ARAB AND NEAR EAST PLANT PROTECTION NEWSLETTER

The Arab and Near East Plant Protection Newsletter (ANEPPNEL) is jointly published twice a year by the Arab Society for Plant Protection and the Near East Regional Office of the FAO. All correspondence should be sent either to Editorial Assistant, Arab Society for Plant Protection, P.O. Box 113-6057, Beirut, Lebanon (e-mail: aspp@terra.net.lb; website: www.asplantprotection.org).

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Number 51, December 2010

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News and announcements from all on any aspect of plant protection in the Arab world are invited for the Newsletter. Contributions from the Executive Committee of the Arab Society for Plant Protection and from the four Subject Matter Committees, as well as from national societies in the Arab region dealing with any aspect of plant protection are kindly requested and highly appreciated.

EDITORIAL

The Newsletter Silver Jubilee

By the end of 2010, the Arab and Near East Plant Protection Newsletter (ANEPPNEL) completed 25 years of service as the official newsletter of the Arab Society of Plant Protection (ASPP) and recognized as a handy source of information related to all aspects of plant protection in the Arab and Near East region. The Newsletter was published regularly, without interruption, for a quarter of a century, an achievement which all of us are proud of.

This biannual newsletter is designed to provide brief and timely plant protection news about: pests and diseases outbreaks, research highlights, plant protection activities of FAO and other organizations in the region, short plant protection notes, general news, publications and coming events. Even though many of these items are considered very useful by many colleagues receiving the Newsletter, but we strongly feel that after 25 years, it is time to introduce some changes to make it more useful and attractive to its users. As of the first issue of 2011, the ASPP Executive Committee is considering to increase the frequency to three times per year, instead of two, and introduce changes in style and contents.

The editorial space of this issue is used to invite all ASPP members in particular, and all others who receive the newsletter, to kindly send us constructive improvements they would like to see implemented starting the first issue of 2011. All suggestions will be considered very seriously if received before the end of March 2011. You can send your inputs addressed to the ANEPPNEL editor using the ASPP e-mail address aspp@terra.net.lb

We look forward to your inputs and let us work collectively to significantly improve the quality and effectiveness of the newsletter, a goal which will serve us all and maintain the good reputation which our newsletter earned as an important vehicle for regional plant protection information delivery.

Editorial Board

DISEASE AND PEST OUTBREAKS

EGYPT

First Report of *Penicillium ulaiense* as a Postharvest Pathogen of Orange Fruit in Egypt. Citrus is a major export commodity of Egypt, with production estimated to be 2.5 million metric tonnes per year. The most common and serious postharvest diseases of citrus fruits are green and blue moulds, caused by *Penicillium digitatum* and *P. italicum*, respectively. During April 2009, oranges (*Citrus sinensis*) from three Egyptian varieties (Baladi, Sukhary, and Abu-surra) were collected from commercial markets and packinghouses in the Giza Governorate. After three weeks storage at room temperature and high relative humidity, a morphologically distinct *Penicillium* spp. was observed as a mixed infection with *P. digitatum* and *P. italicum*. The pathogen was isolated on potato dextrose agar (PDA), and identified as *Penicillium ulaiense*, according to its morphological and cultural characteristics. *P. ulaiense* was distinguished from *P. digitatum* by its blue-grey spore mass and from *P. italicum* by its ability to form coremia (1-7 mm tall) with white stalks. An aqueous conidial suspension (10^5 spores/ml) was prepared from 14-day-old cultures of a monoconidial isolate. Thirty 'Valencia late' orange fruits were washed with 0.5% sodium hypochlorite solution, rinsed, dried and wounded (2 mm wide and 1 mm deep) at the equatorial zone. Wounds were inoculated with 10 µl of conidial suspension or water and kept at 25±2°C and 90-95% relative humidity. After 15 days incubation, symptoms caused by *P. ulaiense* were observed on inoculated fruit. The control fruit remained healthy. The causal agent was reisolated, and Koch's postulates confirmed. According to the available literature, this is thought to be the first report of *P. ulaiense* causing a citrus postharvest rot from natural infection in Egypt. Since this species can easily develop resistance to the fungicide imazalil, its presence in Egyptian packinghouses may represent a threat for long-term storage and delivery abroad. [K. Youssef, Y. Ahmed, A. Ligorio, A.M. D'Onghia, F. Nigro and A. Ippolito (Egypt & Italy). Plant Pathology, 59: 1174, 2010].

First Report of *Colletotrichum acutatum* and *C. gloeosporioides* Causing Anthracnose Diseases on Strawberry in Egypt. During the growing seasons of 2007 and 2008, typical anthracnose symptoms were observed in cultivated strawberry (*Fragaria* × *ananassa*) fields in Kalubia and Ismailia governorates, Egypt. Disease symptoms on immature and ripe fruits contained circular, sunken, and dark-coloured lesions (1–12 mm) bearing salmon-coloured masses of conidia, with lesions also appearing in necrotic petioles and stolons. A representative *Colletotrichum acutatum* culture (isolate 4), from infected fruit (cv. Yael), possessed hyaline, cylindrical conidia attenuated at both ends, measuring 12.6 (11.8–15.4) × 4.1 (3.3–5.1) µm. Additional symptoms of wilted plants resembled those of anthracnose crown rot caused by *C. gloeosporioides*. A representative *C. gloeosporioides* culture (isolate 1), isolated from necrotic roots (cv. Tamar), possessed hyaline, oblong conidia with obtuse ends, measuring 15.5 (14.3–17.3) × 4.5 (4.3–5.0) µm. Symptoms typical to those observed in the field were obtained 3 weeks after inoculation on 2-month-old potted strawberry transplants (six replicate plants each for isolate 1 and isolate 4), sprayed with conidial suspensions (10^6 conidia per mL) and maintained in a moist chamber for 48 h at 25°C. Water-inoculated plants remained healthy. Re-isolations were made from infected fruit, petioles, stolons and crowns, verifying the causal agents of disease. Species-specific PCR amplification was conducted on the two representative *Colletotrichum* isolates. The identities of the pathogens were confirmed as *C. gloeosporioides* (isolate 1) resulting in a single amplified DNA fragment of 450 bp using primers ITS4 and *Cg*Int; and *C. acutatum* (isolate 4) with an amplified product of 490 bp using primers ITS4 and *Ca*Int2. This is the first reliable and accurate report, based on molecular identification, of *C. acutatum* and *C. gloeosporioides* causing anthracnose on strawberry in Egypt, although a record on occurrence of strawberry anthracnose was published previously in a local journal. [E. M. Embaby, M. E. Ragab, Kh. A. Al. Doug Doug, R. Ahmed, A. Zveibil, M. Maymon and S. Freeman (Egypt). Plant Pathology, 59: 808, 2010].

IRAN

Identification of Phytoplasmas Associated with Cultivated and Ornamental Plants in Kerman Province, Iran. Kerman Province is a major agricultural centre in south-eastern Iran and an increase in agricultural activities results in an increase in disease. We report phytoplasmal infections in Iran of five plant species; spinach (*Spinacia oleracea* L.), sunflower (*Helianthus annuus* L.), canola (*Brassica napus* L.), cucumber (*Cucumis sativus* L.) and Aegean wallflower (*Erysimum cheiri* (L.) Crantz; Family *Brassicaceae*) using *in silico* restriction fragment length polymorphism and sequence analysis. Amplicons of approximately 300 bp were amplified using polymerase chain reaction amplification with universal P3/P7 primer pair. The amplified products were cloned and sequenced. On the basis of *in silico* restriction analysis of the amplicon digested with 17 distinct restriction enzymes and 16/23S spacer region sequence, Erysimum and cucumber phyllodies (EPh and CuPh2, respectively) were 100% identical and showed closest similarity with members of the peanut witches'-broom group (16SrII). Whereas spinach yellows (SpY) and canola phyllody (CaPh) revealed closest homology with phytoplasmas of the aster yellows group (AY) 16SrI. Mixed infections of the SuWB sample were confirmed in which two different phytoplasmas belonging to 16SrII and 16SrVI groups were found. This is the first report of phytoplasmal infection of Aegean wallflower (EPh) caused by a phytoplasma belonging to the 16SrII

group. While spinach phytoplasmas have been isolated in the past; however, our isolate from spinach belonging to the 16SrI group is the first spinach isolate from Iran. [Susan Asghari Tazehkand, Akbar Hosseini Pour, Jahangir Heydarnejad (Iran). Journal of Phytopathology, 158(11-12): 713–720, 2010].

IRAQ

First Record of Tomato Borer (Tomato Moth) *Tuta absoluta* (Meyrick) (Lepidoptera: Gelechiidae) on Tomato Crop in Iraq, 2010. Tomato fields were surveyed for the presence of tomato borer during the 2010 autumn season in the Rabia region, Nineveh province. The observation of the different developmental stages of the tomato borer, tunnels in the leaf, stem and fruit and the black larvae excrement on the infested leaves were considered as an indication for the occurrence of the tomato moth in that region. This is the first record of the tomato borer *Tuta absoluta* in this region of Iraq. In order to confirm identification, five pheromone traps provided by Russell IPM were installed in the field. The total adults collected after 24 hours were 515, 313, 475, 375 and 350, respectively. [Amal Salman Abdul Razzak, Ismail Ibrahim Al- Yasiri and Hikmat Qasim Fadhil. Ministry of Agriculture, the State Board for Plant Protection, Baghdad, Abu Ghraib, Iraq].

SAUDI ARABIA

First Report of Fusarium Wilt of *Lavandula pubescens* Caused by *Fusarium oxysporum* in Saudi Arabia. In November 2008, a wilt of lavender (*Lavandula pubescens*) seedlings was observed in the greenhouse at King Saud University, Riyadh, Saudi Arabia. Affected seedlings were wilted and the root system was poorly developed. Diseased stems developed a dark coloration that extended down to the roots. Vascular tissue of the affected seedlings appeared red or brown. Isolations consistently yielded a fungus growing from the discolored stem tissue when placed on potato dextrose agar. The macroscopic characteristics of the colony, as well as microscopic structures, were used to identify the fungus as *Fusarium oxysporum*. Oval to elliptical microconidia without septa and originating from short phialides were used to distinguish the species from *F. solani*. The fungus was authenticated by the ITCC (Indian Type Collection Centre), Indian Agricultural Research Institute, New Delhi, India, and given I.D. No. 7532.09. For conducting further experiments, healthy seedlings of *L. pubescens* were obtained from the botanical garden of the King Saud University and grown in steam-sterilized soil. Healthy seedlings of lavender were inoculated using a root-dip method with a conidial suspension (1×10^7 CFU/ml) of one strain of *F. oxysporum* obtained from infected plants. Inoculated seedlings were then transplanted into steam-sterilized soil. Plants inoculated with sterilized water (1 ml per plant) served as control treatments. Wilt symptoms and vascular discoloration in the roots and crown developed within 20 days on all plants inoculated with the pathogen, while control plants remained asymptomatic. *F. oxysporum* was consistently reisolated from symptomatic plants. The pathogenicity test was conducted twice. To our knowledge, this is the first report of *F. oxysporum* on *L. pubescens* in Saudi Arabia or elsewhere in the world, and this newly identified disease may be a potential threat to commercial production of lavender. [K. Perveen and N. Bokhari, (Saudi Arabia). Plant Disease, 94: 1069, 2010].

SYRIA

The First Registration of the Insect Hemispherical Scale *Saissetia coffeae* (Walker, 1852) (Homoptera: Coccidae) on Citrus in Syria. Hemispherical scale *Saissetia coffeae* is the most abundant and wide-spread of all soft scale species, it is common and generally distributed in all citrus growing regions of the World. *S. coffeae is* native to Africia. *S. coffeae* is polyphagous insect attacks coffee, tea, citrus, guava and some ornamental plants. Hemispherical scales feed on plant juices and cause a loss of vigor, spots on the foliage due to toxins in the scale saliva, deformation of infested plant parts, loss of leaves, retarded plant growth, and even death of the plant. The hemispherical scale was observed on citrus trees in Hresson village in Tartous Governorate. Hemispherical scales are found clustered on the shoots, leaves, and young fruit of plants. The eggs are laid underneath the carapace of the adult female. The eggs are translucent or whitish just after oviposition and later turn pale yellow and ultimately orange. The first instars nymphs are called crawlers. They are flat, oval, greenish-brown to pale amber, have six legs, and are about the same size as the eggs. The body color of the last two instars ranges from pale yellow to greenish brown to dark pink. The second and early third instar body shape has an irregular outline and lies flat. The mature female scale has a convex, light to dark yellow-brown, smooth and polished, helmet-shaped carapace. Body broadly oval or round; conspicuously convex in cross section in older females; as specimens mature becoming light brown; young females with raised areas forming an "H" on dorsum, disappearing in older females; without obvious wax covering or ovisac; hemispherical body forms a cavity under female where eggs are laid. Occurring on leaves and stems. *Saissetia coffeae* is similar *toS. oleae* by having a disc seta on anal plates and areolate dermal. *Saissetia coffeae* differs by having ventral submarginal tubular duct with conspicuously expanded filament (*S. oleae* has ventral submarginal tubular ducts with narrow filament). [Abd-Alnabi Basheer, Department of Plant Protection, Faculty of Agriculture, Damascus University, Nabil Abou-Kaf, Faculty of Agriculture, Tishreen University, Eyad Mohammad and kais Gazal, Lattakia Rearing Center of Natural Enemies on Lattakia, Syria].

The First Registration of the Scale insect Cappardis Wax *Coccus capparidis* (Green) Homoptera: Coccidae) on Citrus in Syria. Cappardis wax scale Present on fruit, stems, and leaves of host, adult female, with body broadly

oval; body covered by white mealy secretion; 17 pairs of thin wax filaments around perimeter of body. Dorsal setae clavate or capitate; ventral tubular ducts submarginal, restricted to abdomen, with 4 to 13 on body; dorsal submarginal tubular ducts absent; claw with small denticle. Claw digitules equal in size; 1 or 2 pairs of prevulvar setae (posterior pair often obscured by anal plates); 10 to 16 submarginal tubercles around body margin; marginal setae slender, apices pointed, bifurcate, or slightly fringed; anal plates with posterior margin slightly longer than anterior margin; each anal plate with 3 apical setae, without a subdiscal seta; with 2 or 3 subapical setae on each plate; anal fold with 4 fringe setae; without tibio-tarsal sclerosis; antennae 6- or 7-segmented. The mature female lay 500 eggs, the hatch after 12- 24 h. The nymphs remain under the mother's body for several days, and then spread to the leaves, especially on the lower surface and on the branches and fruit. There are three nymphal instar. Cappardis wax scale completes its generation within one month to several months depending on food availability and temperature, the insect secretes a honeydew lead to the growth of the sooty mold fungit, and the honeydew will attract horny ants which blocks the action of natural enemies. [Eyad Mohammad, Lattakia Rearing center of natural enemies on Lattakia, Abd-Alnabi Basheer, Department of Plant Protection, Faculty of Agriculture, Damascus University and Nabil Abou-Kaf, Faculty of Agriculture, Tishreen University, Lattakia, Syria].

The First Registration of the Insect Illyrian Thistle Stem Borer, *Lixus cardui* Olivier (Coleoptera: Curculionidae) on Illyrian Thistle, *Onopordum illyricum* in Syria. Illyrian thistle, *O. illyricum* is one of the very spiny plants that occupied the field edges and road sides and around the service rooms and farm buildings, also it invades the rangelands and fields of winter crops. The species, *L. cardui* was recorded for the first time in Syria. Results showed a high level of synchronization between the bioagent and the weed phonological stages. Adults appeared in early spring at the time of forming the first true leaves of the plant and started to feed on them. At the time of stem elongation females started to bore the elongated stem to lay eggs inside the holes, which considered as a clear evidence of the infestation. Larval stage lasted for 42.4±4.33 days and pupal stage for 10.2±1.2 days and reached to adult stage inside the bored stem were they overwinter till next spring. Host specificity test proved that the bioagent was very specific to the weed, *O. illyricum* and the adult never fed or laid eggs on the tested plants. [Ghassan Ibrahim and Abd-Alnabi Basheer, Department of Plant Protection, Faculty of Agriculture, Damascus University, Syria].

TUNISIA

First Report of *Beet mosaic virus* Infecting Chickpea (*Cicer arietinum*) in Tunisia. Chickpea plants with severe yellowing and tip wilting were observed in the Cap-Bon Region of Tunisia in 2006. The viral-like symptoms resulted in yield loss of approximately 25% in some fields. A total of 110 symptomatic chickpea plants was collected from nine chickpea fields and tested at the Virology Laboratory of ICARDA, Syria for eight legume viruses using tissue-blot immunoassay (TBIA). Polyclonal antisera produced at the ICARDA Virology Laboratory were used to test for *Chickpea chlorotic dwarf virus* (genus *Mastrevirus*, family *Geminiviridae*), *Broad bean stain virus* (genus *Comovirus*, family *Secoviridae*), *Broad bean mottle virus* (genus *Bromovirus*, family *Bromoviridae*), and *Bean yellow mosaic virus* and *Pea seed borne mosaic virus* (genus *Potyvirus*, family *Potyviridae*). Antiserum to *Beet mosaic virus* (BtMV; genus *Potyvirus*, family *Potyviridae*) (AS-0143) was provided by the German Collection of Microorganisms and Cell Cultures (DSMZ, Braunschweig, Germany). In addition, three monoclonal antibodies (MAb) were used to detect *Faba bean necrotic yellows virus* (FBNYV; genus *Nanovirus*, family *Nanoviridae*) (MAb 3-2E9), potyviruses (PVAS-769 [MAb PTY 3 Potyvirus Group] American Type Culture Collection, Manassas, VA), and luteoviruses (MAb B-2-5G4). Twenty-two of the plants tested positive with MAb PTY 3 and BtMV antisera, 56 samples reacted with MAb B-2-5G4, and eight plants with the FBNYV MAb, whereas 24 plants tested negative with all antisera. Because reactions with the BtMV antiserum were unexpected, detection of BtMV was confirmed by reverse transcription-(RT)-PCR assays using BtMV-specific primers (LN26 and LN27), which produced an amplicon of expected size (1,050 bp) from all plants that reacted with BtMV antiserum but not from plants that were serologically negative. Leaf tissue from a BtMV-infected plant was ground in 0.01 M potassium phosphate buffer, pH 7.2 (1:20, wt/vol), mixed with 0.5% celite, and used for mechanical inoculation of chickpea seedlings (cv. Beja 4). In addition, adults of three legume aphid species (*Aphis craccivora*, *A. fabae*, and *Acyrthosiphon pisum*) were starved for 1 h before feeding on BtMV-infected chickpea leaves for an acquisition access period of 5 min. Fifteen aphids of each species were placed on each chickpea plant, allowed to feed for 24 h, and then sprayed with an insecticide. Tip wilting symptoms appeared on plants 15 to 20 days after mechanical and aphid inoculations but not on plants used as negative control treatments (inoculated mechanically with healthy leaf tissue or with aphids that had fed on noninfected chickpea plants). Use of BtMV antiserum for TBIA analysis of inoculated plants revealed systemic BtMV infections in 35 of 92 plants inoculated mechanically and 15 of 75 plants inoculated with viruliferous *A. fabae* only. To our knowledge, this is the first record of BtMV infecting chickpea in Tunisia. [S. G. Kumari, A. Najar, N. Attar, M. H. Loh, H.-J. Vetten, (Tunisia, Syria, Australia & Germany). Plant Disease, 94: 1068, 2010].

First Report of *Rhizoctonia solani* AG 2-3 on Chickpea in Tunisia. Chickpea plants (cv. Béja 1) showing typical symptoms of root and collar rots were collected from the Beja area (Tunisia). Visual diagnostic, isolation and microscopic observation identified the causal organism as *Rhizoctonia solani*. Sequence data of the ITS rDNA region confirmed the species identity and revealed that the

anastomosis group of the isolate was AG2-3. Mechanical inoculation of chickpea seedlings resulted in the typical root and collar rot, proving that this isolate is pathogenic on chickpea. This is the first report of *R. solani* AG2-3 causing root and collar rot of chickpea in Tunisia. [Noura Omri Ben Youssef, Ali Rhouma, Samira Krid, Mohamed Kharrat. (Tunisia). Phytopathologia Mediterranea, 49(2): 253-257, 2010].

The Gall Wasp *Plagiotrochus amenti* Potentially Dangerous for Cork Oak Found for the First Time in Tunisia. The occurrence of *Plagiotrochus amenti* in Tunisia is reported here for the first time. This gallicolous wasp is a potential pest for the oak tree, and its expansion could result in economical losses in Tunisia for the cork industry. The dangers of its potential proliferation are exposed. The indications for recognition of its appearance are given. [J. Pujade-Villar, M. Grami and M.L. Ben Jamâa (Tunisia & Spain). Tunisian Journal of Plant Protection 5: 225-230, 2010].

First Record of *Leptocybe invasa* and *Ophelimus maskelli* Eucalyptus Gall Wasps in Tunisia. Two Australian gall wasps were detected for the first time in Tunisia on the foliage of *Eucalyptus camaldulensis* trees. *Leptocybe invasa* was detected in 2004, while *Ophelimus maskelli* in 2006. *L.invasa* makes galls on petioles, leaf midribs and young branches whereas *O. maskelli* induces galls on limbs. Vigilance is recommended when seedlings are carried to plantation. [S. Dhahri, M.L. Ben Jamaa and G. Lo Verde (Tunisia & Italy). Tunisian Journal of Plant Protection 5: 231-236, 2010].

TURKEY

Downy Mildew Outbreak on Parsley Caused by *Plasmopara petroselini* in Turkey. Flat-leafed parsley (*Petroselinum crispum* var. *neapolitanum*) is one of the most commercially important vegetable crops in the eastern Mediterranean region of Turkey. In February 2009, downy mildew symptoms were observed in several fields inspected in Hatay province. Incidence of downy mildew infection was 40–60%, but in some locations it was as high as 95–100%. Initial symptoms appeared as faint chlorotic spots on the upper surfaces of the leaves. On the corresponding lower surfaces, white to off- white mycelium and sporangiophores developed which eventually turned dark grey. The leaves and stalks became shriveled and necrotic, eventually dying. The tree-like sporangiophores (120–300 × 7.5–10.0 µm), which emerged in groups from the stomata (up to 10 in a fascicle), were hyaline, straight or slightly curved with a slightly swollen base, monopodially branched, each branch ending in two to five ultimate sterigmata tapered towards the tip. The sporangia were hyaline, broadly ellipsoidal to ellipsoidal, 22.5–30.0 × 12.5–7.5 µm, with a length/width ratio = 1.28–1.55. A short conical pedicel (1.2 µm) was mostly present on mature sporangia which exhibited a dehiscence apparatus. Encysted zoospores were 5.0–7.5 µm in diameter. Oospores were not observed on the infected leaves. On the basis of symptoms and morphology of the organism, the pathogen was identified as *Plasmopara petroselini* (= *P. umbelliferarum* pro parte = *P. nivea* pro parte = *P. crustosa*). Pathogenicity was confirmed by inoculating foliage of five-week-old parsley plants (cv. d'giant Italiana) with a suspension of sporangia (10^5 sporangia per mL). Inoculated plants were kept in a moist chamber (90% RH) at 18°C for 48 h and then moved to a growth chamber at 20°C with a 16 h photoperiod. Symptoms and signs of downy mildew developed after 12 days only on inoculated plants, and the pathogen morphology matched *Plasmopara petroselini*. A voucher specimen was deposited at the MKU Herbarium and Culture Collection (MS-310904). The disease has been previously reported to cause severe damage to parsley grown in European countries, e.g. Belgium, Sweden and Czech Republic, but this is the first report of *P. petroselini* on parsley in Turkey. [S. Soylu, E. M. Soylu and Ş. Kurt (Turkey). Plant Pathology, 59: 799, 2010].

First Report of Bacterial Blight Caused by *Pseudomonas syringae* pv. *pisi* on Pea in Turkey. In April of 2009, leaf blight symptoms were observed on field peas (*Pisum sativum* L.) grown in Söke, Torbali, and Ödemis counties in the Aegean Region of Turkey. Field inspections revealed disease incidence as high as 45% and the disease was found in 13 commercial fields. Initial symptoms consisted of small, dark green, water-soaked lesions on leaves, stipules, and stems near ground level. Lesions often enlarged and coalesced and turned chocolate brown with a water-soaked margin. Stem infections usually coalesced and girdled the stem spreading upward to stipules and leaflets forming a fan-like lesion on the stipule. A fluorescent, gram-negative bacterium was consistently isolated from diseased tissues onto King's B medium. Twelve strains (five from cv. Early Sweet, three from cv. Geneva, two from cv. Bolero, and two from cv. Carina) from thirteen pea fields were obtained. All strains metabolized glucose oxidatively, and their reactions in LOPAT tests were +, -, -, -, +, and thus classified as belonging to *Pseudomonas syringae* LOPAT group Ia. The 12 strains utilized homoserine, inositol, sorbitol, sucrose, mannitol, and mannose but did not utilize erythritol, trehalose, and L-tartarate. All showed ice nucleation activity but variable results were obtained for gelatin liquefaction and esculin hydrolysis. Identification of *P. syringae* pv. *pisi* was confirmed by sequencing the 16S rDNA with primers Univ-1390R and 27F. Sequences of the three local strains (Bz2, Bz4, and Bz8) were 100% identical to a type culture strain. The nucleotide sequence of strain Bz4 was submitted to GenBank (Accession No. GU332546). Pathogenicity tests were performed on greenhouse-grown 2-week-old pea plants cv. Geneva as three replicates in 12-cm pots containing a steamed sand/peat/soil mixture. Plants were stab inoculated by puncturing the main stem at its junction with the stipules at the second node from the apical end with a 26-gauge needle through a 5-µl drop of 10^8 CFU/ml bacterial suspensions. Control plants were inoculated with sterile water. After 10 days of incubation in a growth chamber at 24±1°C with a 14-h photoperiod, stems inoculated with pea isolates resulted in water-soaked tissue spreading from the site of

inoculation along the veins on stipules and leaflets that were identical to symptoms seen in the field. Control plants remained symptomless. Isolates recovered from the symptomatic stems showed the same morphological and biochemical features of the original isolates. All physiological and biochemical tests as well as the pathogenicity assay were performed at least twice and the type strain of *P. syringae* pv. *pisi* (NCPPB 2585) was used as reference. On the basis of the physiological, biochemical, genetic, and pathological characteristics, all strains were identified as *P. syringae* pv. *pisi*. To our knowledge, this is the first report of *P. syringae* pv. *pisi* causing bacterial blight on pea in Turkey. Turkey currently produces approximately 93.000 t of peas annually and three-quarters of that is produced in Western Anatolia. The new disease may represent a limiting factor for future production. [K. Benlioglu, Ü. Özyilmaz and D. Ertan (Turkey). Plant Disease, 94: 923, 2010].

First Report of Group 16SrXII Phytoplasma Causing Stolbur Disease in Potato Plants in the Eastern and Southern Anatolia Regions of Turkey. In recent years, a stolbur-like disease has had devastating effects on the yield and marketable quality of potato production in Erzurum (Eastern Anatolia) and Akcakale-Sanliurfa (Southern Anatolia) regions of Turkey. Potato plants exhibited several different symptoms including stunting, upward rolling of the top leaves along with reddish or purplish coloration, chlorosis, shortened internodes, swollen nodes, proliferated axillary buds, aerial tubers, and early plant decline. An extensive survey from 2003 to 2010 was performed and diseased plant samples were collected. Total genomic DNAs were isolated from the leaf mid-veins of the six different symptomatic and two symptomless plants selected. Using molecular tools, the occurrence of phytoplasma associated with potato plants was determined, and this phytoplasma shared very high sequence homology (99%) with phytoplasmas of subgroup 16SrXII-A (e.g., GenBank Accession No. EU010006). Moreover, collective RFLP pattern of potato-associated phytoplasma differed from digestion profiles of previously described 16SrXII subgroups, with similarity coefficient of 0.94 with the reference phytoplasma strain of subgroup 16SrXII-A (GenBank Accession No. AJ964960). Thus, it was confirmed that potato-associated phytoplasma represents a new 16SrXII subgroup (16SrXII-N). Furthermore, a new primer set was designed for specifically detecting stolbur phytoplasma in infected potato plants. The use of this method may help to determine possible alternative hosts and vectors of potato phytoplasma, which is important for development of an integrated management strategy for effective control of this disease in the future. Presence of potato stolbur diseases in the Eastern Anatolia Region of Turkey has previously been reported. To our knowledge, this is the first report of occurrence of a 16SrXII group phytoplasma causing potato stolbur diseases in the Eastern and Southern Anatolia regions of Turkey. [S. Eroglu, H. Ozbek and F. Sahin (Turkey). Plant Disease, 94: 1374, 2010].

RESEARCH HIGHLIGHTS

ALGERIA

Inventory and Identification of Some Thrip Species in Coastal and Subcoastal Regions of Algeria. During the last decade, the presence of thrips on crops has manifested itself by the increase in viral diseases transmitted by some species. This study proposes a first approach to these Thysanoptera, which have been very little studied in Algeria. An exploration and identification of thrips on different host plants in coastal and sub- coastal regions in Algeria were made for 2 consecutive years. The taxonomic study enabled the determination of 5 species. There were two Tubulifera-Phlaeothripidae, being *Gynaikothrips ficorum*, which is strictly limited to *Ficus retusa*, and *Haplothrips tritici*, is harvested from *Anacylus clavatus* and *Avena sterilis*, and two Terebrantia-Thripidae, *Odontothrips loti* (Haliday, 1852 on jasmine and *Pittosporum tobira*, and *Frankliniella occidentalis* collected from roses, *Cucurbita pepo* and *Cucumis sativus*. The fifth species was *Limothrips cerealium*, which was harvested from *Triticum durum*, *Triticum aestivum* and *Avena sterilis*. [Hassina Benmessaoud-Boukhalfa, Fazia Mouhouche and Fatma zohra Belmazouzi (Algeria). Agriculture and Biology Journal of North America, 1(5): 755-761, 2010].

EGYPT

Augmentation and Evaluation of a Parasitoid, *Encarsia inaron*, and a Predator, *Clitostethus arcuatus*, for Biological Control of the Pomegranate Whitefly, *Siphoninus phillyreae*. The aim of this study was to evaluate the biological control potential of *Encarsia inaron* (Walker) (Hymenoptera: Aphelinidae) and a predator *Clitostethus arcuatus* (Rossi) (Coleoptera: Coccinellidae) against the pomegranate whitefly, *Siphoninus phillyreae* (Haliday) (Homoptera: Aleyrodidae) on pomegranate (*Punica granatum* L.) by mass rearing and augmentative releases of these two natural enemies during a long-term field study in Egypt. A study was conducted to evaluate the biological control potential of this pest by augmentation with a parasitoid, *En. inaron*, and a predator, *C. arcuatus*. Both species were mass reared and monthly releases were made in fields of pomegranate during each of 11 consecutive years (1996-2006). About 1,155,000 *En. inaron* and 990,000 *C. arcuatus* were released in fields in Assuit governorate in Egypt on pomegranate which was naturally infested by *S. phillyreae*. Populations of the natural enemies and parasitism were much higher in field plots where releases were made compared with where no releases were made. The maximum rate of parasitism reached 93% (88% by *En. inaron*) in the field treatment where releases were made, while parasitism peaked at 36% where no releases were made. The population of *En. inaron* was significantly correlated with the population of whitefly during the field season. Additional parasitism was by natural infestation with *Eretmocerus parasiphonini* Evans and Abd-Rabou

(Hyneoptera: Aphelinidae). Among all years, the maximum number of *C. arcuatus* ranged from 13 to 44 beetles per 100 leaves for the treatment, and there were more predators in the release plot than in the control plot. These observations enhance understanding of the usefulness of these natural enemies after augmentation in the field. [Shaaban Abd-Rabou and Alvin M. Simmons (Egypt & USA). Archives of Phytopathology and Plant Protection, 43: 1318–1334, 2010].

Effect of Certain Cultural Practices on Susceptibility of Potato Tubers to Soft Rot Disease Caused by *Erwinia carotovora* pv. *carotovora*. *Erwinia* soft root causes destructive and serious damage to many vegetable crops including potato in the field, transit and storage periods. The effect of certain cultural practices on the susceptibility of potato tubers to soft rot bacteria was studied and the results of this work can be summarised in the following: potato tubers harvested on 1 May first exhibited the highest disease incidence compared with those harvested on 15 May or 30 May. Harvesting on 15 June resulted in the lowest disease infection. The application of high levels of nitrogen fertiliser as urea (46.5%), ammonium nitrate (31%) and ammonium sulphate (20.5%) resulted in an increase of the susceptibility of potato tubers to bacterial soft rot disease. In contrast, the addition of phosphorous as superphosphate (15.5%) fertiliser caused the reverse effect. The addition of potassium as potassium sulphate (48%) alone at any of the tested levels showed no effect. The susceptibility of potato tubers to bacterial soft rotting disease was increased by increasing storage periods at 4°C for 1, 2, 3 and 4 months. Spraying copper sulphate exhibited the highest decrease in soft rot incidence disease followed by manganese, zinc and iron. However, spraying of boron increased susceptibility to the disease. Potato tubers obtained from plants sprayed with copper and stored for different periods showed the lowest susceptibility to disease incidence. Tuber sprayed with zinc, iron, manganese and finally boron came next. [Kamal A. M. Abo-Elyousr, M. A. Sallam, M. H. Hassan and A. D. Allam (Egypt). Archives of Phytopathology and Plant Protection, 43: 1625-1635, 2010].

Effectiveness of Entomopathogenic Nematodes *Steinernema feltiae* and *Heterorhabditis bacteriophora* on the Colorado Potato Beetle *Leptinotarsa decemlineata* (Say) (Coleoptera: Chrysomelidae) Under Laboratory and Greenhouse Conditions. In laboratory and greenhouse studies, the invading ability, virulence, and mortality caused by *Stinernema feltiae* and *Heterorhabditis bacteriophora* were compared. After one and two days of exposure to either nematode species, the mortality of Colordo potato beetle (CPB) *Leptinotarsa decemlineata* larvae at different instars, third and fourth, was recorded and the number of nematodes invading cadavers was more than the number of nematodes inside the larvae at the late last instar (one day before pre-pupa). Two concentrations, 250 and 500 IJs/dish, infective juvenile nematodes/0.5 ml were tested on different CPB larval instar. *S. feltiae* was more effective, with fourth instar rather than third and late last instar. On the other hand, *H. bacteriophora* showed a very weak effect with *L. decemlineata*. Also it was clear that *S. feltiae* was more effective and faster than *H. bacteriophora*: more than 70% of larvae were killed within 24 hours compared with *H. bacteriophora* which killed 40% of larvae within 48-72 hours. A significant difference in invading efficiency was observed with concentration 2500 IJs/pot in the greenhouse test. The number of adult females found in the cadavers of *L. decemlineata* larvae was always higher than the number of males. Foliage application of *S. feltiae* and *H. bacteriophora* resulted in a significant reduction of the number of damaged leaves and a lower index of damage compared with that in the control. We conclude that *S. feltiae* has significant potential and can help in the management of the Colorado potato beetle. [Manal M. Adel and Hany M. Hussein (Egypt). Archives of Phytopathology and Plant Protection, 43: 1485-1494, 2010].

IRAN

A Study on Seasonal Populations of Potato Leafhoppers in Kerman Province of Iran. This study of potato leafhoppers population dynamics was conducted in Kerman province during 2005-2007. In this study Mahan, Bardsir and Lalehzar as the principal potato growing areas of Kerman province were selected. Sampling commenced at 40 days after planting on 8 June in Lalehzar region, 30 days after planting on 8 May in Bardsir and 55 days after planting on 4 May in Mahan. According to the results of this study 11 species belong to 11 genus; three families and six subfamilies were collected from three potato growing areas (Lalehzar, Bardsir, Mahan) during 2005-2007 and identified as follows: *Empoasca decipiens*, *Psammotettix striatus*, *Unkanodes tanasijevici*, *Sogatella vibix*, *Exitianus fasciolatus*, *Euscelis alsius*, *Reptalus lindbergi*, *Pseudophlepsius binotatus*, *Circulifer* sp., *Macrosteles* sp., *Idiocerus* sp. Statistical analysis revealed that *Empoasca decipiens* was the most abundant species in potato fields in Lalehzar, Bardsir and Mahan regions. [Hadi Zohdi, Mohammad Mehdi Aminaee and Mohammad Taghizadeh (Iran). Archives of Phytopathology and Plant Protection, 43: 1177-1182, 2010].

Relationships Between Population Densities of the Cereal Cyst Nematode, *Heterodera latipons* and Yield Losses of Winter Wheat in Microplots. The cereal cyst nematode, *Heterodera latipons*, has been shown internationally to be a serious nematode pest causing yield losses in cereals and it occurs in some cereal-growing provinces of Iran. The objectives of this research were to study the effect of different initial population (*Pi*) densities (0, 2.5, 5, 10 and 20 eggs and second-stage juveniles/gram of soil) of *H. latipons* on yield and growth parameters of the winter wheat cv. Sardari. Two experiments were conducted in the 2006–07 and 2007–08 growing seasons in field microplots in the Markazi province of Iran. *H. latipons* was shown to significantly reduce grain yield by up to 55%, root dry weight by up to 70%, aerial shoot dry weight by up to 48%, spike height by up to 36% and plant height by up to 32% at the highest *Pi*. The final population of *H. latipons*

increased significantly with increasing *Pi* levels in both years, while the reproduction factor decreased. Regression analysis clearly demonstrated inverse relationships between *Pi* density and grain yield, which was modelled using the exponential association equation: Grain Yield Loss (%) = 52.86 $(1 - e^{-0.17Pi})$. [A. Hajihasani, Z. Tanha Maafi, J.M. Nicol and A. Seraji (Turkey & Iran). Australasian Plant Pathology. 39:530-535, 2010].

IRAQ

The Biological Activity of Bacterial Vaccine of *Pseudomonas putida2* and *Pseudomonas fluorescens3* Isolates to Protect Sesame Crop (*Sesamum indicum*) from *Fusarium* Fungi under Field Conditions. This research investigated the biological effects of *Pseudomonas putida2 and Pseudomonas fluorescens3* as biocides to inhibit *Fusarium* fungi growth and as biofertilizers to improve growth characters of sesame crop grown in contaminated soil with *Fusarium* under field conditions compared with Dithan. Results showed mixture of vaccine *Pseudomonas putida2 + Pseudomonas fluorescence3* together was more effective on *Fusarium* growth and increased growth characters muche higher than each isolate alone. Both isolates scored significant improving in morphological, physiological and productivity characters for sesame compared with control and Dithane treatments. But mixture of *P. putida2 + P. fluorescens3* treatment together (Fusant) as a biocide and biofertilizers gave higher significant results in increasing chlorophyll content, percentage of N, P, K in total dry weight of shoot, branch no./plant, height of plant, leaf area per plant, leaf no./plant, pods no./plant, grains no./pod, total weight of 1000 grains, total yield of grains/plot, and percentage of oil in sesame grains. The values were 3.21 mg/gm, 4.18%, 0.44%, 3.87%, 45.8 branch/plant, 151.7 cm/plant, 59.7 cm²/plant, 428.3 leaf/plant, 146.7 pod/plant, 69.1 grain/pod, 2.92 gm/1000 grain, 982.3 gm (grains)/plot and 56.2% oil in sesame grains respectively. While control treatment scored: 0.85 mg/gm, 1.77%, 0.11%, 1.43%, 14.6 branch/plant, 53.3 cm/plant, 25.5 cm²/plant, 162.7 leaf/plant, 44.0 pod/plant, 31.3 grain/pod, 0.94 gm/1000 grain, 112.4 gm (grains)/plot and 26.6% oil in sesame grains respectively. [Hammad Nawaf Farhan, Basher H. Abdullah and. Ashwaq T. Hameed (Iraq). Agriculture and Biology Journal of North America, 1: 803-811, 2010].

JORDAN

Antifungal Activity of Several Medicinal Plants Extracts Against the Early Blight Pathogen (*Alternaria solani*). The antifungal activity for several medicinal plants against the early blight fungus (*Alternaria solani*) has been investigated. These plants were Syrian marjoram (*Majorana syriaca*), rosemary (*Rosmarinus officinalis*), Greek sage (*Salvia fruticosa*), roselle (*Hibiscus sabdariffa*) and cotton lavender (*Santolina chamaecyparissus*). The inhibitory effect of these extracts on the radial mycelial growth as well as on spore germination was measured *in vitro* at various concentrations of crude extract (0.5 g dry plant powder/ml medium). Extracts of *M. syriaca* and *H. sabdariffa* were most effective causing total inhibition of mycelial growth and spore germination at 8-10% concentration. Extract of *R. officinalis* also caused total inhibition of the above two parameters but at double the concentration (20%). Extracts of *S. fructicosa* and *S. chamaecyparissus* produced relatively moderate antifungal activity. At 25% concentration, these extracts showed an incomplete inhibition in mycelial growth being around 75-85% and 70-90%, respectively. However, at this same concentration both plant extracts produced total inhibition of spore germination. Results of this study indicated that both extracts of *M. syriaca and H. sabdariffa* were strong inhibitors of this fungus and to levels comparable to standard fungicides. Further studies are required to determine the effect of these extracts *in vivo* to evaluate their potential as natural treatments for this disease. [Saba J. Goussous, Firas M. Abu El-Samen and Ragheb A. Tahhan (Jordan). Archives of Phytopathology and Plant Protection, 43: 1745-1757, 2010].

LRBANON

Survival of Weed Seeds Subjected to Sheep Rumen Digestion. An experiment was conducted to examine the effect of sheep rumen digestion on the viability of the seeds of eight weed and two crop species common in Lebanon. Seed samples were put in small monofilament polyester bags and placed in the rumen of fistulated sheep for 1, 2, 3 and 4 days. The viability of the seeds 4 days after placement in the rumen was 85% for *Cuscuta campestris*, 76% for *Amaranthus retroflexus*, 31% for *Convolvulus arvensis*, 17% for *Chenopodium album*, 10% for *Eleusine indica*, and 1.3% for *Setaria viridis*, compared with the control. Seeds of *Lolium multiflorum* and *Raphanus raphanistrum* died 2 days after placement in the rumen, while seeds of *Lens culinaris* and *Hordeum vulgare*, which were tested for comparison, died 1 day after placement in the rumen. The seeds most tolerant to incubation were *Cuscuta campestris* and *Amaranthus retroflexus*, followed by *Convolvulus arvensis*, *Chenopodium album* and *Eleusine indica*. The results indicate that sheep could be an important vector for dispersing viable weed seeds, particularly hard-coated seeds. Thus, sheep should be kept in pens for about 4 days before being released into new fields, to reduce the risk of weed infestation and spread. [M.A. Haidar, C. Gharib and F.T. Sleiman (Lebanon). Weed Research, 50: 467–471, 2010].

OMAN

Influence of Seed-borne *Cochliobolus sativus* (Anamorph *Bipolaris sorokiniana*) on Crown Rot and Root Rot of Barley and Wheat. The effect of seed-borne pathogens of wheat and barley on crown and root rot diseases of seven barley cultivars (Jimah-6, Jimah-51,

Jimah-54, Jimah-58, Omani, Beecher and Duraqi) and three wheat cultivars (Cooley, Maissani and Shawarir) was investigated. *Bipolaris sorokiniana* and *Alternaria alternata* were detected in seeds of at least eight cultivars, but *Fusarium* species in seeds of only two barley cultivars (Jimah-54 and Jimah-58). Crown rot and root rot symptoms developed on barley and wheat cultivars following germination of infected seeds in sterilized growing media. *Bipolaris sorokiniana* was the only pathogen consistently isolated from crowns and roots of the emerging seedlings. In addition, crown rot and root rot diseases of non-inoculated barley cultivars correlated significantly with *B. sorokiniana* inoculum in seeds ($P = 0.0019$), but not with *Fusarium* or *Alternaria* ($P > 0.05$). These results indicate the role of seed-borne inoculum of *B. sorokiniana* in development of crown rot and root rot diseases. Pathogenicity tests of *B. sorokiniana* isolates confirmed its role in inducing crown rot and root rot, with two wheat cultivars being more resistant to crown and root rots than most barley cultivars ($P < 0.05$). Barley cultivars also exhibited significant differences in resistance to crown rot ($P < 0.05$). In addition, black point disease symptoms were observed on seeds of three barley cultivars and were found to significantly affect seed germination and growth of some of these cultivars. This study confirms the role of seed-borne inoculum of *B. sorokiniana* in crown and root rots of wheat and barley and is the first report in Oman of the association of *B. sorokiniana* with black point disease of barley. [Abdullah Mohammed and Michael Leonard Deadman (Oman). Journal of Phytopathology, 158: 683–690, 2010].

PAKISTAN

The Correlation of Abiotic Factors and Physico-morphic Characteristics of (*Bacillus thuringiensis*) *Bt* Transgenic Cotton with Whitefly, *Bemisia tabaci* (Homoptera: Aleyrodidae) and Jassid, *Amrasca devastans* (Homoptera: Jassidae) Populations. Nine (*Bacillus thuringiensis*) *Bt* genotypes (Bts-496, FH-113, CP-1401, I-2015, I-2086, CP-1402, VH-255, MG-3 and I-802) and non-transgenic genotype CIM-496 (control), were sown in an RCBD with a plot size of 206 x 170 ft to determine the correlation of abiotic factors and physico-morphic characters of Bt cottons with whitefly, *Bemisia tabaci* (Homoptra: Aleyrodidae) and jassid, *Amrasca devastans* (Homoptera: Jassidae), populations. The results suggest that maximum population of the whitefly and jassid was observed on transgenic genotypes VH-255 and I-2086, respectively; while, the lowest population was recorded on control. The results, showed whitefly and jassid populations to be positively correlated with the temperature. The correlation between the relative humidity was found to be negative for both the whitefly and jassids. The rainfall had a positive effect on the whitefly and negative effect on the jassids. The effect of physico-morphic characteristics of transgenic and non-transgenic varieties had similar kind of varied relationship with the whitefly and jassids. For example, the trichome-density on the leaf-lamina, midrib and veins had positive and significant correlation with the whitefly. In contrast, it is non-significant and negatively correlated with the jassids population. The varieties having thick leaf lamina showed non-significant negative response for the whiteflies population, and significant positive correlation with the jassids. [M. Ashfaq, Muhammad Noor ul Ane, Khuram Zia, Abida Nasreen and Mansoor-ul-Hasan **(**Pakistan). African Journal of Agricultural Research, 5: 3102- 3107, 2010].

Entomopathogenic Fungus as a Biological Control Agent Against *Rhyzopertha dominica* F. (Coleoptera: Bostrychidae) on Stored Wheat. To evaluate the pathogenicity of *Metarhizium anisopliae* (Metschinkoff) Sorokin (Deuteromycotina: Hyphomycetes) a bioassay was designed under laboratory conditions against *Rhyzopertha dominica* F. (Coleoptera: Bostrychidae) on stored wheat. The fungus was applied at the dose rates of 8×10^3, 8×10^5, 8×10^7 and 8×10^9 conidia/kg of wheat and the bioassay was conducted at 25°C with 60% relative humidity. The data regarding the mortality was recorded after 7 and 14 days exposure intervals. All the treatments gave the significant mortality of *R. dominica* and *M. anisopliae* of 8×10^9 conidia/kg was found to be the most effective after a 14-day exposure interval. There was greater production of progeny when the low rate of *M. anisopliae* was applied to wheat. Overall, our study showed that *M. anisopliae* is vigorous when applied at a high dose rate which revealed an effective control of *R. dominica* and also played a pivotal role in the integrated pest management program (IPM) of stored wheat insect pests. [Waqas Wakil and M. Usman Ghazanfar (Pakistan). Archives of Phytopathology and Plant Protection, 43: 1236-1242, 2010].

SAUDI ARABIA

Determination of the Optimum Sterilizing Radiation Dose for Control of the Red Date Palm Weevil *Rhynchophorus ferrugineus* Oliv. (Coleoptera: Curculionidae). The optimum dose of gamma radiation for sterilizing the red date palm weevil was determined using newly emerged weevils obtained from colonies established on four date palm cultivars in the laboratory. Male weevils from each date palm cultivar were treated with gamma radiation doses of 10, 15, 20, 25 or 30 Gray (Gy) and then mated with similar aged females to determine egg hatchability and male lifespan. Hatchability percent was significantly reduced at 15 Gy and above, and male lifespan was decreased at 10–15 Gy and above. Date palm cultivar significantly affected average male lifespan as well as egg hatchability, and the interaction between radiation dose and date palm cultivar was significant for both parameters. These results indicate that 15 Gy of gamma radiation to be an optimum dose for sterilizing red date palm weevil. [Hassan Yahya Al-Ayedh and Khawaja Gulam Rasool (Saudi Arabia). Crop Protection, 29(2): 1377-1380, 2010].

Assessment of the Bioregulatory Activity of the Leaf Juices of Higher Plants in Al-Taif, Saudi Arabia Against *Fusarium solani, Phytophthora* spp. and *Rhizoctonia solani*. Resistance to conventional fungicides causes poor

disease control in agriculture. Natural products from plants have great potential as novel fungicide sources for controlling pathogenic fungi. In this study the antipathogenic activity of the leaf juices of 11 plant species (*Chenopodium ambrosioides*, *Pulicaria vulgaris*, *Lavandula pubescens*, *Lavandula dentata*, *Ageratum conyzoides*, *Ficus retusa*, *Zizyphus nummularia*, *Acacia tortilis*, *Phragmanthera* sp. Aff. *Rufescens*, *Lawsonia alba* and *Olea europaea*) were evaluated *in vitro* against three plant pathogenic fungi (*Fusarium solani*, *Phytophthora* spp. and *Rhizoctonia solani*). Plate assays showed that the leaf aqueous juices have antifungal activity against these fungi. The aqueous extracts of *Pulicaria vulgaris*, *Lavandula dentata*, *Ageratum conyzoides*, *Ficus retusa*, *Zizyphus nummularia*, *Acacia tortilis*, *Phragmanthera* sp. Aff. *Rufescens* (when associated with *Acacia tortilis*), *Lawsonia alba* and *Olea europaea* exhibited antifungal properties against *Fusarium solani*, *Phytophthora* spp. and *Rhizoctonia solani* with variable degrees. On the other hand, *Chenopodium ambrosioides*, *Lavandula pubescens* and *Phragmanthera* sp. Aff. *Rufescens* (when associated with *Zizyphus nummularia*) did not exhibit any fungitoxicity. All these observations suggest the possible exploitation of Chenopodium oil as a potential botanical fungitoxicant in ecofriendly control of post-harvest biodeterioration of food commodities from storage fungi. [Salih A. Bazaid and Nehal S. ElMougy (Saudi Arabia & Egypt). Archives of Phytopathology and Plant Protection, 43: 1064-1071, 2010.

SUDAN

Survey and Molecular Detection of Two Citrus Viroids Affecting Commercial Citrus Orchards in the Northern Part of Sudan. Two extensive surveys and laboratory work were conducted to determine the occurrence of citrus exocortis viroid (CEVd) and hop stunt viroid (HSVd), the causal agent of cachexia (CVd-IIb) disease in the main citrus growing areas in three states in the northern part of Sudan, viz, Northern, River Nile and Khartoum. For CEVd, all, but one of the examined citrus trees failed to show typical exocortis symptoms. The only symptomatic orange tree encountered in the survey displayed the characteristic CEVd symptoms including tree stunting and bark cracking or bark splitting of the rootstock. While for the cachexia disease, most of the commercial citrus trees were found to be symptomless carriers except mandarin. Symptomatic mandarin trees which were grafted on sour orange rootstock displayed heavy gum impregnation (bark gumming), wood staining and deep bark cracking, in addition to severe stem pitting, bark pegging, twig dieback and yellowing of leaves. Pitting and gum development were usually encountered near the budunion but could spread to other sensitive portions of the infected tree. However, using viroid specific primers and reverse transcription polymerase chain reaction (RT-PCR) approach, both viroids were shown to exist in total RNA preparations from symptomatic and asymptomatic citrus species. Bands of 370 bp and 300 bp corresponding to the full length genomes of CEVd and CVd-IIb, respectively, were detected. The test was positive in 54 for CEVd and 20 for CVd-IIb out of 200 random samples tested from orange, grapefruit and mandarin. The results indicated that a considerably high percentage of citrus species in the northern part of Sudan, particularly in Khartoum State, were symptomless carriers of both CEVd and CVd-IIb. Being rapid, sensitive and in most cases reliable, the molecular approach could be considered indispensable for viroid detection and in testing programs to produce certified viroid-free planting materials. [Mohamed Yousif Adam Abubaker and Siddig Mohamed Elhassan (Sudan). Agriculture and Biology Journal of North America, 1(5): 930-937, 2010].

SYRIA

Damage Potential and Reproduction of *Heterodera avenae* on Wheat Under Syrian Field Conditions. Three trials were conducted to asses the effects of three levels of initial population densities *(Pi)* of *Heterodera avenae* (15.3,27.6,40.4 eggs and juveniles/g soil) on growth and yield of two wheat cultivars ('Sham 3' of durum wheat and 'Sham 6' of bread wheat) and nematode reproduction, under field conditions in North East Syria, during the growing season 2006-2007. Reduction of yield components of both wheat cultivars increased with the increase of *Pi* of H. *avenae* and reached maxima of 56.6% and 49.6% in grain yield and 49.5% and 44.6% in straw yield in durum and bread wheat, respectively, at the greatest initial population density of 40.4 eggs and juveniles/g soil. A similar trend was observed for the reduction of plant height in both cultivars. Durum wheat was more sensitive than bread wheat to the nematode. Significant negative linear regressions were observed between *Pi* of H. *avenae* and yield components of both wheat cultivars. Final population densities (Pj) of H. *avenae* were positively correlated with *Pi*, whereas reproduction factors (Rj) were negatively correlated with *Pi* on both wheat cultivars. [G. Hassan, Kh. AI-Assas and M. Jamal (Syria). Nematol. medit., 38: 73-78, 2010].

Occurrence of *Clavibacter michiganensis* subsp. *michiganensis*, the Causal Agent of Bacterial Canker of Tomato, in Syria. Several surveys were carried out to evaluate the occurrence of bacterial canker of tomato caused by *Clavibacter michiganensis* subsp. *michiganensis* (Cmm) in Syria, especially in the North-West provinces Latakia and Tartous. The surveys revealed typical disease symptoms in greenhouses where the tomato cvs. Dima, Huda and Astona were grown, such as dark brown to black lesions on the leaf margins, wilting of whole plants, stunting, and vascular discoloration. The disease incidence in such greenhouses was 15% in the spring of 2007, and up to 70% by the end of July. Ten isolates obtained from diseased plants at different locations in these two provinces were identified as *Clavibacter michiganensis* subsp. *michiganensis* using classical microbiological tests as well as PCR. This is the first detailed proof of the occurrence of bacterial canker of tomato in Syria. [Radwan Ftayeh, Andreas von Tiedemann, Birger Koopmann, Mahmoud

Abu-Ghorrah and Klaus Rudolph (Syria). Phytopathologia Mediterranea, 49:172-178, 2010].

***Phytophthora citrophthora* is the Predominant *Phytophthora* Species in Syrian Citrus Groves.** A survey on *Phytophthora* spp. in the soils and roots of citrus groves was carried out in the main Syrian growing areas of Lattakia and Tartous. Traditional assays (selective medium with soil dilution plates) were used for pathogen detection, and molecular (PCR) assays were used for unanmbiguous identification of *P. nicotianae* and *P. citrophtora* in 38.5% of the collected samples. In both locations, *P. citrophthora was the predominant species.* [Thaer Yaseen, Leonardo Schena, Franco Nigro and Antonio Ippolito (Syria). Phytopathologia Mediterranea, 49: 205-211, 2010].

First Registration for a Species of Bumblebees, *Bombus terrestris* (Linnaeus, 1758) in Syria. Bumblebees belong taxonomically to the order Hymenoptera, super family Apoidea, family Apidae and subfamily Bombinae. Included under this subfamily 300 species; 250 species of Eusocial bumblebees and 45 species of Cleptoparasitis bees or Cuckoo bees. A total of 116 samples of bumblebees (9 queens, 27 workers and 80 males) were collected at different times and from various plant host in a direct collection net from locations along the Syrian coast: Tartus (AlQadmus, Safita, Machta alhelo) and Lattakia (Jableh, Al qirdaha, Alhafa, Slunfeh, Kassab). The samples were examined in the Honey Bees Research Laboratory of the Faculty of Agriculture, Damascus University, based on morphological measurements (length of the insect, corbicular length of the hind leg, length of the right wing and marginal cell, head width and glossa length), using Classification keys. The results showed that the specie prevalent along the Syrian coast is *Bombus terrestris* (Linnaeus, 1758) which has an antenna of 12 segments in the Queen and the worker, and 13 segments in the male. The abdomen is characterized by the presence of the yellow color on the first thorax tergum, and the second abdominal tergum, and white color on fourth and fifth abdominal tergums, while the rest of the segments are black. [Bassem Solaiman Khaled and Ali Alburaki, Department of Plant Protection, Faculty of Agriculture, Damascus University, P.O. Box 30621, Damascus, Syria].

TUNISIA

Effects of Environment Components and Agricultural Practices on Communities of Nematodes Associated with the Potato Crop in Tunisia. An investigation was undertaken on the structure of nematode communities associated with potato crops in the geographical regions Sousse, Monastir, Mahdia, Kairouan, Cap Bon and Bizerte, in central and north-eastern Tunisia. A study of in-terrelationships between the different groups of nematodes as well as the different components of the environment was made. Two thousand and fifty-three samples of soil, roots and tubers were taken from 118 sites. A total of 23 genera of nematodes were identified and the greatest diversity was found in the soils of the Sousse region. Plant parasitic nematodes were the most abundant in the regions Cap Bon and Bizerte, bacterial feeding and fungal feeding nematodes dominated in Mehdia and Kairouan, and omnivores and predators were more numerous in Monastir and Sousse. Indices of richness and diversity were significantly different between regions. The graphic representation of correspondence analysis showed that the outputs and the composition of the nematofauna were affected by soil type, agricultural system, rotations, type of fertilization and nematicide treatments. The same type of analysis, relating each potato endoparasitic nematode with different groups of soil nematodes, showed that *Pratylenchus* spp. were most frequent when populations of bacterial feeding and predatory nematodes were greatest. *Globodera* sp. frequency was associated with ectoparasitic plant nematodes. The presence of *Meloidogyne* sp. was mainly associated with the different classes of bacterial feeding nematodes and especially with fungal feeders. [W. Hlaoua, S. Kalle and N. Horrigue-Raouani (Tunisia). Nematol. medit., 38: 13-26, 2010].

Molecular Detection and Characterization of *Hop stunt viroid* Sequence Variants from Naturally Infected Pomegranate (*Punica granatum* L.) in Tunisia. Tunisian pomegranate *Hop stunt viroid* (HSVd) variants are described. Dot-blot hybridization, S-Page, and reverse transcription polymerase chain reaction (RT-PCR) of RNA extracts from infected tissues were carried out. Results obtained by these techniques were confirmed by cDNA sequencing. The genetic diversity among the Tunisian variants was investigated, which also involved analysis of sequences of previously described HSVd variants from Tunisian citrus var. clementine and fig, and from fruit trees from other Mediterranean countries. Phylogenetic analysis showed that Tunisian pomegranate HSVd variants were clustered into two groups: a cachexia strain within the citrus type group and a recombinant citrus-plum type group. Results also showed a high haplotype diversity which was not related either to the host or to the geographical origin. Selective neutrality and genetic network tests suggest that the HSVd isolates have spread rapidly. [Faten Gorsae, Amine Elluch, Imène Hamdi, Amel Salhi-Hannachi, Hatem Fakhfakh. (Tunisia). Phytopathologia Mediterranea, 49:152-162, 2010].

Postharvest Control of the Date Moth *Ectomyelois ceratoniae* Using Eucalyptus Essential Oil Fumigation. This work aims to investigate the chemical composition and to assess for the first time the fumigant toxicity of two eucalyptus (*Eucalyptus camaldulensis* and *E. rudis*) essential oils against the date moth *Ectomyelois ceratoniae* in storage as alternative to methyl bromide. GC-MS analyses showed that *E. rudis* essential oil presented α-pinene (14.49%), 1,8-cineole (19.87%), β-pinene (3.91%), γ-terpinene (6.04%), terpinene-4-ol (4.46%) and α-terpineol (4.32%) as major compounds whereas, *E. camaldulensis* essential oil had α-pinene (16.49%), 1,8-cineole (20.62%), γ-terpinene (4.08%), terpinene-4-ol (4.45%), aromadendrene (3.93%) and isothymol (7.3%) as major compounds. Results showed that fumigant toxicity depends

on oil species, concentrations and exposure time. The fumigant toxicity potential of *E. rudis* (LC_{50} = 31.37 µl/l air) was greater than *E. camaldulensis* (LC_{50} = 34.08 µl/l air). Moreover, the median lethal time values (LT50) were 36.10 and 48.84 h, respectively. Results suggested that *E. rudis* and *E. camaldulensis* essential oils could be used as an alternative to the synthetic fumigant in postharvest treatment program for the control of *E. ceratoniae.* [S. Haouel, J. Mediouni-Ben Jemâa and M.L. Khouja (Tunisia). Tunisian Journal of Plant Protection 5: 201-212, 2010].

TURKEY

Effects of Seed Coat Colour on Seed Characteristics of Honeylocust (*Gleditsia triacanthos*). Honeylocust (*Gleditsia triacanthos*) seeds have hard seed coats of different colours that affect duration of dormancy. This study investigated the effects of seed coat colour on water uptake, germination, and quantity of seed parts. The results show that seed coat colour had a significant effect on seed moisture content, seed coat weight, endosperm weight, water uptake, and germination. However, the quantity of embryos having seed coats of various colours did not differ significantly. Seeds with a yellow seed coat contained the most moisture and had the highest water uptake, even though yellow seed coats were thicker than other coat colours. Yellow-coated seeds showed 100% imbibition after 48 h and also the highest germination (95%). As honeylocust seed coats darken, it slows down seed germination. This research suggests that yellow-coated honeylocust seeds should be recommended for nursery cultivation. [Murat Ertekin and Erol Kirdar (Turkey). African Journal of Agricultural Research, 5: 2434-2438, 2010].

Characterization of *Fusarium oxysporum* f.sp. *cepae* from Onion in Turkey Based on Vegetative Compatibility and rDNA RFLP Analysis. Seventy-five isolates of ***Fusarium oxysporum* f.sp. *cepae***, the causal agent of basal plate rot on onion, were obtained from seven provinces of Turkey. The isolates were characterized by vegetative compatibility grouping (VCGs) and restriction fragment length polymorphism (RFLP) analysis of the nuclear ribosomal DNA intergenic spacer region (IGS). Forty-eight vegetative compatibility groups were found, each containing a single isolate. Only one isolate formed strong heterokaryons with the reference isolates of VCG 0423. Five isolates were heterokaryon self-incompatible. Restriction fragment analysis with six different enzymes revealed 13 IGS types among 75 *F. oxysporum* isolates from Turkey as well as 16 reference isolates from Colorado, USA. The majority of single-member VCGs produced identical RFLP banding patterns with minor deviations, considerably different from those of the reference VCG isolates. These results suggested that isolates of *F. oxysporum* f.sp. *cepae* in Turkey derived from distinct clonal lineages and mutations at one or more vegetative compatibility loci restrict heterokaryon formation. [Harun Bayraktar, Muharrem Türkkan and Fatma Sara Dolar. (Turkey). Journal of Phytopathology, 158(10):691-697, 2010].

UNITED ARAB EMIRATES

Performance of Three Endophytic Actinomycetes in Relation to Plant Growth Promotion and Biological Control of *Pythium aphanidermatum*, a Pathogen of Cucumber Under Commercial Field Production Conditions in the United Arab Emirates. In the current study, the performance of three endophytic actinomycetes identified as *Actinoplanes campanulatus*, *Micromonospora chalcea* and *Streptomyces spiralis* previously shown to reduce seedling damping-off, and root and crown rots of mature cucumber (*Cucumis sativus*) caused by *Pythium aphanidermatum* in pots under greenhouse conditions were further evaluated to determine their potential as biological control agents and as plant growth promoters in the field under the conditions of commercial production of cucumbers in the United Arab Emirates (UAE). When applied individually or in combination to cucumber seedlings, the three isolates significantly promoted plant growth and yield and reduced seedling damping-off and root and crown rots of mature cucumber plants. Individually the performance level of *S. spiralis* was relatively the best followed by *A. campanulatus* and then by *M. chalcea*. The three isolates (which were not inhibitory to each other) performed better, both as biological control agents as well as plant growth promoters, when applied together than when they were inoculated individually. The ability of these three isolates to colonize the internal tissues of roots, stems and leaves under field conditions, and to persist up to 8 weeks after seedling inoculation, showed that they can easily adapt to an endophytic habit systemically within healthy cucumber plants. As the three endophytic actinomycete isolates also colonized the rhizosphere and showed outstanding rhizosphere competency it is clear that they are facultative and not obligate endophytes. The success with the three inoculants indicated that they could well be used in place of the fungicide metalaxyl which is currently recommended for the management of *Pythium* diseases in the UAE. This is the first successful field use of endophytic actinomycetes as promising plant growth promoters and biological control agents against *Pythium* diseases of cucumber. [Khaled A. El-Tarabily, Giles E. St. J. Hardy and Krishnapillai Sivasithamparam (United Arab Emirates & Australia). European Journal of Plant Pathology, 128: 527-539, 2010].

❖ SOME PLANT PROTECTION ACTIVITIES OF FAO AND OTHER ORGANIZATIONS

DESERT LOCUST SITUATION

General situation during November 2010 forecast until mid-January 2011

The Desert Locust situation continues to remain a cause for concern in Sudan. Despite control efforts during November, adults formed small groups that moved to northeast Sudan and laid eggs while several other groups crossed the Red Sea to the northern coast of Saudi Arabia. If good rains fall in either country, locust numbers could increase rapidly and threaten the region. Therefore, it is essential that the highest priority be given to deploying additional survey and control teams in the field immediately in both countries. Elsewhere, the current situation is being monitored closely along the Indo-Pakistan border where control operations continued in November against gregarious infestations, in northern Mali and Niger where the situation is not entirely clear but locusts are likely to be present and gregarizing, and in northwest Mauritania where breeding and limited control operations are underway for the second consecutive month.

Western Region. Very little rain fell during November in the Region. Small-scale breeding continued for a second consecutive month in northwest Mauritania, causing locust numbers to increase slightly and, in some areas, concentrate and form small groups that were treated (400 ha). During the forecast period, locust numbers will decline in central and western Mauritania as adults move to the northwest and north and breed on a small scale. Local reports of hopper bands in northern Mali were confirmed as gregarizing adults. A similar situation probably exists in adjacent areas of northern Niger but this could not be confirmed due to insecurity. Scattered adults persisted in Chad and in the Sahara of Algeria. During the forecast period, there is a low to moderate risk that adults and perhaps a few small groups or swarm lets could move from northern Mali and Niger to parts of central, eastern and southern Algeria.

Central Region. Very little rain fell during November in the Region. Ground control operations continued during November in northern Sudan (6,909 ha) against hopper bands and adult groups in the summer breeding areas. Nevertheless, groups of adults moved to northeast Sudan where they laid eggs, and several groups reportedly crossed the Red Sea to the northern coast of Saudi Arabia on the *30th*. Isolated adults were already present in a few places along the coast. During the forecast period, groups and perhaps a few small swarms will form in the interior of Sudan and move to the coast in December. Locust numbers will increase in the northeast as hatching commences and small hopper groups and bands form, and on the coast where breeding will occur in areas of recent rainfall. Breeding will also occur in areas of recent rainfall on the Red Sea coast of Saudi Arabia as well as in Yemen from earlier rains. Ground teams treated 8 ha of adults in northern Oman.

Eastern Region. Ground control operations continued during November in Pakistan (4,100ha) against groups of hoppers and adults and, to a lesser extent, in India (370 ha), against adult groups. Consequently, locust infestations declined in both countries and the situation is expected to return to normal by the end of the year. Nevertheless, there remains a moderate risk that a few small adult groups and swarms could move west to the spring breeding areas in western Pakistan during the forecast period.

❖ SHORT PLANT PROTECTION NOTES

- An international firm is now marketing a biofungicide, for control of diseases in vegetable crops, built on two naturally occurring active ingredients, *Tichoderma gamsi* and *T. asperellum*, which are said to be effective across a broad range of temperature and humidity, www.isagro.it/.
- Inter-cropping with *Trifolium alexandrinum* (berseem clover) reduced *Orobanche crenata* infection of legumes in the Mediterranean region. D. Rubiales, Diego.Rubiales@ias.csic.es.
- Marker assisted selection effectively selected recombination of genes resistant to *Tomato spotted wilt virus* and *Phytophthora infestans* report M. D. Robbins and associates at Ohio State University, Wooster; North Carolina State University; Brigham Young University; and Bangladesh Agricultural Research Institute. (HortScience 45:1424-1428, 2010)
- Oil and extracts from *Metasequoia glyptostroboides* are antibacterials to control plant diseases caused by Xanthomonas spp. report V. K. Bajpai and associates at Daegu University and Cheju National University, Korea. (J. Phytopathol. 158:479- 486, 2010)
- Potato tubers were most susceptible to infection by *Streptomyces scabiei* 3-20 days after tuber initiation, using a soil-less system, report B. B. Khatri and associates at the University of Tasmania, Australia. (J. Phytopathol. 158:453-455, 2010)
- *Pseudomonas fluorescens* is a biocontrol agent for wheat root-infecting fungi that works by modulating defense/stress gene expression in roots report P. A. Okubara and associates at USDA-ARS and Washington State University. (Biological Control, 55:118- 125, 2010)
- Recent field trials showed that Green Muscle® (*Metarhizium acridum*) was effective as a barrier treatment and preventative control strategy against *Schistocerca gregaria* (desert locust nymphs) under arid conditions.W. Mullie, Wim_sen@yahoo.fr.

- Seed treatment, seedling dip, and soil drenching of liquid formulation of *Pseudomonas fluorescens* reduced Fusarium wilt of tomato in the field report R. Manikandan and associates at Tamil Nadu Agricultural University, India. (Biol. Control 54:83-89, 2010)
- Spray programs to control potato early blight were most effective if boscalid + metiram were in the first two applications report A. Horsfield and associates at Nufarm Australia Ltd., South Australian Research and Development Institute, Dow Agrosciences Australia Ltd., Australia. (Australas. Plant Pathol. 39:368-375, 2010)
- Thirty rice genotypes with two to three genes highly resistant to *Xanthomonas oryzae* were identified by S. Perumalsamy and associates at Tamil Nadu Agricultural University and Tamil Nadu Rice Research Institute, India. (Plant Breeding, 129:400-408, 2010)
- To screen tomato genotypes for resistance to *Tomato yellow leaf curl virus*, tomato microshoots were inoculated with *Agrobacterium tumefaciens* harboring an infectious clone of the virus report A. M. Al Abdallat and associates at University of Jordan and Uppsala BioCenter SLU, Sweden. (Virol. J. 7:84, 2010)
- Two years of field trials revealed pea intercropped with cereal substantially reduced ascochyta blight impact compared to a pea monocrop when the epidemic was moderate to severe. A. Schoeny, Alexandra.Schoeny@avignon.inra.fr.
- Ultraviolet light alleviates decay of *Penicillium*-infected onion, stimulates flavonols, and reduces *Escherichia coli* counts on peeled onions report V. Rodov and associates at The Volcani Center, Bet Dagan, Israel. (J. Agric. Food Chem. 58:9071-9076, 2010)
- Viroids in mixed infections can suppress sporangial development in *Phytophthora* infection on citrus report T. P. Thomas and associates at Texas A&M University- Kingsville. (HortScience 45:1069-1072, 2010)
- Xylanase produced by *Cochliobolus sativus* influences aggressiveness of its isolates to barley seedlings report Y. Bakri and associates at AECS, Damascus, Syria. (J. Phytopathol. 158:444-447, 2010)

❖ GENERAL NEWS

FAO GLOBAL GUIDELINES GIVE IPM AN EXPANDED ROLE

In June 2010 the Food and Agriculture Organization of the U.N. (FAO) published Guidance on Pest and Pesticide Policy Development--a topic linked to the International Code of Conduct on the Distribution and Use of Pesticides-- and in so doing gave special attention to IPM as an approach to sustainable pest management and a viable avenue toward reducing reliance on pesticides. The 6-chapter guide, focusing on agricultural pests and pest management, is aimed at policymakers, governmental departments, and other relevant stake- holders involved in policy development, especially in developing nations. In contrast with other technical guides related to the Code of Conduct, the guidelines emphasize the importance and scope of policies impacting pest management and encourage both governments and stakeholders to consider whether the present level and extent of pesticide use is actually justified. Following the introduction, the full, freely downloadable FAO document at http://tinyurl.com/3x4kb4c presents a discussion of the driving forces behind pest and pesticide management policy development, and explains the concept of pesticide risk reduction. The 39-page text touches on other important aspects and includes an annex entitled “Further Information on Integrated Pest Management,” a concise section that distills IPM into its basic tenets and includes a listing of “available techniques in the IPM toolbox." A list of sources for further IPM technical information is also presented.

IPM WORKSHOP FINDINGS PUBLISHED AS ‘WHITE PAPER’

The CGIAR System wide Program on Integrated Pest Management (SP_IPM) recently published Integrated Pest Management and Crop Health Bringing Together Sustainable Agroeco systems and People's Health as a 'white paper' "to provide guidance to the CGIAR Consortium, its research partners, donor agencies, and other institutions and organizations working towards reducing world poverty and hunger, improving human health, and fostering agricultural ecosystems," according to the document. The paper resulted from a 3-day workshop organized by the SP-IPM in Germany during March 2010 and attended by international experts in a variety of related fields. Among the 11 major points summarized in the document's executive summary, the workshop participants agreed that "there is a dire need for research to be strengthened so as to improve established IPM methodologies" across CGIAR centers. The group also felt that there is a basic need to "improve knowledge generally of what crop health is and how to adopt IPM innovations with extension services and at the farmers' level." The 17-page document is not online as of this writing. SPIPM, Carolyn House, 26 Dingwall Rd., Croydon, CR9 3EE, UK. sp-ipm@cgiar.org

CABI Launches Revamped Crop Protection Compendium

UK-based CABI is actively marketing a newly tweaked version of its comprehensive Crop Protection Compendium (CPC) as "a one-stop shop for information on crop protection" that has been enhanced with new content and features as well as relocated to a new online 'platform.' The CPC bulges with: full data sheets on 3,000 pests (i.e, pest insects), weeds, diseases, natural enemies, host plants, and crops, plus the countries in which they occur; 160,000 bibliographic records that are updated weekly; and loads of full text journal and conference articles. There is now a "report generator" to enable key information to be rapidly edited and disseminated. And the list of included resources goes on. Broadly, the CPC is an "encyclopaedic, mixed-media tool [that] collates science-based knowledge from experts all over the world," CABI sources explain. The latest revamped version of the CPC is designed to provide better access to, and delivery of, information in a more user-friendly manner, according to CABI officials involved with the CPC. Compilation of the CPC represents years of work with funding support from a wide array of organizations and consortia. The CPC, at www.cabi.org/cpc/ is offered on a subscription basis; a free trial can be requested. S. Bell, CPC, CABI, Nosworthy Way, Wallingford, Oxfordshire OX10 8DE, UK. S.Bell@cabi.org.

An Effective Biofungicide for Vegetables

A recent addition to the Philippine Rice Research Institute's printed booklets in its Rice Technology Bulletin Series is Trichoderma Biofungicide for Vegetables, an illustrated description of using *Trichoderma* sp. to realize benefits of economically effective pest management. The succinct, 16-page, 2009 publication, no. 62 in the series, was authored by H.R. Rapusas, *et al*, and addresses procedures for both *Trichoderma* sp. production and application to a crop. Funding for the study supporting the document came from both the Institute and the IPM-CRSP. Other recent series titles related to crop protection include management of rice blast disease, management of yellow and white stemborers, and root-knot management in a rice-onion cropping system. See: www.PhilRice.gov.ph, click on "products," then "knowledge products. A. Blanuza, ABlanuza@email.philrice.gov.ph.

A New Biocontrol Product Introduced

A recent addition to a growing list of biological control agents available from an international firm specializing in biocontrol is designed to help control *Planococcus* spp. (mealybug) attacking citrus, grape, and other vine crops. The product, Citripar, is based on a parasitic wasp, *Anagyrus pseudococci*, in mummy form that is said to be effective against second and third larval and adult *P. citri* and *P. ficus*, especially female *P. citri*. A single pack is sold as a 50 ml bottle containing wood chips and mummies from which 500 parasitic wasps hatch when the label is removed (per instructions) on the bottle, and the bottle hung in the crop out of direct sunlight for at least two weeks. The product requires controlling any presence of ants. The female adult wasp parasitizes the targeted mealybugs; results can be visually observed within two to three weeks. The firm also has developed two models of a hand-held, dry cell powered device for distributing predatory mites within a crop. The device ("Airbug") comprises a fan blowing a forward stream of air that intercepts, and transports to the target crop, the mites in a carrying mixture that falls out of holes in a revolving container. The process requires that an operator walk through the crop. Koppert B.V., Postbus 155, 2650 AD Berkel en Rodenrijs, THE NETHERLANDS, info@koppert.nl;.http://tinyurl.com/348f2yl

❖ ARAB SOCIETY FOR PLANT PROTECTION NEWS

A Combined Meeting for the Executive and Advisory Committees of the ASPP 26-27 November, 2010, Aleppo, Syria

A meeting for the Executive and Advisory Committees of Arab Society for Plant Protection (ASPP) was held at ICARDA, Aleppo, Syria on 26-27 November, 2010, to discuss several issues related to the society activities which can be summarized as follows:

- Proposed changes to the society by-laws were discussed and agreed upon and will be distributed to all members 3-6 months before the coming congress for their information. Approval of such proposed changes will be made by the general assembly during the next ASPP congress.
- A Finance Committee was developed to establish means and ways to improve the finances of the society. The committee is composed of Dr. Ibrahim Jboory (Iraq), Khaled Makkouk (Lebanon) and the Secretary-Treasurer of the Society, who is at present Dr. Mustapha Haidar (Lebanon).
- A committee was developed to propose a structure for establishing an “Expert House” for ASPP. The Committee is composed of Dr. Walid Abou Gharbieh (Jordan), Dr. Bassam Bayaa (Syria), Dr. Abdelrahman Saghir (Lebanon) and Dr. Khaled Makkouk (Lebanon).
- A committee composed of Dr. Safaa Kumari (Syria) and Dr. Ibrahim Jboory (Iraq) to develop further the society web site. The main task for this committee is to make sure that all society publications and news are placed on the web site including the old issues of the Arab Journal of Plant Protection. Access to the publications on the web site will be only available for active members.

- A request was made to the Honors and Awards Committee chaired by Dr. Ahmed Katbeh to finalize the guidelines to be followed in nominating society members who will receive the "Society Fellow Award". The guidelines, once established will be placed on the society web site.
- It was agreed to organize a workshop related to the Arabisation and unification of plant protection terms immediately before the coming congress of the society. It is hoped that a new edition of the Plant Protection Dictionary will be printed in 2012 in three languages, Arabic, English and French.
- Dr. Ibrahim Ghariani (Libya) gave a short presentation on the newly developed Plant Protection Society in Libya. A discussion followed on how to maximize collaboration between such a national society and ASPP.
- Dr. Mohamed Said El-Zemeity presented a summary on the activities made so far in preparation for the coming ASPP congress which is planned to be held in Egypt in 2012. Details related to this event will be posted on the web site in due course.

Group photo for ASPP members who attended the combined Executive and Advisory Committees of ASPP and hosted by ICARDQA, Aleppo, Syria.

THE ESTABLISHMENT OF AN ASPP EXPERT HOUSE

A. Objectives

The Executive Committee of the Arab Society for Plant Protection agreed to establish an "Expert House" to promote sustainable agricultural development in the Arab region in the area of plant protection through the participation of experienced ASPP members in technical assistance efforts beneficial to the communities of the region such as:

1. To benefit from the expertise and services of experienced Arab scientists, including those in academic institutions, in the different fields of plant protection to study and develop improved pest management methods in the Arab countries.
2. To extend the experiences of highly qualified Arab scientists beyond their institutions and countries and expand the services of ASPP to play an effective role in developing further the plant protection sciences in the Arab countries.
3. To assist the private sector in the design and implementation of scientific experiments to improve crop production through crop health management to ensure healthy food products while conserving the environment.

B. Plant protection areas covered

The areas include technical studies on endemic and exotic pests covering their biology and management, including the following:

1. Economic insects, mites, nematodes, weeds and diseases caused by fungi, viruses, bacteria and phytoplasmas. Focus will be on crop health management of various economic crops grown under traditional or organic conditions.
2. Other specific studies such as agricultural quarantines, production of healthy propagation plant material, soil solarization, production of food products free from pesticides and other toxic materials….etc, are also included.

C. Activities and services provided

1. Highly specialized technical teams will be formed to address the needs and can best serve the requirements of the agricultural institutions (governmental or private) in the different Arab countries. Such teams can also address and design solutions for certain urgent problems such as serious epidemics of damaging crop pests. The sudden spread of the invasive species *Tuta absoluta* which attacked tomato in several Arab countries is one example.
2. providing professional services in areas such as evaluation of scientific research papers or research project proposals, participation in committees for graduate students and committees for promotion of faculty members……..etc.
3. Organization and participation in workshops, meetings, and conferences related to plant protection in the Arab countries.
4. Offering courses or specialized training programs at universities, governmental or private institutions or any other agencies involved in the area of plant health management.

D. Qualifications of members participating in the ASPP Expert House

Membership in the Expert House is opened to Arab experts who are specialized in any of the various disciplines of plant protection, and proved to be active in scientific research with a proven record of publications in respected peer reviewed journals. Priority will be given to scientists who have been active members of ASPP for at least 15 years.

E. Establishment of a Data Base of Experts

A data base will be established to include all potential participants in the Expert House through the submission of a special form prepared by the committee managing the Expert House. The data base will include a personalized CV for the applicant with information on technical experience, studies made, and previous professional positions held, publications, supervision made to graduate students…..etc. The application also includes the kind and duration of services the applicant is interested to be involved with.

❖ PUBLICATION

❖ SELECTED RESEARCH PAPERS

Entomology and Acarology الحشرات والعناكب

Cyromazine induced effects on larvae and adults of laboratory Tunisian strain of the Mediterranean fruit fly *Ceratitis capitata*. 2010. J. Mediouni-Ben Jemâa and E. Boushih (Tunisia). Tunisian Journal of Plant Protection, 5: 213-224.

Functional response of *Tetrastichus gallerucae* (Hym: Eulophidae) to different densities of the elm leaf beetle eggs, *Xanthogaleruca luteola* (Col: Chrysomelidae). 2010. Hadi Zohdi and Aliasghar Talebib (Iran). Archives of Phytopathology and Plant Protection, 43(11): 1050-1055.

Influence of plant leaf surface on the development, reproduction and life table parameters of the predacious mite, *Agistemus exsertus* Gonzalez (Acari: Stigmaeidae). 2010. S.A. Saber and Aly H. Rasmy (Egypt). Crop Protection, 29: 789-792.

Insect economic levels in relation to crop production. 2010. Nabil E. El-Wakeil (Egypt). Archives of Phytopathology and Plant Protection, 43(17): 1710-1744**.**

Insecticidal activities of neem (*Azadirachta indica* A. Juss) seeds under laboratory and field conditions as affected by different storage durations. 2010. Abdalla Abdelrahim Satti, Mohamed Elamin Ellaithy and Abdin Elhadi Mohamed (Sudan). Agriculture and Biology Journal of North America, 1: 1001-1008.

Laboratory rearing of pomegranate fruit butterfly *Virachola livia* on two host plants in Tunisia. 2010. N. Gharbi (Tunisia). Tunisian Journal of Plant Protection, 5: 195-199.

Phytoseiid mites (Acari: Mesostigmata) from Tunisia: catalogue, biogeography, and key for identification. 2010. S. Kreiter, M.-S. Tixier, H. Sahraoui, K. Lebdi-Grissa, S. Ben Chabaan, A. Chatti, B. Chermiti, O. Khoualdia and M. Ksantini (Tunisia & France). Tunisian Journal of Plant Protection, 5: 151-178.

Secretion of *Spodoptera littoralis* female reproductive system on deposited egg masses that possibly acts as oviposition deterring substance for conspecific females. 2010. Hani A. Gomaa (Egypt), Archives of Phytopathology and Plant Protection, 43: 1081-1087.

Studies on host preference and its biological effects on the red palm weevil, *Rhynchophorus ferrugineus* Olivier in Egypt the fruit trees. 2010. M.I. Mogahed (Egypt). Archives of Phytopathology and Plant Protection, 43(10): 949-956.

The rhinoceros beetle *Oryctes agamemnon arabicus* in Tunisia: Current challenge and future management perspectives. 2010. R. Soltani (Tunisia). Tunisian Journal of Plant Protection 5: 179-193.

Ultra morphology of sensilla on the head and mouth parts of the earwig *Anisolabis martima* (Bonelli) (Dermaptera: Carcinophoridae). 2010. Aziza Sharaby and Mona M. Al-Dosary (Egypt & Saudi Arabia). Archives of Phytopathology and Plant Protection, 43(12): 1214-1224**.**

Viruses فيروسات

Distribution and impact of virus associated diseases of common bean (*Phaseolus vulgaris* L.) in northern Iran. 2010. S.G.M. Ghorbani, N. Shahraeena and S.A. Elahinia (Iran). Archives of Phytopathology and Plant Protection, 43: 1183-1189.

Fungi الفطور

Botrytis disease of tea in Turkey. 2010. Aziz Karakaya, Harun Bayraktar. (Turkey). Journal of Phytopathology, 158: 705-707.

Cytology of infection of *Fusarium mangiferae* Britz in different malformed reproductive parts of mango. 2010. Zafar Iqbal, Sohail Hameed, Muhammad Akbar Anjum, Altaf Ahmad Dasti and Ahmad Saleem (Pakistan). European Journal of Plant Pathology, 127: 391-398.

Differentiation of the causal pathogen of onion white rot *Sclerotium cepivorum* isolates by using the APIZYM system. 2010. Nashwa M. Sallam, A.A. Abd Elrazik, M. Hassan and E. Koch (Egypt & Germany). Archives of Phytopathology and Plant Protection, 43(10): 957-961.

First report of black spot disease caused by *Alternaria alternata* in persimmon fruits in Turkey. 2010. Ş. Kurt, E. M. Soylu, and S. Soylu. (Turkey). Plant Disease, 94: 1069.

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Chemical control of weeds in wheat (*Triticum aestivum* L.) in Iran. 2010. Eskandar Zand, Mohammad Ali Baghestani, Majid AghaAlikhani, Saeid Soufizadeh, Mohammad Mehdi Khayami, Reza PourAzar, Peyman Sabeti, Mohammad Jamali, Naser Bagherani and Somayyeh Forouzesh (Iran & Australia). Crop Protection, 29: 1223-1231.

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Contact and fumigant activities of *Citrullus colocynthis* formulations against *Callosobruchus chinensis* (Coleoptera: Bruchidae). 2010. Nadia Z. Dimetry and A.M.E. Abd El-Salam (Egypt). Archives of Phytopathology and Plant Protection, 43(11): 1123-1131.

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Some physiological, biochemical and histopathological effects of *Artemisia monosperma* against the cotton leafworm, *Spodoptera littoralis.* 2010. Manal M. Adel, Fatma M. El-Hawary, Nahid F. Abdel-Aziz and Elham A. Sammour (Egypt). Archives of Phytopathology and Plant Protection, 43: 1098-1110.

Study on antagonistic effects of *Talaromyces flavus* on *Verticillium albo-atrum*, the causal agent of potato wilt Disease.

2010. Laleh Naraghi, Asghar Heydari, Saeed Rezaee, Mohammad Razavi and Hanieh Jahanifar (Iran). Crop Protection, 29: 658-662.

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Use of entomopathogenic fungi and insecticide against some insect pests attacking peanuts and sugarbeet in Egypt. 2010. F. N. Zaki and M. A. Abdel-Raheem (Egypt). Archives of Phytopathology and Plant Protection, 43(17): 1819–1828.

❖ EVENTS OF INTEREST

2011

***23-24 February**

Crop Protection in Southern Britain, Impington, Cambridge, UK. Email: Rebecca@aab.org.uk
Website: http://tinyurl.com/2aof6o5

***21-23 March**

Minia International Conference for Agriculture and Irrigation in the Nile Basin Countries (**MICMA2011**), El-Minia, Egypt. Website: www.micma2011.org

*** 13-15 April**

International Congress of Post Harvest Pathology, Lleida, Catalonia, Spain. Email: fundacio@700.udl.cat
Website: www.postharvestpathology.com

*** 26-29 April**

The 4th Asian Conference for Plant Pathology and the 18th Biennial Australasian Plant Pathology Society conference, "New Frontiers in Plant Pathology for Asia and Oceania," Darwin, NT, Australia. Email: Conference@conlog.com.au;
Website: www.appc2011.org

*** 27-29 April**

18th Biennial Australasian Plant Pathology Meeting and 4th Asian Conference for Plant Pathology, Darwin Convention Centre, Darwin, Northern Territory, Australia.
Website: http://www.appc2011.org

***4-7 April**

The third Arab Conference for Applied Biological Control in the Arab Countries, Cairo, Egypt.
Email: esbcp3rd2011@gmail.com

*** 17-20 May**

4th Conference of the International Working Group on Legume and Vegetable Viruses (IWGLVV), Antequera, Málaga, Spain. Email: jnavas@eelm.csic.es

*** 23-28 May**

4th International Workshop for Phytophthora, Pythium and Related Genera, College Park, Maryland, USA.
Email: gloria.abad@aphis.usda.gov

***24 May**

63rd International Symposium on Crop Protection, Ghent, Belgium. Email: iscp@ugent.be
Website: www.iscp.ugent.be/index.php

*** 26-28 May**

2nd Argentine Congress of Plant Pathology, Mar del Plata, BA, Argentina. Email: RidaoAz@balcarce.inta.gov.ar

*** 1-3 June**

2nd Argentine Congress of Plant Pathology, Mar del Plata, Buenos Aires Province, Argentina.
Email: ridaoaz@balcarce.inta.gov.ar;
aafcongreso2011@gmail.com

***19-23 June**

Insect Pathologens and Entomopathogenic Nematodes, Innsbruck, Austria. Email: Hermann.Strasser@uibk.ac.at
Website: www.uibk.ac.at/bipesco/iobc_wprs_2011

*** 7-12 June**

11th World Congress on Parasitic Plants, Martina Franca, Italy. Email**:** Maurizio.Vurro@ispa.cnr.it
Website: http://tinyurl.com/yjyf5w4

*** 20-23 June**

2nd Entomophagous Insect Conference, Antibes, France. Email: Wajnberg@sophia.inra.fr;
Website: http://tinyurl.com/2c5799s

*** 2-7 October**

3rd International Symposium on Environ-mental Weeds & Invasive Plants (Intractable Weeds and Plant Invaders), Ascona, Switzerland.
Email: Christian.Bohren@acw.admin.ch
Website: http://tinyurl.com/24wnjxo

*** 16-17 November**

2nd Conference of the Near East Weed Science Society, University of Jordan, Amman, Jordan. For more information contact Dr. Barakat Abu Irmaileh, Faculty of Agriculture, University of Jordan, Amman 11942, Jordan, E-mail Barakat@ju.edu.jo. You can also review announcements on the NEWSS site at: http://www.ju.edu.jo/sites/newss

*** 27-30 November**

5th International Conference Plant Protection Research Institute. Giza, Egypt. Contact address: Prof. Dr. Khalil Gharib Al-Maliky, Plant Protection Research Institute 7 Nadi El-Seid St. – Dokki; Email: ppri1951@yahoo.com

2012

***23-25 January**

Southern Weed Society (U.S.) Annual Meeting, Charleston, SC, USA. Email: swss@marathonag.com;
website: www.swss.ws

***17-22 June**

VI International Weed Science Congress, Dynamic Weeds, Diverse Solutions, Hangzhou, China.
Email: iwsc2012local@wssc.org.cn;
Website: www.iwss.info/coming_events.asp

2013

***18-22 February**

International Herbiside Resistance conference, Perth, Australia. Contact address: S. Powles, AHRI, School of Plant Biol., Univ. of Western Australia, 35 Stirling Hwy., Crawley, Perth 6009, WA, Australia. Fax: 61-8-6488-7834. Tel.: 61-8-6488-7870; Email: Stephen.Powles@uwa.edu.au

*** 25-30 August**

10th International Congress of Plant Pathology (ICPP2013), Beijing, China. Contact address:
Email: president@cspp.org.cn
See: http://www.icppbj2013.org/