: (1) D. Errampalli et al. Plant Dis. 75:579, 1991. (2) I.-M. Lee et al. Phytopathology 82:977, 1992.

First Report of Tomato Yellow Leaf Curl Virus in Spain. E. Moriones and J. Arnó, Institut de Recerca i Tecnología Agroalimentàries, Centro de Cabrils, Ctra. de Cabrils, s/n, 08348 Cabrils (Barcelona), Spain; and G. P. Accotto, E. Noris, and L. Cavallarin, Istituto di Fitovirologia Applicata, C.N.R., Strada delle Cacce 73, 10135 Torino, Italy. Plant Dis. 77:953, 1993. Accepted for publication 22 March 1993.

Tomato yellow leaf curl geminivirus (TYLCV) is transmitted by the whitefly *Bemisia tabaci* Gennadius and causes a serious disease in tomato (*Lycopersicon esculentum* Mill.) in tropical and subtropical countries (1). The disease was not present in Europe until 1988–1989, when it was reported in southern Italy. Because *B. tabaci* is present in greenhouses throughout Europe, further spread of the disease was feared. Populations of *B. tabaci* in greenhouses of eastern Spain have increased progressively since 1990. In autumn 1992, tomato plants from this region were found with symptoms of yellow leaf curl, typically yellowing and curling of leaf margins and general stunting. Samples were collected, and total nucleic acids were extracted and analyzed by dot blot and Southern blot assays under high stringency conditions with a TYLCV-specific probe obtained from the 2.7 kpb insert of a cDNA clone prepared from TYLCV-infected plants from Sardinia, Italy (2). Strong reactions were obtained from the sample extracts, and DNA bands with the same electrophoretic mobility as controls from TYLCV-infected tomatoes were detected. In these assays, the geminivirus African cassava mosaic virus, which has the highest sequence homology with TYLCV, showed a reaction ranging from 20 to 100 times less than that of positive sample extracts. This is the first report of TYLCV in Spain.

References: (1) H. Czosnek et al. Phytopathol. Mediterr. 29:1, 1990. (2) A. Kheyr-Pour et al. Nucleic Acids Res. 24:6763, 1991.

Expanded Geographic and Host Range of Vein-Banding Disease of *Ribes*. J. D. Postman, USDA-ARS, National Clonal Germplasm Repository, 33447 Peoria Road, Corvallis, OR 97333. Plant Dis. 77:953, 1993. Accepted for publication 4 May 1993.

Although vein-banding disease (VBD) of currants and gooseberries (*Ribes* spp.) is presumed to occur wherever these crops are grown, it has never been officially reported in North America. The causal agent is presumed to be viral on the basis of symptoms, graft transmissibility, and aphid transmissibility. The VBDs of black currants, red currants, and gooseberries are treated independently in the literature and may be caused by more than one virus. The National Clonal Germplasm Repository (NCGR) at Corvallis, Oregon, houses a living collection of clonal *Ribes* germ plasm that has been assembled from research stations, private contributions, and collecting expeditions around the world. Vein banding has been the most common viruslike disease found in NCGR *Ribes* accessions, as determined by direct observation of symptoms on potted clones growing in glass- or screenhouses. Leaf symptoms of VBD are distinctive and are unlikely to be confused with any other disorder except aphid toxicity. No aphids have been present on these plants. U.S. sources of symptomatic plants include California, Connecticut, Minnesota, New Jersey, New York, Oregon, Rhode Island, and Washington. Symptomatic plants have also come from Canada, China, Czechoslovakia, England, Germany, Netherlands, Pakistan, Sweden, and Uzbekistan. VBD has been observed in 17.5% of the 630 clonal NCGR *Ribes* accessions. Symptoms have been noted in 16% of 286 gooseberry, 48% of 84 red and pink currant, 52% of 31 white currant, and 5% of 92 black currant clones. Naturally infected plants include the species *R. aureum* Pursh, *R. diacantha* Pall., *R. grossularia* L., *R. lacustre* (Pers.) Poir., *R. maximowiczii* Batal., *R. nigrum* L., *R. orientale* Desf., *R. pauciflorum* Turcz. ex Pojark., *R. petraeum* Wulf., *R. rubrum* L., *R. sanguineum* Pursh, and *R. uva-crispa* L. This represents the first report of this disease in North America and an extension of the natural host range.

First Report of *Melampsora occidentalis* on *Populus trichocarpa* in the Central United States. B. D. Moltzan, R. W. Stack, and P. A. Mason, Department of Plant Pathology, North Dakota State University, Fargo 58105; and M. E. Ostry, USDA Forest Service, St. Paul, MN 55108. Plant Dis. 77:953, 1993. Accepted for publication 13 April 1993.

Melampsora occidentalis H. Jacks. is indigenous to western North America, where it causes leaf rust of black cottonwood (*Populus trichocarpa* Torr. & A. Gray), a tree native from the Rocky Mountains westward. In recent years, experimental forestry plantings of *P. trichocarpa* have been made in the Midwest. Leaf rust caused by *M. occidentalis* was found on *P. trichocarpa* growing in plantations in Iowa in 1989 and 1990 and in Wisconsin in 1989, 1990, and 1991. The uredial and telial stages of the rust in these collections were examined by light and scanning electron microscopy. The very large uredospores (38×17 μm) and large teliospores with a thickened upper wall identify this pathogen as *M. occidentalis* and distinguish it from *M. medusae* Thuem., the common cause of Populus leaf rust in the central states. The occurrence of this rust at two locations and in successive years suggests that it has become established in the region. The alternate host is unknown, but several candidate coniferous species are widely distributed in the region.

French Marigold (*Tagetes patula*): A New Experimental Host of Citrus Exocortis Viroid. M. E. N. Fonseca, CENARGEN/EMBRAPA, CP 02372 70849-970, and E. W. Kitajima, Universidade de Brasilia, 70919-970 Brasilia (DF), Brazil. Plant Dis. 77:953, 1993. Accepted for publication 5 January 1993

French marigold (*Tagetes patula* L.) was found to be a new host of citrus exocortis viroid (CEVd) during a host range study of a Brazilian isolate of the viroid. Plants of marigold and of three other common herbaceous hosts of CEVd—tomato (*Lycopersicon esculentum* Mill. 'Rutgers'), chrysanthemum (*Chrysanthemum* × *morifolium* Ramat.), and velvetplant (*Gynura aurantiaca* (Blume) DC.)—were slash-inoculated with a CEVd nucleic acid preparation (100 ng/μl) purified from citron tissues as described by Semancik and Weathers (2). The CEVd- and buffer-inoculated plants (negative controls) were kept in a greenhouse at 25–30 C. Typical symptoms of CEVd infection (epinasty and stunting) were observed in tomato, chrysanthemum, and velvetplant 30 days later, whereas marigold plants did not show any diagnostic symptom. CEVd infection was confirmed by dot blot hybridization assay with CEVd-RNA transcripts (riboprobes). In comparative tests using return-PAGE (1), marigold extracts produced more intense bands, as judged visually, than did extracts from tomato, chrysanthemum, and velvetplant. The viroid was not detected in the negative controls. Our findings suggest that marigold may be used as an additional test plant for CEVd indexing and also to multiply this viroid for analytical purposes.

References: (1) J. Schumacher et al. J. Phytopathol. 115:332, 1986. (2) J. S. Semancik and L. G. Weathers. Virology 47:456, 1972.