DISEASE NOTE

FIRST REPORT OF BLOSSOM BLIGHT CAUSED BY *PSEUDOMONAS SYRINGAE* ON KIWIFRUIT PLANTS IN PORTUGAL

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In spring 2007, a new disease was observed on 5- to 7-year-old kiwifruit plants (*Actinidia deliciosa* L.) of cv. Hayward in several orchards of northern Portugal. Symptoms consisted of brown discolourations of buds and flowers, spots surrounded by yellow haloes on the leaves, and dry cankers on the branches. Crop losses were up to 30%. From affected organs, bacterial colonies were recovered on nutrient agar medium supplemented with 5% sucrose (NAS). All isolates were Gram negative, aerobic, positive for catalase, production of levan, fluorescent pigment, tobacco hypersensitivity, gelatine liquefaction and acid from sucrose. They were negative for oxidase, potato rot, arginine dehydrolase, nitrate reduction and utilization of 2-Keto-gluconate, and showed remarkable ice nucleation activity (INA) at -3°C (Hildebrand *et al.*, 1988). Pathogenicity tests were carried out on young plants of kiwifruit cv. Hayward, pear, liliac and lemon. All isolates induced symptoms only on kiwifruits, similar to those observed in the field after 3 to 5 days on buds, flowers and leaves, and after 10 to 15 days on the branches. Original bacterial strains were reisolated from symptomatic tissues. The 16S rDNA region (Moore *et al.*, 1996) of two strains (PS1708-PS1808) was sequenced and compared with the corresponding sequences in INSD (GenBank, EMBL and DDBJ). These sequences showed a complete identity with those of *P. syringae* pv. *syringae* strains. This is the first report of blossom blight caused by *P. syringae* (presumably pv. *syringae*) on kiwifruits from Portugal.

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DISEASE NOTE

FIRST REPORT OF *TOMATO SPOTTED WILT VIRUS* ON EGGPLANT IN TURKEY

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In summer and winter 2006 and 2007, eggplants (*Solanum melongena* L.) showing symptoms similar to those induced by *Tomato spotted wilt virus* (TSWV) were observed in Turkey, in open fields at Yesiltepe and Kazanli (Mersin, eastern Mediterranean region) and in a greenhouse at Altinoluk (Antalya, western Mediterranean region). Symptomatic plants were stunted, had mottled, necrotic and deformed leaves, and fruits with ringspots. The presence of TSWV was ascertained by DAS-ELISA using a commercial kit to this virus (Bioreba, Switzerland). Leaf extracts from symptomatic plants produced A_{405} readings in the range of 1.6, whereas A_{405} readings of symptomless plants did not exceed 0.160. Amplification of total RNA extracts by RT-PCR using the virus-specific primers L1TSWVR and L2TSWVF (Mumford *et al.*, 1996) confirmed the presence of TSWV in symptomatic plants. The expected amplicons of 276 bp were observed after electrophoresis of PCR products in 1% agarose gel. Serological and molecular assays disclosed the presence of TSWV in five of 72 samples tested. In no instance, the virus was detected in symptomless plants. To the best of our knowledge, this is the first report of TSWV on eggplant in Turkey.

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DISEASE NOTE

FIRST REPORT OF *ALTERNANTHERA YELLOW VEIN VIRUS* IN *ECLIPTA PROSTRATA* IN CHINA

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Eclipta prostrata L. (family Asteraceae), commonly known as false daisy, is a widely distributed weed of moist places throughout India, China, Thailand, and Brazil. In ayurvedic medicine, leaf extracts are considered to be powerful liver tonics, rejuvenative, and especially good for the hair. During a survey in March 2008, a virus isolate (YN598) was obtained from plants found in Yuxi (Yunnan province, China) that showed vein yellowing. To identify possible begomoviruses, total DNA was extracted from symptomatic leaves of *E. prostrata* essentially by using Qiagen DNeasy kit (Qiagen, USA). DNA extracts were amplified by rolling circle amplification (RCA) using the TempliPhi Amplification kit (Amersham, UK) according to Inoue-Nagata *et al*. (2004). In brief, DNA samples (*ca.* 1 µg in 1 µl) were mixed with sample buffer (5 µl), reaction buffer (5 µl), 20 mM thiophosphate-modified random hexamer (52-NpNpNp NpsNpsN-32) (1 µl), Phi-29 DNA polymerase (0.2 µl) and H_2O to 50 µl. After incubation for 20 h at 30°C, followed by enzyme inactivation at 65°C for 10 min, *Bam*HI-digested RCA products were cloned in pGEM-3Z (Promega, USA) and the inserts were sequenced. Two clones contained begomovirus DNA-A sequences. The complete DNA-A of YN598 was 2745 nt long (accession No. FJ015062) and was 95.6% identical to the sequence of Alternanthera yellow vein virus isolate Ecl (accession No. DQ641704). When the total DNA was amplified using the universal abutting primer pair (beta01/beta02) to detect DNAβ (Briddon *et al*., 2002), no amplicon was obtained. The results show that the symptomatic *E. prostrata* plants were infected by AlYVV. To our knowledge, this is the first report of AlYVV infecting *E. prostrata* in China.

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DISEASE NOTE

FIRST REPORT OF *FUSARIUM STERILIHYPHOSUM*- AND *F. PROLIFERATUM*-INDUCED MALFORMATION DISEASE OF MANGO IN EGYPT

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In 2008, vegetative and floral malformations were observed on a high percentage (60-80%) of mango trees of cvs Handi Sennara and Fagr Kelan in Bohera and Giza Governorates of Egypt. Diseased tissue were plated on potato dextrose agar and incubated at 24°C. In addition of *F. subglutinans*, two *Fusarium* spp. were isolated from both cultivars, which were identified as *F. sterilihyphosum* and *F. proliferatum* based on morphological characters. To assess the pathogenicity of these *Fusarium* isolates, two-year-old mango transplants of cvs Handi Sennera and Tomy grown in 30 cm pots were inoculated with a suspension of 3×10^3 macroconidia. Both *Fusarium* species induced typical malformation symptoms in inoculated mango transplants and were re-isolated after four weeks. Mango malformation disease (MMD) was first described in India in 1891 and has since been found in multiple locations of Asia, Africa, and of the Americas (Marasas *et al*., 2006). At least four *Fusarium* species have been associated with MMD worldwide, including *F. subglutinans* in many growing areas, *F. sterilihyphosum* in Brazil and South Africa, and *F. proliferatum* in Malaysia. To date, only *F. subglutinans* has been reported from Egypt (Ploetz *et al.,* 2002). To our knowledge, this is the first report of *F. sterilihyphosum* and *F. proliferatum* as the cause of mango malformation in Egypt.

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DISEASE NOTE

FIRST REPORT OF *APPLE CHLOROTIC LEAF SPOT VIRUS* INFECTION OF APPLE TREES IN IRAN

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During 2004-2006, a preliminary survey for the presence of *Apple chlorotic leaf spot virus* (ACLSV) in apple (*Malus pumila*), pear (*Pyrus communis*) and quince (*Cydonia oblonga*) was conducted in the provinces of Tehran, Isfahan, East and West Azerbaijan, their main growing areas in Iran. Samples were taken from 1078 apple, 92 pear and 23 quince trees and tested by DAS-ELISA (Clark and Adams, 1977) for the presence of ACLSV using commercial kits (Bioreba, Switzerland). ACLSV was found in 200 apple samples (18.6%) but in none of the other samples. Some of the positive samples came from trees with small and malformed leaves with necrotic lesions, whereas others were from symptomless plants. The highest incidence of ACLSV was in the province of Isfahan (30.9%), followed by West Azerbaijan (19.8%), Tehran (16.1%) and East Azerbaijan (13.2%). To confirm virus identification, total RNA was extracted from leaf samples (Rowhani *et al*., 1993) and subjected to RT-PCR using primers specific for a region of the ACLSV genome (GenBank accession No. M58152) that encodes part of the coat protein, ACLSV-5' (5'-GGC AAC CCT GGA ACA GA-3', position 6875-6891 nt) and ACLSV-3' (5'-CAG ACC CTT ATT GAA GTC GAA-3', position 7213-7233 nt) (Candresse *et al*., 1995). A 358 bp DNA fragment corresponding to a fragment of the ACLSV coat protein gene was amplified from extracts of infected trees but not from those of healthy trees. To our knowledge, this is the first report of ACLSV in apple trees in Iran.

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DISEASE NOTE

FIRST REPORT OF *DIPLODIA CORTICOLA* ON GRAPEVINE IN ITALY

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Vines with dieback of young shoots, chlorosis/necrosis of interveinal leaf tissues and early defoliation were observed during surveys in several grape-growing areas of Apulia (southern Italy). Sub-cortical brown streaks of variable length were present on the canes, and wedge-shaped necrotic areas within trunks and branches. Isolations made on potato dextrose agar (PDA) from discoloured wood, yielded eight different anamorphic species of *Botryosphaeria*, involved in the aetiology of black dead arm (BDA) of grapevines (Lehoczky, 1974). Occasionally, a fungus morphologically similar to *Diplodia corticola*, the causal agent of oak canker (Alves *et al.*, 2004), was also isolated. This fungus grew well in the dark at 22±3°C (13 mm/day) and produced pycnidia and conidia on half-strength PDA supplemented with pine needles (Lazzizera *et al.*, 2008). Conidia were unicellular, hyaline, with a thick smooth wall, 23.9-30.32 x 12.14-12.94 mm in size. Some turned dark and 1-septate with age. The fungus in question had nucleotide sequence of the internal transcribed spacer region (ITS1-5.8S-ITS2) of ribosomal DNA (accession No. FJ225332), 96% identical to that of a comparable sequence of *Botryosphaeria corticola* (accession No. AY259100), and was therefore identified as *D. corticola* (Alves *et al*., 2004). Artificial inoculations were carried out in June 2006 and 2007 by introducing a small (0.5 cm^2) colonized agar plug into a U-shaped incision on second basal internode of green shoots of 5-year-old pot-grown vines of cvs Italia and Lambrusco. Within 30 to 50 days, brown streaks (3.5 to 11.8 cm in length) developed in all inoculated plants, followed by death of the shoots. The pathogen was re-isolated from discoloured tissues, thus fulfilling Koch's postulates. To our knowledge, this is the first report of *D. corticola* as the cause of a severe disease of the grapevine, which represents a new host for this fungus.

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DISEASE NOTE

FIRST REPORT OF *LEEK YELLOW STRIPE VIRUS* ON LEEK IN TURKEY

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Virus diseases of leek (*Allium porrum*) are widespread in the world, causing serious damage to the yield and quality of the crop. The eastern Mediterranean region of Turkey contributes 16% (305,000 tons) of the country's leek production. A survey was therefore conducted in leek fields of Adana, Mersin, Osmaniye and Hatay provinces, where virus-like symptoms were observed in the 2007-2008 growing season. Samples were collected from 195 leek plants showing yellow stripes, mosaic, enations and deformation of the leaves, and stunting. DAS-ELISA assays were made using a commercial kit to *Leek yellow stripe virus* (LYSV) from Agdia (USA). Of the tested samples, 48 (24.6%) proved to be infected by LYSV. These results were checked by RT-PCR using a set of primers reported to be specific for the coat protein gene of LYSV (Fajardo *et al*., 2001). In particular, the totality of the ELISA-positive samples and eight ELISA-negative samples were analyzed. Products of the expected size (approximately 1020 bp) were amplified only from the ELISA-positive samples, confirming infections by LYSV. However, viruses other than LYSV are suspected to occur in symptomatic plants that did not react for LYSV in DAS-ELISA and RT-PCR. To our knowledge, this is the first record of LYSV in Turkey.

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DISEASE NOTE

FIRST REPORT OF *BOTRYOSPHAERIA CORTICOLA* AFFECTING *QUERCUS AFARES* AND *Q. CANARIENSIS* IN TUNISIA

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In Tunisia, oak forests are widespread chiefly in the Northwest regions where they play an important ecological and socio-economical role. In September 2006, cankers and dieback of branches were observed in *Quercus afares* and *Q. canariensis* trees in the reserve of Aïn Zena near Aïn Draham (north-west Tunisia). Fungal isolates obtained from twigs and branches showing sunken necrotic bark lesions were identified as *Botryosphaeria corticola* on the basis of morphological characters as described by Alves *et al*. (2004). The *B. corticola* strain CBS 119935 isolated from *Q. suber* in Italy and deposited at the Centraalbureau voor Schimmelcultures, Utrech (The Netherlands), was used as a reference strain. On potato-dextrose-agar (PDA) at 25°C *B. corticola* isolates developed dark brown colonies with dense aerial mycelium which produced pycnidia on sterile cork oak twigs placed on the surface of PDA within one month. The hyaline, cylindrical to ellipsoid and aseptate conidia measured 25.4-33.2x11.7-14.6 µm (n = 50). Koch's postulates were fulfilled by stem inoculation on six 1-year-old seedlings of *Q. afares* and *Q. canariensis* using the isolate DCT 07, obtained in this study and stored in the culture collection of the Department of Plant Protection, University of Sassari. Stem cankers developed on both oak species three weeks after inoculation. At the end of the experiment, four seedlings of *Q. canariensis* and three of *Q. afares* died. The pathogen was re-isolated from infected tissues. Control seedlings inoculated with sterile PDA plugs remained healthy. *B. corticola* is a dangerous and widespread fungal pathogen frequently involved in the aetiology of "oak decline" in the Mediterranean region. This is the first record of *B. corticola* on *Q. afares* and *Q. canariensis* in Tunisia.

Alves A., Correia A., Luque J., Phillips A., 2004. *Botryosphaeria corticola*, sp. nov. on *Quercus* species, with notes and description of *Botryosphaeria stevensii* and its anamorph, *Diplodia mutila*. *Mycologia* **96**: 598-613.

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DISEASE NOTE

OLIVE KNOT CAUSED BY *PSEUDOMONAS SAVASTANOI* pv. *SAVASTANOI* IN EGYPT

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During field surveys carried out in 2008 in all olive-growing areas of Egypt, bacterial knot symptoms were observed on twigs and branches of domestic olive cultivars in El-Fayoum governorate. From colonies resembling those of *Pseudomonas savastanoi* pv. *savastanoi,* isolated from olive knots on nutrient agar, four representative isolates were selected, purified on 5% sucrose nutrient agar medium and compared with *P. savastanoi* pv. *savastanoi* reference strain LMG 2209^T. All isolates were gram negative, fluorescent on King's medium B and had only oxidative metabolism of glucose. They were negative for levan, oxidase, potato rot and arginine dihydrolase and positive for tobacco hypersensitivity. When 1-year-old olive (*Olea europea* cvs Toffahi, Agyze alshame, Picual, Manzanilla and Frantoio) and wild olive (*Olea europaea* subsp. *oleaster*) plants were inoculated with bacterial suspensions (10^8 cfu ml^{-1}) by puncturing them in wounds made in the bark, all isolates induced knots in 20-30 days in both host plants at the site of inoculation. Bacteria re-isolated from the inoculated plants were identical to the original isolates. PCR analysis revealed that all the isolates generated and amplicon with the size expected for *P. savastanoi* pv. *savastanoi iaa*L gene (Penyalver *et al*., 2000). By rep-PCR, it was shown that the isolates have a 95-100% similarity among them and with the reference strain. Based on morphological, biochemical, physiological and pathogenicity tests as well as molecular analyses, it seems safe to conclude that the Egyptian bacterial isolates conform to the description of *P. savastanoi* pv. *savastanoi*. To our knowledge, this is the first record of olive knot disease on olive plants in Egypt.

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DISEASE NOTE

TRANSMISSION OF THE FIG MOSAIC AGENT BY THE ERIOPHYD MITE *ACERIA FICUS* COTTE (ACARI: ERIOPHYIDAE)

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Fig mosaic disease (FMD) and its vector *Aceria ficus* Cotte are widespread in different fig growing ares of Turkey. Fig cultivars Bursa siyahı, Göklop, Sarı Zeybek and Yediveren that were heavily infested by mites, were used as source plants for attempting mite transmission of FMD (8 mites per plant) to healthy fig seedlings. Electron microscopy of donor plants prior to transmission tests showed cv. Bursa siyahı to have double membrane bodies (DMBs) in the palisade mesophyll cells, and all cvs to have long flexuous virus-like particles (LVLPs) in vascular tissues. Electron microscopy of experimentally infected seedlings showed that only those infested with mites from FMD-infected cv. Bursa siyahı contained DMBs in mesophyll cells and that no LVLPs were present. However, none of the test plants, fed on by mites coming from cvs. Göklop, Sarı Zeybek and Yediveren showed any symptoms in four months following transmission. The presence of DMBs has been linked with FMD (Bradfute *et al*., 1970; Martelli *et al*., 1993; Serrano *et al*., 2004). DMBs have been observed previously in field-infected symptomatic plants in Turkey (Martelli *et al*., 1993), however our results are the first record of FMD and associated DMBs in experimentally infected fig seedlings. These results reinforce the suggestion that an agent that elicits the production of DMBs in infected plants is involved in the aetiology of FMD.

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DISEASE NOTE

SCLEROTIUM ROLFSII CAUSING COLLAR ROT ON *CHLORAEA MEMBRANACEA* (ORCHIDACEAE) IN ARGENTINA

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Chloraea membranacea Lindl. is a terrestrial orchid native to the southern Latin American countries, which grows in the northern and central regions of Argentina. It is a perennial herbaceous plant producing white flowers grouped in spikes (Roitman *et al.,* 2002/03). In spring 2007, the basal leaves of potted flowering plants from La Plata, began to turn yellow, then light brown, and finally wilted because of collar rot and decay of the roots. The rotten crown and the surrounded soil were covered by a white mycelium with scattered light to dark brown sclerotia 0.5-1.9 mm in diameter. A fungus was isolated on PDA, where it developed a white mycelium with clamp connections, differentiating smooth, round or ellipsoidal sclerotia, that turned dark brown with age. Based on these characteristics, the fungus was identified as *Sclerotium rolfsii* Sacc. Pathogenicity tests were conducted with an inoculum consisting of a fungal culture on sterilised rice kernels, 5 g of which were mixed with the upper soil layer around the stems of each of ten potted mature plants of *C. membranacea*. These were covered with plastic bags for 48 h and kept at 25-28ºC. All inoculated plants developed yellowing of the basal leaves, followed by wilting and basal rot after 12-15 days. Controls remained healthy. *S. rolfsii* was recovered only from inoculated plants. This pathogen has previously been isolated from Orchidaceae in Venezuela, USA and India (Farr *et al.*, 2008). In Argentina, it was recorded from the northeastern region on the orchid *Vanda* sp. (Galmarini *et al.,* 2002). To our knowledge, this is the first report of *S. rolfsii* causing basal rot of *C. membranacea*.

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DISEASE NOTE

DETECTION OF GREEN STEM DISORDER OF SOYBEAN IN ENTRE RIOS, ARGENTINA

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Green stem disorder (GSD) is a complex disease of soybean (*Glycine max*) whose causes have not yet been determined. GSD is characterized by delayed senescence of stems with normal pod and seed maturation (Hobbs *et al*., 2006). In order to characterize the GSD situation in Entre Ríos (Argentina), a survey was carried out in 280 soybean fields in two counties during three growing seasons (2004-2007). The prevalence (P), incidence (I) and severity (S) of the disease were determined and the presence of virus and phytoplasmas was assessed at IFFIVE-INTA. The identification of *Soybean mosaic virus* (SMV), *Alfalfa mosaic virus* (AMV) and *Bean common mosaic virus* (BCMV) was done by TAS-ELISA, whereas DAS-ELISA was used for *Tobacco ringspot virus* (TRSV), *Tobacco streak virus* (TSV) and *Bean pod mottle virus* (BPMV) using commercial kits (Agdia, USA). The presence of phytoplasmas was determined by PCR utilizing the universal primers P1/P7 (Smart *et al.,* 1996) and by electron microscope observation of thin sections. In the fields, P was 38.2, 16.4 and 39.8% in 2004-05, 2005-06 and 2006-07, respectively whereas I and S were, in average, 26.2, 46.8, 35.4%, and 30.2, 44.0, 38.4%, respectively. Of the viruses assayed, four were detected at low P in at least one of the three growing seasons, i.e. AMV (0.0, 37.7, 2.0%), SMV (0.0, 12.2, 14.0%), TSV (11.1, 1.1, 0.0%) and TRSV (0.0, 4.4, 0.0%). Phytoplasmas were found in none of the 3925 samples analysed. To our knowledge, this is the first report of GSD in Entre Ríos. The results suggest that GSD is not linked with the presence of the viruses and phytoplasmas assayed.

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DISEASE NOTE

FIRST REPORT OF *APPLE MOSAIC VIRUS* INFECTING ROSE IN YUNNAN, CHINA

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Apple mosaic virus (ApMV) is a member of the genus *Ilarvirus* in the family *Bromoviridae*. ApMV has been recorded from birch, hop, rose, apple, plum, peach, pear, apricot and other woody hosts (Scott, 2001). During 2005-2008 in the major rose-growing areas of Yunnan province (China), diseased rose (*Rosa hybrida*) samples were taken from plants that showed chlorotic to bright yellow ringspots and line patterns. Polyclonal antibodies (Agdia, USA) were used to assay for the presence of ApMV, *Prunus necrotic ringspot virus*, *Tobacco streak virus*, and *Arabis mosaic virus* in these samples by DAS-ELISA. Of the 97 samples analysed, 92 (94.8%) reacted strongly with an antiserum to ApMV. To further confirm the presence of this virus, IC-RT-PCR was performed as described by Jiang and Zhou (2002) using ApMV antiserum and the ApMV-specific primer pair ApB5 (5'-CAAGCGAACCC-GAATAAGG-3') and ApB3 (5'-ATCACGTACAAATCC-CTCAT-3') that amplify the majority of the coat protein gene. An amplicon of about 500 bp was obtained from diseased rose samples, but none was produced in tests with samples from symptomless plants. The amplified fragment from the sample KMi1 was then cloned and sequenced (EMBL accession No. AM403478). A database BLAST search at the National Center for Biotechnology Information showed that the fragment shared the highest nucleotide sequence identity (97%) with ApMV isolate NC-GR 9026 from USA (accession No. AY854050). To our knowledge, this is the first report of ApMV infecting rose in China.

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DISEASE NOTE

FIRST REPORT OF BLACK FOOT DISEASE ASSOCIATED WITH *CYLINDROCARPON* sp. IN LEBANON

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During summer of 2006-2008, young grapevines of cv. Sémillon, planted in 2002 in two different plots of the Bekaa valley (Lebanon), showed severe signs of decline, consisting of lack of bud break in the spring and dying canes. Some declining vines pushed new shoots from above the graft union. Vines uprooted in 2007 and 2008 showed a black discolouration of the rootstock in contact with the soil. To compensate for the poor development and lack of functionality of the initial 30-40 cm deep root system, secondary roots were formed close to the soil surface. Diseased roots showed discoloured bark and extensive necrotic lesions. When dead external root tissues were removed and cross sections were made, brown to black vascular streaks were seen, resembling those previously reported for Black foot disease (Larignon, 1999; Halleen *et al.,* 2007). Isolations were made from discoloured wood of eight different vines. Wood chips were cut, surface-sterilized by dipping in a 3% calcium hypochlorite solution, and plated on malt agar. Plates were incubated at 20-22°C with a 12 h light-dark cycle. After one week, fungal colonies developed from all isolations which, after subculturing, were identified as *Cylindrocarpon* sp. on the basis of morphological features. As expected (Halleen *et al.,* 2007), colonies were variable in colour, often cinnamon, and had a sparse aerial mycelium. All produced subcylindrical, ellipsoid and ovoid microconidia, 1-3 septate macroconidia, and chlamydospores. Identification at the species level is underway. The development of the disease was likely favoured by the deep planting of the vines and the high soil humidity in winter. To our knowledge, this is the first report of Black foot disease in Lebanon.

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Halleen F., Fourie P.H., Crous P.W., 2007. Control of Black foot disease in grapevine nurseries. *Plant Pathology* **56**: 637-645.

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DISEASE NOTE

VIRUSES IN MOSAIC-AFFECTED FIGS IN PORTUGAL AND THE ISLAND OF CRETE

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Leaf samples from mosaic-diseased fig trees collected in the vicinity of Evora (Portugal) and Chania (island of Crete, Greece) were examined for the presence of viruses by electron microscopy (leaf dips and thin sections) and RT/PCR. Primers used were specific for Fig leaf mottle-associated virus 1 (FLMaV-1), Fig leaf mottle-associated virus 2 (FLMaV-2) (Elbeaino *et al*., 2006, 2007), the enveloped virus-like particles (double membrane bodies, DMBs) typically associated with fig mosaic (T. Elbeaino, personal communication) or an unnamed member of the family *Flexiviridae* (A. Minafra, unpublished results). Portuguese samples contained DMBs in mesophyll cells, aggregates of filamentous particles in both mesophyll cells and sieve tubes, and were PCR-positive for the enveloped virus-like particles, the flexvirus and FLMaV-1. Flexivirus particles in leaf dips were decorated by using the homologous antiserum. Cretan samples contained DMBs in parenchyma cells and filamentous closterovirus-like particles in sieve tubes, and were PCR-positive for the enveloped virus-like particles and FLMaV-2. The flexivirus was not detected by electron microscopy or by PCR. Fig mosaic has been recorded previously in Portugal (Nolasco and Sequeira, 1991) and mainland Greece (Martelli *et al*. 1993) but this report is the first of the presence of particular viruses in symptomatic plants, i.e. DMBs, FLMaV-1 and flexivirus in Portugal; DMBs and FLMaV-2 in Crete.

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DISEASE NOTE

FIRST REPORT OF PINK MOLD ON PECAN NUTS IN ARGENTINA

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Pecan (*Carya illinoinensis* (W) K. Koch) is an important fruit crop in the provinces of Buenos Aires and Entre Ríos (Argentina), where it is grown on *ca*. 4000 ha. In summer 2007, nuts showing a pink mold growing on scab lesions were observed in plants of cv. Don Sala, grown in the Experimental Station "Julio Hirschhorn", Universidad Nacional de La Plata (Buenos Aires, Argentina). From diseased nuts placed in a moist chamber, fungal isolates were obtained and grown on 2% potato dextrose agar (PDA). Colonies were initially white, then turned to pink. Conidiophores were simple, septate, hyaline, 62.5 to 212 x 5 to 7.5 mm in size (average 133 x 5.3 mm), whereas conidia were apical, single, hyaline, pink in mass, 2-celled, with a well marked and truncate attachment point, 12.5-22.5 x 7.5-10 mm in size (average 18 x 9.5 mm). These morphological characters are typical of *Trichothecium roseum* as described by Barron (1968). Pathogenicity tests were performed by spraying healthy nuts of cv. Pawnee with a conidial suspension of a representative fungal isolate (1 x 10^6 conidia/ml of sterile distilled water). Controls were sprayed with sterile distilled water. Inoculated nuts were incubated in plastic boxes and placed in a growth chamber with a 12 h photoperiod at 20±2°C. After two days, the boxes were uncovered and kept at the same temperature for 2 weeks. Inoculated nuts showed necrotic tissues on shucks from which *T. roseum* was constantly re-isolated. This fungus has been reported on Pecan nuts in USA as weakly parasitic after scab disease (Farr *et al.*, 1989). This is the first record of *T. roseum*-induced pink mold on Pecan nuts in Argentina

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DISEASE NOTE

FIRST REPORT OF CHARCOAL ROT CAUSED BY *MACROPHOMINA PHASEOLINA* ON MEDITERRANEAN SAGE IN TURKEY

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Mediterranean or garden sage (*Salvia fruticosa* Miller), is one of the commercially most exploited medicinal and ornamental plants grown in eastern Mediterranean Turkey. In August 2008, several dying *S. fruticosa* plants were observed in a nursery at Hatay. Diseased plants exhibited apical necrosis and irregular black-brown necrotic areas on the leaves. Other symptoms included stunting, blackening of stems, and rotting of the crown and roots. A fungus isolated from stems and roots of diseased plants on potato dextrose agar (PDA), produced a dark mycelium and sclerotia. The multiseptate hyphae were initially hyaline and later became grey-black in colour. Sclerotia were minute, black, round to oblong or irregular in shape with mycelial attachments and varied from 60 to 140 µm in diameter. Based on these morphological characters, the fungus was identified as *Macrophomina phaseolina* (Tassi) Goidanich (Holliday and Punithalingam, 1970). To confirm pathogenicity, 3-month-old sage seedlings were inoculated with the isolated fungus, placing mycelial plugs of a 1-week-old culture into an incision made at the base of the seedlings. Control plants were inoculated with plugs of sterile PDA. Inoculated plants, kept at 27°C, developed the symptoms described above. The fungus was consistently re-isolated from symptomatic but not from control plants which remained symptomless. Although *M. phaseolina* has been recorded from several cultivated crops in Turkey, this is the first report of its occurrence on garden sage. Several diseases of *Salvia* spp. caused by soil-borne pathogens such as *Phytophthora cryptogea* and *Sclerotinia sclerotiorum* have been reported from Italy (Cacciola *et al*., 2002; Garibaldi and Gullino, 2004). To the best of our knowledge, *S. fruticosa* is new host for *M. phaseolina*.

Cacciola S.O., Pane A., Raudino F., Davino S., 2002. First report of root and crown rot of sage caused by *Phytophthora cryptogea* in Italy. *Plant Disease* **86**: 1176.

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DISEASE NOTE

FIRST REPORT OF PHOMOPSIS LEAF BLIGHT OF STRAWBERRY IN EGYPT

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In spring 2008, extensive leaf blight was observed on mother plants of strawberries (*Fragaria virginiana*) of cvs Tamar and Susana grown under plastic for cutting production in a commercial farm in Tahreer province, Bohara Governorate (Egypt). The disease affected about 25% of the plants. Young foliar lesions were irregular, often circular, with purplish halos, whereas older lesions along the veins were typically V-shaped, widening toward the edge of the leaflet. Affected leaflets could turn brown. Pycnidia appearing a black dots developed often in the central areas of older lesions. A fungus, isolated consistently from blighted tissue was identified as *Phomopsis obscurans* on the basis of morphological features (Maas,1998). Pathogenicity tests were performed on plants of the highly susceptible cv. Susana grown in 18-cm diameter pots. Ten healthy plants were sprayed with a conidial suspension containing 10^5 conidia/ml. After fifteen days, symptoms resembling those exhibited by naturally infected field plants developed on inoculated plants. A fungus identical to that used as inoculum was re-isolated from foliar lesions. To my knowledge this is the first report of *Phomopsis obscurans* causing leaf blight of strawberry in Egypt.

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DISEASE NOTE

FIRST REPORT OF FALSE SMUT DISEASE ON DATE PALMS IN CYPRUS

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Date palm (*Phoenix dactylifera*) is cultivated in Cyprus mostly as an ornamental tree in house, hotel and public gardens. During spring and early summer of 2008, some date palms located in Nicosia and Larnaca districts showed symptoms typical of false smut disease. Fruiting structures (sori) were present subepidermally and in abundance on both sides of the pinnae and on the rachis of old fronds. These sori were black, cup-shaped, and 1-5 mm in diameter. The outer part of a sorus was hard and persistent, while the inner part was membranous. Whitish filaments with attached spores emerged from the black body. The spores in the sorus were spherical to ellipsoid, 3-6 mm in diameter with thick wall. The fungus, a basidiomycete, was identified as *Graphiola phoenicis*, the causal agent of false smut disease. Disease attacks are most common on about 10-year-old palm date trees. The disease so far has been observed sporadically on a few individual date palms located in Nicosia and Larnaca districts. At present, infected palms do not show any growth reduction and the disease seems to be primarily cosmetic. Pruning and removal of infected leaves to decrease the inoculum level seem to be a sufficient practice for the management of the disease. To our knowledge, this is the first report of *G. phoenicis* attacks to date palm trees in Cyprus.

Abbas E.H., Abdulla A.S., 2004. First report of false smut disease caused by *Graphiola phoenicis* on date palm trees in Qatar. *Plant Pathology* **53**: 815.

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DISEASE NOTE

EFFECTS OF PHYTOPLASMA INFECTION ON THE QUALITY OF *GRINDELIA ROBUSTA* ESSENTIAL OIL

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Grindelia robusta (Asteraceae), a perennial species native to California, is exploited pharmaceutically because of the antitussive, expectorant, sedative, and analgesic effects of its essential oil fractions. During spring 2007, phytoplasmas belonging to subgroup 16SrI-B (Aster yellows, *Candidatus* Phytoplasma asteris) were identified in *G. robusta* plants showing virescence and phyllody symptom, growing in the Herb Garden of Casola Valsenio (Ravenna, Italy). To determine whether qualitative differences existed in the composition of essential oils between healthy and phytoplasma-infected plants, gas chromatography-mass spectrometry (GC-MS) analyses were performed. Samples collected from six symptomatic and five symptomless plants were tested by nested PCR followed by RFLP analysis. *Ca*. P. asteris was found only in symptomatic samples. Oils from healthy ("H") and infected ("I") samples obtained by direct steam distillation of 0.5 kg dried plant material were submitted to GC-MS analyses, according to recently described methodologies (Bruni *et al.*, 2007). About 42 different components were separated and identified in the analyzed samples. A higher percentage of selected monoterpenes was observed in oil "I" as compared with "H". In particular, the concentration of limonene and borneol acetate was almost 50% higher, and that of borneol was 15% in "H" as compared with 21.3% in "I". These preliminary results confirm previous findings relative to *Hypericum perforatum* infected by the ash yellows phytoplasma, in which qualitative and quantitative differences in oil composition were detected (Bruni *et al.*, 2005). Phytoplasma infections appear to modify also metabolic pathways in other plant species such as apple, in which *Candidatus* Phytoplasma mali, the apple proliferation agent, influences the behaviour of insect vectors and enhances disease transmission (Mayer *et al.*, 2008).

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Mayer C.J., Vilcinskas A., Gross J., 2008. Phytopathogen lures its insects vector by altering host plant odor. *Journal of Chemical Ecology* **34**: 1045-1049.

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