ARAB AND NEAR EAST PLANT PROTECTION NEWSLETTER

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EDITORIAL

Food Security and Plant Protection

World's population is growing rapidly and frightens agriculture workers and put on their shoulders additional responsibilities, as statistics show that the world population will reach seven billion in 2012 and nine billion in 2025. Experts also predict a decline in the amount of farmland available per capita. UN forecasts points to a 30% reduction of arable land per capita in 2050 (1600 square meters) compared to that of 1950 (5100 square meters).

With such figures and keeping in mind that 95% of the population increase is occurring in developing countries and some poor countries, which has around 1.3 billion people who do not earn more than a dollar per day, confronts workers in plant and animal breeding and plant protection scientists with major challenges. Such responsibility was met by adopting modern technologies, which began in the sixties with the first green revolution, which produced improved wheat varieties coupled with enhanced production of fertilizers, agricultural chemicals and certified seed and more recently adoption of genetic engineering technology. Crops such as wheat, soybeans, rapeseed (colza), rice, corn, some root crops, tubers and cotton stand in the forefront of agricultural research, including genetic engineering, and developing crop varieties with high yields and resistant to pests is the main approach to face declining agricultural area and increase in world population

The collaboration between plant breeders and plant protection scientists achieved a positive result in production of high yielding crop varieties resistant or immune to agricultural pests. The genetic engineering revolution which led to the transfer of disease resistance genes from bacteria for the production of immune or resistant crops, e.g. BT- cotton, Bt-corn, soybean and rapeseed resistant to insects, and to the impact of weed herbicide resistant crops, and salinity tolerant cultivars. The successes achieved are an indicator for facing the challenges in the developing countries whose population increased from 79% of the global population in 1995 to 84% in 2020. The challenges appeared in 2009 such as the new strain of wheat stem rusts Ug99 and tomato borer *Tuta absoluta* are both serious factors which can affect the food basket of all families

The Arab food security is also threatened, due to the imports of about 40% of their food in 2007 and estimates of self-sufficiency rates are continuously decreasing. The climate changes experienced by the whole world will have a major global food security impact, which will add a burden on the poor as well as on researchers to increase their efforts to come up with means to avoid these dangers

Ibrahim Al-Jboory
Executive Committee Member, Arab Society for Plant Protection

This page is an open forum for all members of the Arab Society for Plant Protection to express their views to further develop the plant protection profession and enhance its positive role in agricultural development in the Arab and Near East Region.

DISEASE AND PEST OUTBREAKS

EGYPT

First Report of Crenate Broomrape (*Orobanche crenata*) on White Lupine (*Lupinus albus*) Growing in Alkaline Soils in Spain and Egypt. Crenate broomrape (*Orobanche crenata* Forsk.) is a parasitic weed known to threaten legume crops since antiquity. It is mainly restricted to the Mediterranean Basin, Southern Europe, and the Middle East where it is an important pest in grain and forage legumes and in some apiaceous crops such as carrot and celery. White lupines are cultivated in acid soils, which usually are free of *O. crenata* infestations. However, breeders are attempting to develop white lupine cultivars adapted to alkaline soils. We report here findings of *O. crenata* infection in field trials of this new lupine germplasm in alkaline soils in experimental farms with a known history of faba bean cultivation and heavy infestation of *O. crenata* in Kafr El-Sheikh, Egypt and Córdoba, Spain in the spring of 2009. Symptoms were typical of *O. crenata* infection with reduced growth and emergence of typical *O. crenata* nonbranched spikes close to the lupine plants. Infection was confirmed by digging up the plants to verify the attachment of the broomrape plant to the lupine. *O. crenata* plants growing on lupines were fully fertile, producing viable seeds. Plant morphology was typical of *O. crenata*. Voucher specimens were deposited at the Herbarium of the Botanic Department of the University of Córdoba. To our knowledge, this is the first report of *O. crenata* infecting lupine and is relevant because the expected introduction of alkaline-tolerant lupine cultivars will extend its area of cultivation into fields heavily infested with *Orobanche*. *O. crenata* is highly polymorphic and could easily adapt to, recognize, and infect this new host. Development of lupine-adapted *O. crenata* populations should be monitored because it could represent a major constraint on lupine introduction into alkaline soils. [M. Fernández-Aparicio**,** A.A. Emeran**,** A. Moral and D. Rubiales, (Spain and Egypt). Plant Disease, 93(9): 970, 2009].

IRAN

First report of Pathogenicity Group 2 of *Leptosphaeria maculans* Causing Blackleg of Oilseed Rape in Iran. Rapeseed (*Brassica napus*) is one of the most important oilseed crops in Iran with more than 200,000 ha planted in 2008. Phoma blackleg (*Leptosphaeria biglobosa*), pathogenicity group 1 (PG-1) or non-aggressive type, has been reported on rapeseed from Golestan province. Recently, in some regions of Mazandaran and Golestan provinces of northern Iran, typical stem canker symptoms were observed with incidence ranging from 20 to 60%. During October and November 2008, ascospores were isolated from pseudothecia on infected rapeseed debris and cultured on V8-agar medium. Sporulating colonies were identified as *L. maculans* (anamorph Phoma lingam). Eleven isolates of *L. maculans* were used for determining the pathogenicity group according to phenotypic interaction (PI) on rapeseed cultivars including Westar, Quinta and Glacier. Nine seven-day old seedlings of each cultivar were inoculated for each isolate and the test was repeated three times. Wounded cotyledons were each inoculated with 10lL of conidial suspensions at $2x10^7$ spores/mL. All plants were maintained in a growth chamber at 21ºC (light) to 16ºC (dark), with a 16-hour photoperiod and relative humidity of 95%. After 10 days, disease severity was rated on a 0-9 scale. Two isolates (Es-5 and Es-7) were classified as belonging to pathogenicity group PG2 and nine isolates as PG1. PG2 isolates showed PI reactions 0 to 2, 7 to 9 and 7 to 9 on cvs Glacier, Quinta and Westar, respectively. In addition, cvs Hyola401 and Okapi were highly sensitive to PG-2 isolates in the cotyledon assay. This is the first report of the occurrence of *L. maculans* PG-2 in Iran. [A.Z. Mirabadi, K. Rahnama and A. Esmaailifar (Iran). Plant Pathology, 58: 1175, 2009].

Characterization of *Cylindrocarpon liriodendri* Associated with Black Foot Disease of Grapevine in Iran. Eight *Cylindrocarpon* isolates recovered from the trunk bases of 10-year-old grapevines showing decline symptoms from two vineyards in Bavanat (Fars province, south-western Iran) were studied. Based on phenotypical characteristics, mating experiments and molecular data, they were identified as *Cylindrocarpon liriodendri.* Pathogenicity was confirmed with selected isolates inoculated into 8-month-old dormant rooted cuttings of grapevine rootstock cv. 110 Richter. This is the first report of *C. liriodendri* causing black foot disease of grapevines in Iran. [Hamid Mohammadi, Sandra Alaniz, Zia Banihashemi and Josep Armengol (Iran & Spain). Journal of Phytopathology, 157: 642–645, 2009].

MOROCCO

***Citrullus lanatus*, a new host of *Bipolaris spicifera* in Morocco.** *Bipolaris spicifera* was isolated from necrotic leaves of field-grown watermelon plants from the Taroudant area of southern Morocco. The pathogenicity of this fungus was tested on the leaves of two cultivars of watermelon (Peacock 124 and Mabrouka) widely cultivated in this area. The infection coefficients (incidence × severity index) of the cv. Mabrouka and Peacock 124 after inoculation with *B. spicifera* conidial suspensions were 53.3 and 22.4 respectively. Calculated disease development rates were greater for cv. Peacock 124 than for cv. Mabrouka. Conidium production of *B. spicifera* on inoculated leaves was very abundant on the two cultivars, and the fungus was re-isolated from lesions on inoculated plants. This is the first record of *B. spicifera* on watermelon in Morocco.

[Mohamed El Mhadri, Rachid Benkirane, Amina Ouazzani Touham and Allal Douira (Morocco). Phytopathologia Mediterranea, 48(2): 291-293, 2009].

***Seiridium cardinale* Newly Reported on *Cupressus sempervirens* in Morocco.** Cypress canker, caused by *Seiridium cardinale*, is a serious fungal disease on *Cupressus* spp. that are native and widely planted in the Mediterranean region. Although the disease is mentioned as a potential threat for cypress in Morocco, it has never been scientifically described in this location. In July, 2007, in a garden a few kilometres north of Imouzzer Kandar, Morocco, 10-year-old ornamental *C. sempervirens* trees were observed with crown reddening, branch dieback and resin exudation from bark lesions. Fungal isolations were made from fragments of necrotic bark from two trees. Dense, cottony colonies, 61–68mmin diameter, with a white margin, a thicker olive green centre, and a salmon orange reverse side, developed on potato dextrose agar (PDA) after 21 days at 25ºC in the dark. Colonies produced acervuli and conidia after three weeks at 18ºC under a mixture of fluorescent and near ultraviolet light on water agar. Conidia were fusiform, straight or slightly curved, 22.3–28.2 X 7.9–9.7 µm, 5-euseptate, with hyaline, conical end cells lacking any appendage, and the four median cells yellow-brown. Based upon these characteristics, the fungus was identified as *S. cardinale*. An isolate (CBS 123991) was deposited at the Centraalbureau voor Schimmelcultures, Utrecht, the Netherlands. Stem inoculations with isolate 123991 were done in May, 2008 on three year old susceptible, tolerant and resistant clones of *C. sempervirens*. Three months later, elliptical, 54–72 mm long, purple-brown cankers were clearly visible on all inoculated stems. The fungus was successfully re-isolated from the inner necrotic periderm. Control trees, inoculated with sterilePDAplugs, healed normally. This is the first report of *S. cardinale* in Morocco. The disease has also been observed on adult *C. sempervirens* trees in Rabat and Marrakesh. Since both early (crown reddening) and advanced (bare branch) symptom development were observed on diseased trees, *S. cardinale* has probably been spreading in Morocco for some years that may give rise to epidemics, as occurred in other Mediterranean countries and recently reported in Cyprus. A detailed survey on cypress is needed to plan proper control measures. [R. Dantia, G. Della Rocca and F. El Wahidi (Italy & Morocco). Plant Pathology, 58: 1174, 2009].

PAKISTAN

First Report of '*Candidatus* Phytoplasma asteris' (Group 16SrI) Infecting Fruits and Vegetables in Islamabad, Pakistan. Nearby fruit and vegetable fields in Islamabad, Pakistan were surveyed for phytoplasma infection. '*Candidatus* Phytoplasma asteris' (Group 16SrI) was found infecting mango, citrus, loquat, geranium, periwinkle, radish, blackberry and potato. Results suggest that a polyphagous vector may be involved in phytoplasma transmission to these plant species, which are first host records of 16SrI phytoplasma infection in Pakistan. [Fauqia Fahmeed, Yaima Arocha Rosete, Karel Acosta Pérez, Eric Boa and John Lucas (Pakistan & UK). Journal of Phytopathology, 157: 639-641, 2009].

First Report of *Citrus bent leaf viroid* and *Citrus dwarfing viroid* from Citrus in Punjab, Pakistan. Pakistan is among the top 10 citrus-producing countries of the world and the leader in Kinnow mandarin production with production concentrated in the province of Punjab, which produces more than 96% of the total citrus crop. To evaluate the presence and distribution of citrus viroids in this area, 34 samples were collected in September 2008 from citrus orchards in the Sargodha, Bhalwal, and Faisalabad areas of Punjab, including 15 'Mosambi' and two 'Bloodred' sweet oranges (*Citrus sinensis*), eight 'Kinnow' and four 'Feutrell Early' mandarins (*C. reticulata*), three 'Jatti Khatti' rough lemon (*C. jambhiri*), and two grapefruit (*C. paradisi*), which showed stunting, bark scaling, and cracking symptoms on the rootstock which was either citrange (*Poncirus trifoliata* × *C. sinensis*) or sweet lime (*C. limetta*). Infected budwood from these trees was grafted onto indicator plants of Arizona 861-S-1 'Etrog citron' (*C. medica*) budded on rough lemon rootstock, and after 3 months, the citron showed typical viroid symptoms of mild epinasty and leaf roll with 23 of the 34 samples. A one-step multiplex reverse transcription (RT)-PCR assay was used to detect simultaneously *Citrus exocortis viroid* (CEVd), *Citrus bent leaf viroid* (CBLVd), *Hop stunt viroid* (HSVd), *Citrus dwarfing viroid* (CDVd), and *Citrus bark cracking viroid* (CBCVd). On the basis of amplification of the appropriate amplicon, CEVd, CBLVd, HSVd, and CDVd were detected in 12, 8, 31, and 17 samples, respectively, whereas CBCVd was not detected. Twenty-three of 34 infected samples harbored more than one viroid species and one had four viroids. Budwood from 11 trees did not induce viroid symptoms on Etrog citron. Two of these trees were infected with CBLVd only and nine with HSVd only. Four primer pairs were used to amplify the full sequences of CEVd, CBLVd, HSVd, and CDVd by RT-PCR, which were cloned by standard methods. Sequences of three cDNA clones each of CEVd, CBLVd, HSVd, and CDVd were deposited in GenBank. BLAST analysis showed that these nucleotide sequences had greater than 97% nucleotide identity to the most similar genome sequences in GenBank. To our knowledge, this is the first report of CBLVd and CDVd in Pakistan. These results indicate the need for proper indexing of mother trees and a virus-free propagation scheme to create healthy budwood sources in Pakistan. [M. J. Cao, S. Atta, and Y. Q. Liu, X. F. Wang, C.Y. Zhou, A. Mustafa and Y. Iftikhar (China & Pakistan), Plant Disease, 93(8): 840, 2009].

SYRIA

First Report of *Pseudomonas savastanoi* pv. *savastanoi* Causing Olive Knot in Syria. During field surveys carried out in 2007 in the main Syrian olive (*Olea europaea*) growing areas, bacterial knot symptoms were observed on olive twigs and branches, with the highest incidence (70%)

in the coastal region (Lattakia and Tartous). Bacterial colonies isolated from knots resembled those of *Pseudomonas savastanoi* pv. *savastanoi*. Ten selected representative bacterial strains and the reference strains LMG2209^T, CFBP 6012 and 6013 of *P. savastanoi* pv. *savastanoi* were subjected to identification tests. All strains were Gram negative, fluorescent on King's medium B and had oxidative but not fermentative metabolism. They were negative for levan, oxidase, potato rot and arginine dihydrolase and positive for tobacco hypersensitivity. One-year-old olive plants (cvs Nebali and Jlot) were inoculated by introducing bacterial suspensions (10^8 cfu mL^{-1}) into wounds made in the bark with a sterile scalpel. All strains induced knots at the site of inoculation from 20 days onwards. Bacteria with characteristics identical to the original strains were re-isolated from inoculated plants. PCR analysis using primers specific for *P. savastanoi* pv. *savastanoi*, which amplify fragments of *iaaL* and *ptz* genes, generated amplicons of the expected size from all strains. Based on morphological, biochemical, physiological and pathogenicity tests as well as molecular analyses, it was concluded that the Syrian strains belong to P. *savastanoi* pv. *savastanoi*. Although strains from Syria have previously been characterised with respect to their ability to produce auxin, this is the first authoritative report of olive knot disease symptoms in Syria caused by *P. savastanoi* pv. *savastanoi*. [N. Alabdallaa, F. Valentinia, C. Morettib, S. Essac, R. Buonauriob and M. Abu-Ghorrad (Syria & Italy). Plant Pathology, 58: 1170, 2009].

Detection and Characterization of *Chickpea Chlorotic Stunt Virus* in Syria. Field surveys were conducted in Syria during the 2005/2006 and 2006/2007 growing seasons to identify viruses which affect cool-season food legumes, volunteer crops, and weeds with yellowing, reddening and/or stunting symptoms. Serological tests (tissue blot immunoassay) showed that *Faba bean necrotic yellows virus* and luteoviruses including, *Beet western yellows virus*, *Bean leafroll virus* and *Soybean dwarf virus* were the main viruses identified. In addition, a large number of samples reacted positively with the broad spectrum legume luteovirus (5G4) monoclonal antibody but not with any other specific luteovirus monoclonal antibodies suggesting the occurrence of new luteovirus species/strains. RT-PCR assay of 27 of such samples revealed the presence of *Chickpea chlorotic stunt virus* (CpCSV; genus *Polerovirus*, family: *Luteoviridae*). The coat protein nucleotide sequence analysis of the Syrian CpCSV isolate from chickpea showed a high homology (98%) to that of the Ethiopian CpCSV isolate. However, there were some differences in host range and aphid transmission characteristics between the Syrian and Ethiopian isolates. This is the first report of CpCSV naturally affecting eight legume species (*Cicer arietinum* L., *Lens culinaris* Medik., *Pisum sativum* L., *Vicia faba* L., *Vicia sativa* L., *Vicia ervilia* L. Willd., *Vicia narbonensis* L. and *Medicago* sp.) and four wild non-legume plant species [*Apium* sp. (Apiaceae), *Euphorbia* sp. (Euphorbiaceae), *Physalis longifolia* Nutt. (Solanaceae) and *Sinapis arvensis* L. (Brassicaceae) in Syria. **[**Nader Y. Asaad, Safaa G. Kumari, Amin A. Haj-Kassem, Abdel-Baset A. Shalaby, Salah Al-Shaabi and Rajendra S. Malhotra (Syria & Egypt). Journal of Phytopathology, 157: 756–761, 2009].

TUNISIA

First Report of *Greenidea ficicola* in Tunisia. *Greenidea ficicola* was encountered for the first time on 2007 in *Ficus nitida* in Sahline location. Then, it was recorded during 2008 in other *Ficus* species in different areas of Tunisian Sahel coast such as Monastir, Sahline, Ouardanine and Sousse. [M. Ben Halima-Kamel (Tunisia). Tunisian Journal of Plant Protection, 4: 107-110, 2009].

Occurrence and Distribution of *Microdochium* and *Fusarium* Species Isolated from Durum Wheat in Northern Tunisia and Detection of Mycotoxins in Naturally Infested Grain. An outbreak of *Fusarium* Head Blight of durum wheat occurred in 2004 being localized in sub-humid and higher semi-arid region of Northern Tunisia. A mycological survey carried out throughout these regions, revealed that 78% of the prospected fields were infested. Results of the morphological and molecular identification, showed that the most common species isolated from diseased wheat spikes was *Microdochium nivale* var. *nivale* (63.5%), followed by *Fusarium culmorum* (26%), *F. pseudograminearum* (9%) and *F. avenaceum* (1.5%). To evaluate mycotoxin content of naturally infected grain, the amounts of trichothecene mycotoxin deoxynivalenol (DON) in harvested grain from 45 fields were quantified by RIDASCREEN DON Enzyme Immunoassay Kit (ELISA)**.** This study showed that the infection levels in freshly harvested grain were very low and the maximum deoxynivalenol (DON) level of the positive samples was 53 ppb. This is the first report on the natural occurrence of DON in naturally infected wheat grain sampled from Northern Tunisia. [Lobna Gargouri Kammoun, Samia Gargouri, Mohamed Rabeh Hajlaoui and Mohamed Marrakchi (Tunisia). Journal of Phytopathology, 157: 546 – 551, 2009].

First Report of *Tobacco mild green mosaic virus* Infecting *Capsicum annuum* in Tunisia. During the springs of 2007 and 2008, leaf deformations as well as symptoms of mild green and chlorotic mosaic were observed on pepper (*Capsicum annuum*) plants grown in Monastir (northwest Tunisia) and Kebili (southeast Tunisia). Symptomatic leaf samples were analyzed by transmission electron microscopy (TEM) of leaf-dip preparations. Typical tobamovirus-like particles (rigid rods ≈300 nm long) were observed in crude plant extracts. According to literature, at least six tobamoviruses infect peppers: *Paprika mild mottle virus* (PaMMV); *Pepper mild mottle virus* (PMMoV); *Ribgrass mosaic virus* (RMV); *Tobacco mild green mosaic virus* (TMGMV); *Tobacco mosaic virus* (TMV); and *Tomato mosaic virus* (ToMV). Extracts from six symptomatic plants from Monastir and four from Kebili fields tested negative for ToMV, TMV, and PMMoV and tested positive for TMGMV by double-antibody sandwich (DAS)-ELISA using polyclonal antibodies specific to each virus (Loewe Biochemica

GMBH, Sauerlach, Germany). To confirm the positive TMGMV results, total RNAs from 10 symptomatic plants that tested positive by ELISA were extracted and analyzed by reverse transcription (RT)-PCR using primers designed to specifically amplify a region of the coat protein gene (CP) of TMGMV. The 524-bp TMGMV-CP specific DNA fragment was amplified from all samples, but was not amplified from healthy plants or the sterile water used with negative controls. Two TMGMV-positive, singly infected symptomatic pepper plants collected from Monastir and Kebili were used in mechanical transmissions to new pepper and tomato plants. Inoculated pepper plants exhibited mild chlorosis symptoms and tested positive for TMGMV only; however, inoculated tomato plants cv. Marmande were asymptomatic and tested negative as expected for TMGMV infection. To our knowledge, although *C. annuum* has been shown as a natural host for TMGMV, this is the first report of TMGMV in Tunisia. [M. I. Font, M. C. Córdoba-Sellés, M. C. Cebrián, J. A. Herrera-Vásquez, A. Alfaro-Fernández, A. Boubaker, I. Soltani, and C. Jordá (Tunisia & Spain), Plant Disease, 93(7): 761, 2009].

First Report of *Cercospora tripolitana* Causing Leaf Spot of *Emex spinosa* in Tunisia. *Emex spinosa* (L.) is a common weed in cereal crops and pastures in northern Tunisia. The build up of the seed bank from a cropping-grazing farming system makes chemical and cultural controls inefficient. Biological control as part of integrated weed management may improve weed control. Diseased seedlings were collected from several locations in northern Tunisia during field surveys. Symptoms were small, circular, light brown leaf spots varying in size (1.75 to 3.5 mm in diameter) with a definite dark brown border on both sides of leaves that wilted and died. Microscopic observations showed conidiophores and conidia within and around the spots. Pure cultures from single conidia were obtained on carrot leaf extract agar. The fungus was identified as *Cercospora tripolitana* on the basis of identification keys. Conidia, borne on unbranched, fasciculated conidiophores, were elongate, hyaline, multiseptate, 110 to 150 × 1.8 to 3.7 μm (average 130 x 2.5 μm), and had truncate bases. For pathogenicity testing, six plants were sprayed with a spore suspension of 6×10^5 conidia/ml. Controls were sprayed with sterile distilled water. Plants were placed in a growth chamber at 22°C, 95% relative humidity, and 18/6 h of light/dark and monitored for symptoms. Ten days after inoculation, symptoms identical to those observed in the field were observed on inoculated plants. Control plants did not develop any symptoms. Four weeks later, diseased leaves turned yellow and died. The fungus was reisolated from symptomatic plants according to Koch's postulates. Although *C. tripolitana* has been previously reported in North and South Africa, to our knowledge, this is the first report of the fungus as a pathogen on *E. spinosa* under Tunisian agroecological conditions, making it a promising candidate for weed control. [L. G. Kammoun and T. Souissi (Tunisia), Plant Disease, 93(7): 763, 2009].

TURKEY

First Report of Bacterial Stalk and Head Rot Disease Caused by *Pectobacterium atrosepticum* on Sunflower in Turkey. Bacterial stalk and head rot on sunflower (*Helianthus annuus*) was investigated in Konya Province of Turkey in 2008. Disease incidence was estimated as 30%. Bacteria appeared as droplets and ooze and symptoms were dark and water-soaked necrotic areas on stems and heads. Twenty-four strains were isolated from lesions on stalks and heads of sunflower cv. TR3080 from a 25-ha field and identified as *Pectobacterium atrosepticum* (formerly *Erwinia caratovora* subsp. *atroseptica*) (2) on the basis of biochemical, physiological (3), and molecular tests (1). Bacteria were gram negative, rod shaped, fermentative, nonfluorescent on King's B medium; positive for gelatin liquefaction, CVP test, catalase, and pectolytic activity, growth on 5% NaCl, reducing substances from sucrose, acid-production from lactose and α-methyl glucoside; and negative for growth at 37°C, acid production from sorbitol and maltose, phosphatase activity, tests for egg yolk (lecithin), sensitivity to erythromycin, and pigmentation on yeast dextrose calcium carbonate agar medium. To distinguish between *P. atrosepticum* and *P. carotovorum*, particular attention was paid to the growth at 37°C, reducing substances from sucrose and the utilization of α-methyl glucoside. Mesophyll cells of tobacco plants (*Nicotiana tobaccum* cv. White Burley) were infiltrated with bacterial suspensions (10^8 cells/ml) or water (control). Brown, collapsed areas of tissues (hypersensitive response) were observed at the injection sites after incubation for 48 h at 28°C and 80% relative humidity. A *P. atrosepticum*-specific primer set, Y45/Y46 (3), was used in PCR reactions to generate a 439-bp DNA fragment. Reference strains, Eca17 from Aegean University, Department of Plant Protection (İzmir, Turkey) and NCPPB 1277 from Selcuk University, Department of Plant Protection, Konya, Turkey, were employed in all biochemical, physiological, and molecular tests as positive controls and similar results were obtained. Koch's postulates were carried out to establish a causal relationship between the bacteria and the disease. A bacterial suspension (10^8 CFU/ml) was injected into sunflower shoot tips and inoculated plants were incubated for 2 weeks at 28°C and 80% relative humidity. All bacterial strains obtained from the stalks and heads produced the rot symptoms and ooze following inoculation to the susceptible sunflower cv. TR 3080. No symptoms were observed on controls that were inoculated with sterile water. The bacteria were isolated from the lesions on stalks and heads and their identities confirmed by the biochemical, physiological, and molecular tests. All tests were performed three times on three plants per strain. To our knowledge, this is the first report of *P. atrosepticum* on sunflower in Turkey. Further research is needed to determine how far the disease is spread in Turkey since other provinces also grow sunflowers. [K. K. Baştaş, H. Hekimhan, Bahri Dağdaş, S. Maden and M. Tör (Turkey). Plant Disease, 93(12): 1352, 2009].

First Report of Leaf Anthracnose Caused by *Phomopsis convolvuli* on Field Bindweed in Turkey. Field bindweed (*Convolvulus arvensis* L.; Convolvulaceae) is a troublesome perennial weed found among many important crops in the world. In May of 2007, dying field bindweed plants were found along the edge of a wheat (*Triticum aestivum* L.) field between Bafra and Taflan, Turkey. Lesions on leaves were irregular and variable in size and dark black with green margins. Severely diseased leaves were wilted or dead. Fruiting bodies were not evident on field-collected material. Diseased tissue was surface disinfested and placed on moist filter paper in petri plates. Numerous pycnidia with alpha conidia were observed after 2 weeks. A fungus, designated 24-6, was isolated from the diseased leaves. Cultures on potato dextrose agar (PDA) were floccose with white mycelia and small black stromata. Alpha conidia from pycnidia on inoculated plants were biguttulate, one celled, hyaline, oblong to ellipsoid, and 7.0 to 12.8 × 3.0 to 5.5 µm (mean 10.0 × 3.9 µm). Neither beta conidia nor the teleomorph, *Diaporthe* sp., were observed on diseased tissue or in cultures. Morphology was consistent with that of *Phomopsis convolvuli* Ormeno-Nunez, Reeleder & A.K. Watson. Alpha conidia were harvested from 12-day-old cultures grown on PDA by brushing the surface of the colonies with a small paint brush, suspending the conidia in sterile distilled water, and filtering through cheesecloth. The conidia were then resuspended in sterile distilled water plus 0.1% polysorbate 20 to arrive at a concentration of 10^7 conidia/ml. Stems and leaves of seven plants at the 3- to 5-leaf stage were spray inoculated with 10 ml per plant of this aqueous suspension. Inoculated plants and two noninoculated plants were placed in a dew chamber at 24°C in darkness and continuous dew. After 48 h, plants from the dew chamber were moved to a greenhouse bench. Disease severity was evaluated 1 week after inoculation with a rating system based on a scale from 0 to 4, in which 0 = no symptoms, 1 = 1 to 25% necrosis, 2 = 26 to 50% necrosis, 3 = 51 to 75% necrosis, and 4 = 76 to 100% necrosis. The average disease rating on inoculated plants was 3.75. No disease was observed on noninoculated plants. *P. convolvuli* was reisolated from all inoculated plants. Comparison of the internal transcribed spacer (ITS) 1 and 2 sequences with available sequences of a vouchered *P. convolvuli* specimen (GenBank Nos. U11363, U11417; BPI 748009, FAU649) showed 192 of 193 and 176 of 179 identities, respectively, for the two regions. Nucleotide sequences for the ribosomal ITS regions (ITS 1 and 2, including 5.8S rDNA) were deposited in GenBank (Accession No. FJ710810), and a voucher specimen has been deposited with the U.S. National Fungus Collections (BPI 878927). To our knowledge, this is the second report in the world of leaf anthracnose on field bindweed caused by *P. convolvuli*. The first report was from Canada of an isolate that was later patented for biological control of *C. arvensis*. [E. Kuleci, B. Tunali, D. K. Berner, C. A. Cavin and L.A. Castlebury (Turkey & USA). Plant Disease, 93(8): 847, 2009].

First Report of Bacterial Leaf Spot Caused by *Pseudomonas cichorii* on *Schefflera arboricola* in Turkey. In late winter and spring of 2006 and 2008, leaf spots with yellow halos were observed on dwarf schefflera (*Schefflera arboricola* cvs. Gold Capella, Trinette, and Green Gold) that were grown as potted plants in two commercial ornamental greenhouses in Adana and Mersin, Turkey. Average disease incidence was assessed as 10% during the term of the study. Isolations were made from leaf spots symptoms on King's medium B. Bacteria consistently isolated from diseased tissues formed green fluorescent colonies on the medium. Ten representative bacterial strains were examined and found to be gram negative, rod shaped, and aerobic, levan, pectolytic, and arginine dihydrolase negative, and oxidase positive. They all induced a hypersensitive response in tobacco (*Nicotiana tabacum* cv. Samsun). All strains were identified as *Pseudomonas cichorii* with similarity indices of 79 to 99% based on fatty acid methyl ester (FAME) profiles determined by Sherlock Microbial Identification System software (TSBA 6 v. 6.00; Microbial ID, Newark, DE). Pathogenicity of the strains was confirmed on five dwarf schefflera plants by leaf tissue infiltration with bacterial suspensions (10^7 CFU ml^{-1}) in sterile distilled water. *P. cichorii* NCPPB 3802 and sterile water were used as positive and negative controls, respectively. The same symptoms as those observed in the commercial greenhouses were observed on dwarf schefflera leaves within 12 to 15 days after inoculation. The bacteria were reisolated from the inoculated plants and identified as the same as the original strain by conventional tests and FAME analysis. Negative control plants remained disease free. Occurrence of bacterial leaf spot caused by *P. cichorii* on vegetable crops in Turkey and dwarf schefflera in other countries has been reported previously, but to our knowledge, this is the first report of the observation of *P. cichorii* on dwarf schefflera in Turkey. [Y. Aysan, M. Mirik and F. Sahin (Turkey). Plant Disease, 93(8): 848, 2009].

YEMEN

Record for three New Species of Whiteflies from Yemen. In this study we report the identification of three additional whitefly species from Yemen as follows: (1) *Trialeurodes vaporarium* (Westwood) – it was collected on 21 Jan 2007 from infested mint, *Meantha* spp. in Sana'a (2200m over sea level). It is considered among the most important pests in protected cultivation, especially in Europe. It attacks a large number of plant hosts, including cucumber, bean, eggplant, green beans, green pepper, potato, poinsettia, pumpkin, rose, strawberry, sweetpotato, tomato, watermelon, and many ornamentals and weed species. It can survive harsh winters in heated glasshouses. (2) *Bemisia afer* (Priesner & Hosny) – it was collected on 12 June 2006 from Cowpea, *Vigna sinensi* at the Agricultural Farm of the Faculty of Agriculture, Sana'a University, Sana'a. It is an oligophagus insect attacking certain **s**pecies in the following families: Malvaceae, Labiateae, Sapindaceae, Myrtaceae; Lythraceae, Moraceae, Rutaceae. The importance of this pest should be considered on this crop, which being one of the important vegetable crop in the country. (3) Ash whitefly, *Siphoninus phillyreae* (Haliday) – it was collected on 7 Feb 2007 on heavily infested pomegranate (*Punica Granatum*) in Sana'a, city. It

is a polyphagous species found on several plant families including: Bignoniaceae, Leguminosae, Lythraceae, Magnoliaceae, Oleaceae, Punicaceae, Rosaceae, Rubiaceae, Rutaceae. The host plants attached by this pest in Yemen need to be investigated, especially fruit crops. The pest may become more important on many other fruit crops in the country if not taken in consideration during the control measures applied for controlling of other fruit pests. [M.M. Abdullah Nasher[1] and Jon Martin[2]. (1) Department of Plant Protection, Sana'a University, Sana'a, P.O. Box 13609 (Main Post Office), Yemen, Email: abd_nasher@yahoo.co.in; (2) Department of Entomology, The Natural History Museum, Cromwell Road, London SW7 5BD, UK].

RESEARCH HIGHLIGHTS

ALGERIA

Comparative Aggressiveness of *Mycosphaerella pinodes* on Peas from Different Regions in Western Algeria. Mycosphaerella blight caused by *Mycosphaerella pinodes* (Berk. et Blox.) Vestergr. is now recognized as one of the major problems limiting yield of pea crops in Algeria. The present work was carried out to study the aggressiveness of 75 *M. pinodes* isolates collected from different pea-growing areas forming four population groups representing four geographic areas in western Algeria. The latent period, incubation period and disease severity were measured in the greenhouse for each isolate × cultivar combination. All three aggressiveness components differed significantly between isolates and between cultivars. No significant interaction however was noted between isolates and cultivars. Both principal component analysis (PCA) and hierarchical cluster analysis (HCA) were employed to analyze the variation pattern within and between population groups. Cluster analysis, which summarizes the relationship between isolates according to their distance of similarity, sorted isolates into six distinct aggressiveness groups. Aggressiveness group 1 was the most represented, with 34% of all isolates. Both PCA and cluster analysis revealed that many isolates were closely related irrespective of the geographic area or the host cultivar from which they were collected. At the same time, and based on the same aggressiveness components, the cv. Onward, Lucy and DP were the most susceptible, whereas the cv. Rondo and MK were partially resistant. [Benali Setti, Mohamed Bencheikh, Jamel Henni and Claire Neema (Algeria & France). Phytopathologia Mediterranea, 48(2): 195-204, 2009].

EGYPT

Effect Four Composts on *Meloidogyne incognita* and *Fusarium solani* Infesting Superior Grapevine and their Influence on Yield Production and Quality. Four commercial composts (El-Wady®, El-Kattamyia®, Bio-green® and Organic Complementary® prepared from food industry residues, town refuse organic matter, poultry droppings and sugar cane residues, respectively, were tested for their efficacy in suppressing root knot and root rot diseases caused by *Meloidogyne incognita* and *Fusarium solani*, respectively. The two pathogens were found infesting ten-year-old grapevines cv. Superior planted in newly reclaimed sandy soil under a drip irrigation system. The impacts of the composts were studied on plant growth variables and yield production when incorporated into the soil at the rates of 1.5, 3.0 and 6.0 kg/grapevine plant during two successive seasons (2007 and 2008). The addition of composts to soil significantly suppressed populations of the root-knot nematode in soil and roots as well as gall formation, with Organic Complementary compost being the most effective in controlling second stage juveniles of *M. incognita* in soil and roots, followed by El-Wady, Bio-green and El-Kattamyia composts, respectively. The greatest suppression of root galls was exhibited by Bio-green compost followed by Organic Complementary, El-Kattamyia and El-Wady composts, respectively. All composts and doses significantly suppressed *F. solani* in soil and enhanced soil mycoflora, which was composed of *Aspergillus niger*, *A. terreus*, *Penicillium chrysogenum*, *P. citrinum* and *P. corylophilum*, and decreased the infection of new grapevine roots by *F. solani.* All composts enhanced plant leaf area and cane thickness, increased nitrogen, phosphorous and potassium content of leaves and improved both physical and chemical characters of clusters and berries. Total soluble solids (TSS), Total acidity (TA), TSS/TA ratio and grape yield were also increased. [H. Abd-EI-Khair, M.A. El-Nagdi, O.M. Hafez and H.H. Ameen (Egypt). Nematologia mediterranea, 37: 89-103, 2009].

Role of Biofertilizer on Faba Bean Growth, Yield, and its Effect on Bean Aphid and the Associated Predators. The role of biofertilizer on parameters of faba growth, nodulation, yield and also its effects on aphid infestation and the associated predators were studied. Field experiments were conducted at the Production and Research Station of National Research Center in El-Nobaria, Egypt in the 2005/06 season. Four treatments were carried out: inoculation with rhizobia alone (R), mixed rhizobia with pseudomonas (R+P), rhizobia + mycorrhiza (R+M) or rhizobia + pseudomonas + mycorrhiza (R+P+M) compared to the fifth treatment with recommended dose of chemical fertilizers NPK (150 kg: 150 kg: 200 kg/ha). There was a significant positive effect of rhizobia strains as evident from fresh and dry weight of leaves and stems, root/shoot ratio, pods/flowers ratio as well as the number and weight of nodules compared to NPK fertilizer plots. A total count of bacteria was higher significantly in mixed inoculant's strains than in single inoculant. Either single or mixed inoculants strains showed positive response on seeds weight compared to NPK plots. The highest number of pods was achieved in treatment of rhizobia mixed with mycorrhiza or pseudomonas. Three treatments were conducted for aphid's control. The percent of aphid reduction caused by aphid-control treatments was Pirimiphos-methyl (98%), m-pede (62%), and Neeem Azal T/S (50%). The mixed inoculants strains caused a good

reduction percent of aphid population (71.3%) compared to single inoculation (64%). Therefore, we recommend using the mixed inoculants strains as commercial inocula for improving production of faba bean. [Nabil E. El-Wakeil and Talaat N. El-Sebai (Egypt). Archives of Phytopathology and Plant Protection, 42(12): 1144–1153, 2009].

Efficacy of *Trichogramma evanescens* in Controlling the Grape Berry moth *Lobesia botrana* in Grape Farms in Egypt. The present work was conducted to evaluate the efficacy of *Trichogramma evanescens* (Westwood) in controlling the grape berry moth Lobesia botrana (Schiff) in two grape farms, in El-Beheira and El-Gharbia Governorates, northern Egypt during 2004 and 2005 seasons. *T. evanescens* was mass produced on *Sitotroga cerealella* (Olivier) eggs in the National Research Centre in Egypt. The horizontal and vertical searching activity of *T. evanescens* was studied to determine the proper way of distributing the *Trichogramma* cards in vineyards. Field experiments were also conducted to evaluate *T. evanescens* efficacy to control *L. botrana* on a large scale. Parasitism by *T. evanescens* on *L. botrana* eggs was greatly affected with the horizontal or vertical distance from the release points as well as with the rate of release. Parasitism reached over 97% and the percentage of reduction in damage caused by the pest reached 96.8% in treated plots. A significant increase in the crop was achieved in treated plots. *T. evanescens* could be a potential candidate for biological control of the grape moth in vineyards. [Nabil El-Wakeil, Hamza Th. Farghaly and Zakia Ragab (Egypt). Archives of Phytopathology and Plant Protection, 42(8): 705-714, 2009].

Biological Control of the Citrus Mealybug, *Planococcus citri* (Homoptera: Pseudococcidae) Infesting Citrus Trees by Successive Releasing with Different Levels of the Green Lacewing, *Chrysoperla carnea* (Neuroptera: Chrysopidae). The green lacewing, *Chrysoperla carnea* Steph. (Neuroptera: Chrysopidae) was successively released (with three levels), 5, 10 and 15 larvae/tree at late April, late May and late June 2006 and repeated in the same times during 2007 at Gharbia Governorate. During the first season (2006), the reduction percentages in the population of the citrus mealybug, *Planoeoeeus eltri* (Risso) increased gradually with elapse of time. The achieved average reductions in mealybug population were 66.08, 82.75 and 98.66% at the end of July for the three releasing levels, respectively in the first year (2006). However, the same trend was achieved in the second season (2007) and reduction percentages were 56.14, 80.86 and 93.92%, respectively. Statistical analysis revealed differences in responses to the three successive releasing levels of *C. carnea* for management *P. citri* during 2006 and 2007 seasons that proved no significant between the two seasons. The present work has shown that *C. carnea* can use successfully as a biocontrol agent in an integrated program for controlling *P. citri* attacking citrus trees. [Ashraf A.H. Mangoud and K.A.H. Ali (Egypt), Egyptian Journal of Agricultural Research, 87(1):107, 2009].

On the Pathogenicity of the Entomopathogenic Nematode, *Steinernema riobravis* on Some Economic Insect Pests. Pathogenicity of entomopathogenic nematode, *Steinernema riobravis*, isolated from the lesser cotton leaf worm, *Spodoptera exigua* (Hubner) (Lepidoptera: Noctuidae) in the United Arab Emirates (UAE) was evaluated against the root borer, *Oryctes agamemnon* Burmeister (Coleoptera: Scarabaeidae), *S. exigua* and the peach fruit fly, *Bactrocera zonata* (Saunders) (Diptera: Tephritidae). Percentages of mortality in 3rd larval instar of the borer, *O. agamemnon* in the laboratory ranged between 44 and 100% at concentrations varied from 12.5 to 50 IJs/cm² of sand surface. In a field trial, in UAE, % mortality in such larvae ranged between 32.7 and 78% when the soil of a fig orchard treated with. *S. riobravis* at the concentrations of $5 \times 10^5 - 2 \times 10^6$ IJs / tree. The nematode was found to be virulent to the full-grown larvae (6th instar) of *S. exigua* with the LC_{50} value of 8.2 IJs /cm2 of sand surface, while the newly formed pupa was less susceptible compared to the full-grown larva with the LC_{50} value of 305.99 IJs /cm2 of sand surface. However, 5-day old pupa was resistant to the nematode's infection. Full-grown larvae (3rd instar) of *B. zonata* was less susceptible to *S. riobravis* as highest mortality achieved was 30% at the highest tested concentration; 400 IJs/cm² of sand surface. As well, the pupae proved to be resistant as mortality did not exceed 8% in the newly formed pupae at the highest tested concentrations (200 and 400 IJs/cm² of sand surface). No mortality was detected in 5-day old pupae. [M.S.T Abbas, and Basma A. Mahmoud (Egypt), Egyptian Journal for Biological Control of Pests, 19(1):49-54, 2009].

UAE

Pathogenicity of the Fungs *Beauveria bassiana* (Bals.) Vuill to the Red Palm Weevil, *Rhynchophorus ferrugineus* (Oliv.) (Col.: Curculionidae) under Laboratory and Field Conditions. Pathogenicity of the entomopathogenic fungus, *Beauveria bassiana* (Bals.) Vuill. to the red palm weevil, *Rhynchophorus ferrugineus* (Oliv.) was studied using a local strain "UAE-B2" in United Arab Emirates. For adult weevils, the calculated LC_{50} was 6.3x106 conidia /ml. Duration of the parasitic phase of the fungus was 9.6 days. Most of insects died between the 8th and 13th day. In the first 6 days after contamination, no symptoms were observed. In the 7th day, diseased adults appeared sluggish in their movement and the insects were unable to get up of their back. Larvae differed in their susceptibility to infection due to their age. The young instars were more susceptible than the old ones. In adult and larval stages, the fungus remains dormant inside the cadavers and starts to continue its saprophytic development when RH approaching 100%. For adults, duration of the saprophytic phase was 14.1 days and the fungus successfully developed on 81.5% of the dead insects. Complete mycosed cadaver produced 2.12 x 109 conidia. For young larval instars, duration of the saprophytic phase was 6.6 days and the fungus successfully developed on 85.7% of the dead larvae. Complete mycosed cadaver

produced 4.3 x 10^7 conidia. Release of the fungus in a date palm plantation by two application methods caused a mortality of 12.8-21.2% and 23-47.1% in adult population in 2005 and 2006 seasons, respectively. The results lead to better understanding of the biology and pathogenicity of *B. bassiana* as a biological control agent against the red palm weevil. [R. El-Sufty, S.A. Al-Awash, S. Al Bgham, A.S. Shahdad and A.H. Al Bathra (Egypt & UAE). Egyptian Journal for Biological Control of Pests, 19(1):81-86, 2009].

IRAN

Farmers' Competence and Training Needs on Pest Management Practices: Participation in Extension Workshops. A survey of farmers in Karaj, Iran explored impacts of extension workshops on farmers' level of competence on pest management practices and identified farmers' needs for pest management training. Three groups of farmers, each one consisting of 30 individuals, were included in the study. Group A included farmers who had recently participated in a local workshop for pest management, group B included farmers who had never participated in a similar workshop, but they were from the same town with farmers of group A (workshop participants) and had close contact with farmers of group A, and group C (control group) consisted of farmers who had never attended a similar workshop and were outside of this community. Training needs were assessed using the Borich Needs Assessment Model. The top three training needs for group A were on a) identification of pesticide application frequency, method of application, and amount, b) pesticide record keeping, and c) knowledge on pesticide selection. The top three training needs for group B were on a) awareness of different pesticide products, b) identification of pesticide application frequency, method of application, and amount, and c) identification of various types of insect damage. The top three training needs for farmers of group C were on a) knowledge of chemical/cultural/biological pest control options, b) biological control of pests, and c) differentiation among fungal, viral, and bacterial diseases. Group A showed the highest level of competence for all three areas of pest management practices (pest identification, pesticide management, and IPM principles), whereas little spread of the acquired knowledge was observed from group A to other community members. [Seyyed Mahmoud Hashemi, Seyed Mahmood Hosseini and Christos A. Damalas (Iran & Greece). Crop Protection, 28: 934–939, 2009].

Studies on the Host Range of *Septoria* Species on Cereals and Some Wild Grasses in Iran. In an attempt to determine the host range of *Septoria* species, 27 species/varieties of cereals and certain wild grasses were examined with inoculation experiments under controlled conditions. Most *Septoria* species were each pathogenic only on a particular host plant, and wild grasses played only a minor role as alternative hosts for these fungi. *Septoria tritici* isolates from *Triticum aestivum* infected *T. aestivum*, *T. durum*, *T. dicoccum* and *T. compactum*, species that may provide a primary inoculum source for *S. tritici*. *Septoria* isolates from *Aegilops tauschii*, *Lolium loliaceum*, *Lophochloa phleoides*, *Phalaris paradoxa* and *Hordeum glaucum* were pathogenic only on their original hosts. *S. passerinii* isolates from *Hordeum vulgare* and *H. distichon* were pathogenic on all *Hordeum* species/cultivars tested except *H. glaucum*. Thus various *Hordeum* species may play a role in the epidemiology of *Septoria* diseases on barley. [S. Seifbarghi, M. Razavi, H. Aminian, R. Zare, H. Etebarian (Iran). Phytopathologia Mediterranea, 48(3): 422-429, 2009].

Sublethal Effects of Some Conventional and Biorational Insecticides on Ectoparasitoid, *Habrobracon hebetor* Say (Hymenoptera: Braconidae). This study was carried out to assess the effects of sublethal dose of profenofos, spinosad, thiodicarb and field recommended dose of hexaflumuron on demographic and biological parameters of *H. hebetor*. Gross reproductive rate in control (68.87) was significantly higher than insecticide treatments. The highest and the lowest gross reproductive rate between insecticides were related to the profenofos and spinosad, respectively. Higher intrinsic rat of increase in control (0.17) compared with insecticide treatments indicated harmful effects of insecticides on it. Hexaflumuron and spinosad had the highest (0.15) and the lowest (0.1) intrinsic rate of increase between insecticides, respectively. Number of laid eggs was significantly affected by insecticides and it was approximately 2 times more than insecticide treatments in control. In this study, hexaflumuron had tremendous sublethal negative effects on biological parameters of *H. hebetor* with no lethal effects on adult wasps. The female longevity in control (29.41) had no significant difference with the means of profenofos and hexaflumuron, but differences between spinosad and thiodicarb with control was significant. Spinosad had the lowest longevity (12.79). However hexaflumuron, profenofos and spinosad had lower generation time compared with control and thiodicarb but differences between treatments were not significant. Sex ratio of *H. hebetor* offsprings was significantly affected by insecticides. In control, it was lowest (39.23) which indicated that proportion of female to male was highest (≈ 2 time) and it was highest in spinosad (54.94) which means that spinosad caused higher male production in population. In all treatments, especially spinosad and thiodicarb, increase in female age caused increase in male production. [Hooshang Rafiee Dastjerdi, Mir Jalil Hejazi, Ghadir Nouri Ganbalani and Moosa Saber (Iran). Journal of Entomology, 6(2): 82-89, 2009].

Life Cycle Parameters of *Empoasca decipiens* Paoli (Hom.: Cicadellidae) on Four Potato Cultivars (Solanum tuberosum L.) in Iran. *Empoasca decipiens* Paoli (Hom.: Cicadellidae) has been causing damage in potato fields of Ardabil region in Iran. There has been an increasing interest in controlling of *E. decipiens* using resistant cultivars. The resistance of four commonly planted cultivars including Diamant, Agria, Casmos and Omidbakhsh to E. decipiens was compared using some life cycle parameters of this pest in greenhouse at 24±1°C, 50±5% RH and 16:8 h (L:D) photoperiod. Incubation

period, development timeof1st, 2ndand 3rd instar larvae were not significantly different on the cultivars studied. Fourth and 5th instar larvae development time and female and male life span of E. decipiens decreased among the cultivars in the order of Diamant >Casmos >Omidbakhsh >Agria. The percentage of larval survival of E. decipiens on Diamant and Casmos were significantly lower than on Omidbakhsh and Agria. Sex ratio of *E. decipiens* on four cultivars was not significantly different. High correlation coefficients were observed between the density of simple and glandular trichomes with the percentage of larval survival, larval development time, female and male life span of *E. decipiens*. These results indicated that among the cultivars that were investigated, Diamant and Casmos were resistant and Omidbakhsh was tolerant to *E. decipiens* damage. The results of this study also confirmed that the density of glandular trichomes may have more affects on the life cycle of E. decipiens than the density of simple trichomes by restricting larvae and adult feeding. These results are useful in an integrated management program of *E. decipiens* in potato fields. [S.A.A. Fathi, G. Nouri-Ganbalani and H. Rafiee-Dastjerdi (Iran). Journal of Entomology, 6(2): 96-101, 2009].

JORDAN

Nematophagal ability of Jordanian isolates of *Paecilomyces variotii* on the root-knot nematode *Meloidogyne javanica*. The distribution and nematophagal ability of local isolates of *Paecilomyces variotii* against the root-knot nematode (RKN), *Meloidogyne javanica*, was investigated under laboratory conditions. Eighty RKN-infected root samples from fig trees, tomato, aubergine and cucumber were collected from three geographical areas of Jordan (Safi, Central Jordan Valley and J erash). *Paecilomyces variotii* occurred in 10% of the samples and was found in both females and egg masses of M. *javanica*. The local isolates of P. *variotii*, as nematode antagonists, resulted in egg parasitism of about 61.4% compared to 68.5% for P. *lilacinus.* Moreover, both species were able to parasitize females and freed eggs and to reduce hatch of second stage juveniles. Under laboratory conditions, P. *lilacinus* parasitized females on agar plates significantly more than local isolates of P. *variotii.* Isolates of *Paecilomyces lilacinus* and P. *variotii* parasitized heat-killed eggs to similar extents, but at rates higher than those of live eggs inside egg masses, suggesting that both species possess high saprophytic ability. [M. Al-Qasiml, W. Abu-Gharbieh and K. Assas (Jordan & Syria). Nematologia Mediterranea, 37:53-57, 2009].

MOROCCO

Patterns of Virulence Diversity in *Puccinia recondita* on Wheat in Morocco in 2005 and 2006. A total of 105 isolates of *Puccinia recondita* from durum wheat and common wheat were collected from the four main agro-ecological areas of Morocco, Abda-Doukkala, Chaouia-Tadla, Gharb-Saïss and Tangérois. The isolates were tested for virulence phenotypes on seedling plants of 21 near-isogenic lines of Thatcher wheat. Eighty nine virulence phenotypes were identified and the resistance genes Lr2a, Lr2b, Lr2c, Lr3bg, Lr3ka, Lr9, Lr21, and Lr24 were found to confer a good resistance on isolates of all four collections. In the set of differentials used in this study, no significant difference was found between virulence frequencies of isolates from durum and from common wheat. Principal coordinates analysis and the Kosman distance between virulence phenotypes showed that the collections from Gharb-Saïss and Tangérois were closely related to each other, while Abda-Doukkala was closely related to Chaouia-Tadla. [F. Bouftass, B. Ezzahiri, A. Ziouti (Morocco). Phytopathologia Mediterranea, 48(3): 430-438, 2009].

PAKISTAN

Multi-locations Variability in Pakistan for Partial Resistance in Wheat to *Puccinia striiformis* f.sp. *tritici.* Expression of plant resistance to diseases varies according to the prevalent pathotypes and climatic conditions at different locations. This variability in partial resistance expression across locations must be known to elucidate the disease status of crop plants in field conditions. We report on the field assessment of partial resistance in wheat to yellow rust, studied at six locations in 37 wheat varieties along with the susceptible control 'Morocco' during the yellow rust season of 2007. The high disease severity of 'Morocco' revealed considerable disease pressure at all locations. The field resistance of these varieties varied across locations, with no variety being immune at all locations. Based on the average coefficients of infection, representing overall partial resistance expression, the tested varieties were grouped into high (27 varieties), moderate (9 varieties) and low levels of partial resistance (one variety). Stability in the expression of leaf tip necrosis, a marker of partial resistance to yellow rust, was recorded for the varieties Suleman-96 and Sindh-81. Kohsar-93, Bakhtawar-93, Saleem-2000, Fakhre-Sarhad, Tatara, Frontana and Karwan had an overall good level of partial field resistance across the locations. There was also considerable variation in the expression of partial resistance to yellow rust resistance across the locations. [Sajid Ali, S. Jawad A. Shah and Hidayatur Rahman (France & Pakistan). Phytopathologia Mediterranea, 48(2): 269-279, 2009].

Relationship Between Saprotrophic Growth in Soil of Different Biotypes of *Pochonia chlamydosporia* and the Infection of Nematode Eggs. The ecology of *Pochonia chlamydosporia* in soil and its interaction with both plant and nematode hosts are important for the successful exploitation of the fungus as a biological control agent. Differences in saprotrophism and parasitism were assessed for biotypes of *P. chlamydosporia*, which had originated from the eggs of cyst or root-knot nematodes. Colonisation in soils of different textures (compost, sandy loam and loamy sand) measured by the numbers of colony-forming

units, differed greatly. Most biotypes were more abundant in sterilised soil of the different textures compared with non-sterilised soils. The proportion of nematode eggs parasitised in a baiting technique demonstrated that biotypes had host preferences. Those biotypes that originated from root-knot nematodes (RKN-biotypes) infected significantly more *Meloidogyne hapla* eggs than *Globodera pallida* eggs, whereas biotypes from cyst nematodes (CN-biotypes) parasitised more *G. pallida* eggs than *M. hapla* eggs. Differences in virulence between biotypes in an *in vitro* assay in which the fungi were placed directly onto the egg masses of *M. hapla* and those differences observed in the baiting technique showed similar trends. There was a negative linear correlation between the growth of the eight biotypes in soil and the proportion of eggs they infected in compatible interactions (i.e. fungal biotype originated from the same nematode genus as the target eggs). Those biotypes that infected most nematode eggs colonised soil the least extensively, suggesting that virulence may have a fitness cost. However, the relationship between saprotrophic growth and virulence is complex. The relative abundance of the different biotypes in soil in Petri dish assays was similar to that under glasshouse conditions using potato but not tomato as the plant host. Chlamydospores of some biotypes applied to soil significantly reduced (>50%) the population densities of *M. hapla* on tomato and of *G. pallida* on potato plants. Some biotypes that were both effective and virulent are good candidates for biological control of specific nematode pests. Data presented here and elsewhere indicate that RKN-biotypes have different host preferences to CN-biotypes; the specific primers based on the *vcp1* gene from *P. chlamydosporia* rapidly confirmed the host origin of seven of the eight biotypes. [I.A. Siddiqui, S.D. Atkins and B.R. Kerry (Pakistan & UK). Annals of Applied Biology, 155(1): 131–141, 2009].

SAUDI ARABIA

Evaluation of Infestation Levels of the Ectoparasitic Mite *Varroa destructor* Infesting Honeybee *Apis mellifera* and its Control Using Essential Oil in Qassim Region, Saudi Arabia. Survey study of the ectoparasitic mite *Varroa destructor* Anderson and Treuman infesting bee colonies was conducted to evaluate its infestation level for the first time in Qassim Region, Saudi Arabia. The infestation levels were variable according to the season and locality. Mite population parasitizing worker bees gradually increased from April and May and may reach its peak in June and July. Apiaries in Melida-1 presented the highest infestation level and declined significantly in Onayzah-2, Bakeriah and Melida-2 (18 to 13%), while Buraydah-1 and 2 and Onayzah-1 presented only 12% of the total annual mite population, respectively. The mites found on the bottom of bee hives started to increase in February and March and reached the peak during summer months (June-September). Apiaries in Melida-1 significantly recorded the highest level of infestation and followed by Buraydah-1, Onayzah-1 and 2, Bakeriah, Melida-2 (28 to 8%), while Buraydah-2 had the lowest infestation level with only 5% of the total annual mite population, respectively. For contamination of bee products purposes, certain local essential oil, safe to worker bees, including aloa, camphor, garlic, black seed and cloves were extracted in laboratory. Data showed that cloves was the most effective substance causing 62% mortality in *Varroa* mites, while garlic, camphor and black seed reduced mite infestation to 51, 47 and 43% 1 day after treatment, respectively. After 7 days, black seed was more effective than Garlic and camphor where they reduced mite infestation to 72, 66 and 56%, respectively. Aloe extract was the weakest extract causing reduction of only 34 and 45% for 1 and 7 days after treatment. Data showed that mite mortality percentage was positively correlated with time after treatment. [Ahmed H. Fouly and Mohammad A. Al-Dehhairi (Saudi Arabia). Journal of Entomology, 6(3): 135-144, 2009].

Combining Effect of *Beauveria bassaania* (Bals.) and *Ertemocerus mundus* Mercet (Hymenoptera: Aphelinidae) on Sweetpotato Whitefly, *Bemisia tabaci* Gennadius (Aleyrodidae; Hemiptera). Combined effects between the entomopathogenic fungi, *Beauveria bassaina* (Bals.) and whitefly parasitoid, *Eretmocerus mundus* Mercet on *Bemisia tabaci* (Genn.) were investigated under laboratory conditions. The competitive interactions among them were also evaluated either alone or in combination, in respect of the positive and negative effects. The deleterious effects on the parasitoid were extremely low, particularly when the parasitized nymphs exposed to the fungus later. In direct contact bioassay, fungus caused 5.1-15.3% mortality in post-releasing trial and from 8.9-22.1% in pre-releasing trial. Three to five days after treatment, *B. tabaci* nymphs were rejected as a host by *E. mundus* females due to the fungal infection. In infected nymphs, the majority of *E. mundus* females were not laid and no parasitism was detected. The control efficiency of the two natural enemies of *B. tabaci*, when used separately or in combination, varied according to the tested biological agent. *E. mundus* alone reduced pest populations by 19.4 and 51.1% in pre- and post-releasing trials, respectively. *B. bassaina* caused 38.1% in pre-releasing trial and 29.4% in post-releasing trial. Meanwhile, the interaction between fungus and the parasitoid in combination reduced the pestpopulation by 51.2 and 72.3% in pre- and post-releasing trials, respectively. [Mohammad A. Al-Deghairi (Saudi Arabia). Journal of Entomology, 6(2): 72-81, 2009].

Effect of Different Neem Products on the Mortality and Fitness of Adult *Schistocerca gregaria* (Forskål). Various neem products were tested against resting and flying Schistocerca gregaria. Two of the products namely neem Azal-F and the unclarified neem oil were obtained from the Company Trifolio, whereas neem oil enriched and pure neem oil, were a gift of Prof. Schmutterer (University of Giessen). The treatment during flight activity caused, for all products applied an increase of the mortality rate, except the neem oil enriched and pure neem oil of Giessen, up to 70 and 90% respectively. The same products, however, sprayed on resting locusts did not show any remarkable mortality. But this treatment reduced the fitness of the locusts in terms of their flight performance, as well as their

adipokinetic potency. In consequence of this, it is to expect that neem treated locusts will not be able to cover long distances. That means the lipid mobilizing system necessary to provide the flight muscles with "fuel" (lipids) is disturbed severely. [Z.I.A. Al-Fifi (Saudi Arabia). Journal of King Abdulaziz University: Science, 21(2): 299-315, 2009].

TUNISIA

Transmission of Grapevine Leafroll Viruses by *Planococcus ficus* (Hemiptera: Pseudococcidae) and *Ceroplastes rusci* (Hemiptera: Coccidae). *Grapevine leafroll associated virus*-3 (GLRaV-3) and *Grapevine leafroll associated virus*-5 (GLRaV-5), two members of the genus *Ampelovirus* associated with grapevine leafroll disease, were transmitted by the mealybug *Planococcus ficus* and the soft scale insect *Ceroplastes rusci* from infected to healthy vines under experimental conditions. The efficiencies of transmission of GLRaV-3 and GLRaV-5 by *P. ficus* were 23.3 and 8.3%, respectively, and by *C. rusci* were 3.3 and 1.7%, respectively. Juvenile instars of *P. ficus* were more efficient in transmission of the viruses than adult females. This is the first report of the ability of *C. rusci* to transmit these viruses to grapevines. [N. Mahfoudhi**,** Rue Hedi Karray, M**.** Digiaro and M.H. Dhouibi (Tunisia), Plant Disease, 93(10):999-1002, 2009].

Effect of Seminotherapy, Fungicide-Herbicide Mixture Foliar Treatment, and Cropping Density on Septoria Leaf Blotch and Durum Wheat Production. Septoria leaf blotch, caused by *Septoria tritici* (teleomorph: *Mycospharella graminicola*) is the most serious foliar fungal disease of durum wheat in Tunisia. This study evaluated the effects of three planting densities, seminotherapy and fungicide mixed with herbicide on Septoria leaf blotch severity in durum wheat. Experiments were conducted during 2003-2004 (year 1) and 2004-2005 (year 2) cropping seasons. Greater planting density appeared to induce a 40% increase of leaf blotch severity in durum wheat. Seminotherapy delayed the establishment of leaf blotch two to three weeks on seedlings. A spray mixture of fungicide and herbicide, applied at tillering growth stage controlled Septoria leaf blotch without a negative effect on herbicide efficiency. It caused 65 and 90% reduction of the severity attack during years 1 and 2, respectively. Seminotherapy alone is not effective to control leaf blotch attacks under a great pressure of the disease. This practice should be coupled with a fungicide-herbicide treatment to alleviate leaf blotch impact on durum wheat grain yield. [M.M. Fakhfakh, S. Rezgui, K. M'hedhbi, A.H. Yahyaoui and B. Nasraoui (Tunisia & Syria). Tunisian Journal of Plant Protection, 4: 41-55, 2009].

Incidence of *Heterodera avenae*, on Wheat, *Triticum durum*, Under Tunisian Field Conditions. The effect of initial densities of *Heterodera avenae* on the yield of wheat, *Triticum durum* cv. Karim, and on nematode population dynamics has been studied in six experimental field sites located in different bioclimatic zones, from arid to sub-humid. Increasing *H. avenae* densities significantly reduced the different yield components and grain yield loss varied from 26 to 96%. The relationship between nematode densities and wheat yield is according to Seinhorst models with damage threshold densities of the order of one egg or larval g soil. Nematode multiplication rates are negatively correlated with initial densities but they remained above unity in all of our trials. The *H. avenae* populations showed large differences in multiplication rates and densities in the soil, depending on the experimental site. These differences may result from agro-climatic characteristics of the regions and! or the action of biological antagonists. [N. Namouchi-Kachouri, S. Kallel and M.M. B'Chir (Tunisia and Sultanat Oman). Nematologia Mediterranea, 37:3-10, 2009]

YEMEN

The Traditional Methods of Integrated Pest Management: a Promising Strategy to reduce Population Density of Coffee Berry Moth, *Prophantis smaragdina* (Butler) (Pyralidae: Lepidoptera) in the Field. During 2004 season, in Medinat Ash–Sharq and Wadi Yaher, the Athab branches followed by smoking treatments reduced the population density of coffee berry moth in comparison to the control. Results have also showed that the Athab branches treatment was the most effective on reducing the % of fruits infestation (3.29% and 6% for Medinat Ash–Sharq and Wadi Yaher, respectively) compared to the other treatments of either smoking treatment or cleaning treatment. During 2005 season, in both Medinat Ash–Sharq and Wadi Yaher, the results showed that all traditional methods decreased the population density of coffee berry moth in comparison to the control. However the population density of coffee berry moth in the combination treatment (Athab + smoking + cleaning) continued to be low until the end of the season, compared to the control. Results have also showed that the combination treatment (Athab + smoking +cleaning) was the most effective on reducing the % of fruits infestation (4.71% and 5.79% for Medinat Ash – Sharq, and Wadi Yaher, respectively) in comparison to the combination of smoking and cleaning or the combination Athab and cleaning. The population density of coffee berry moth was higher during seasons 2004 and 2005, in Wadi Yaher than that found in Medinat Ash – Sharq. During this study the local parasitoid, Elasmus sp (Eulophidae: Hymenoptera) was recorded on coffee berry moth larva in Medinat Ash – Sharq during June, 2005 with parasitism rate 11.11%. [Hassan Soliman Mahdi, Amin Al Hakimi, Mohamed Mahyoub, Ahmed Sayef, Saeed Al Shargabi and Frederic Pelat (Yemen). Journal of King Abdulaziz University: Meteorology, Environment and Aid Land Agriculture Sciences, 19(1): 47-61, 2008].

❖ SOME PLANT PROTECTION ACTIVITIES OF FAO AND OTHER ORGANIZATIONS

DESERT LOCUST SITUATION

General Situation during December 2009 Forecast until mid-February 2010

The Desert Locust outbreak in western Mauritania came to an end in December and only small residual populations remain. Locusts concentrated in vegetation that remained green in northern Niger and formed small groups that were controlled by national ground teams. Local breeding occurred in one area of the central Sahara in Algeria and control was undertaken. In the winter breeding areas along both sides of the Red Sea, limited breeding was reported in Egypt and Eritrea while low numbers of adults were present in coastal areas of Sudan, Saudi Arabia, Yemen and northwest Somalia. During the forecast period, small-scale breeding will occur on both sides of the Red Sea, especially if more rains fall, while low numbers of adults are expected to persist in parts of Mauritania, Western Sahara, Mali, Niger, Algeria and Morocco. No significant developments are likely.

Western Region- Locust infestations continued to decline during December in Mauritania due to control operations and little rainfall. By mid-month, no further control operations were required and the outbreak that developed in late September had ended. Nevertheless, a few adults moved north into southern parts of Morocco, Western Sahara and western Algeria. Ground teams treated 15 ha in the central Sahara of Algeria where local breeding occurred. In Niger, ground teams treated 1,600 ha of late instar hoppers and immature adults that were forming small groups in vegetation that was drying out in Tamesna.

Similar infestations may be present in adjacent areas of Tamesna in eastern Mali but surveys are difficult due to insecurity. Some of the adults probably moved north into southern Algeria where they were seen during surveys. During the forecast period, low numbers of solitarious adults are likely to persist in the above countries. If temperatures remain warm, smallscale breeding could occur on a limited scale in areas where conditions stay favourable. During periods of warm southerly winds, scattered adults may move further north towards the central Sahara and the Atlas Mountains.

Central Region- Local breeding commenced during December in the winter breeding areas along the western side of the Red Sea on the coast of Egypt and Eritrea. Low numbers of mature adults were reported on the coastal plains in Sudan, Saudi Arabia and Yemen. Isolated adults were also present on the coast in northwest Somalia. During the forecast period, small-scale breeding will occur on both sides of the Red Sea and in northwestern Somalia if more rains fall but locust numbers are expected to remain below threatening levels in all countries. In Oman, good rains fell in the north that could lead to local breeding in some areas.

Eastern Region- No locusts were reported in the region during December. Light rains fell in the spring breeding areas of western Pakistan that may allow conditions to become favourable for small-scale breeding to commence by the end of the forecast period. Breeding could also commence in adjacent coastal areas of southeast Iran.

❖ SHORT PLANT PROTECTION NOTES

- A resistance gene introgressed from *Gossypium longicalyx* was mapped and the responsible allele *Ren*^{10n} is usable in breeding cotton for resistance to the reniform nematode report N. D. Dighe and associates at Texas A&M University, USDA-ARS in College Station and Monsanto, St. Louis. (Crop Sci. 49: 1151-1164, 2009)

- *Ageratum*, *Crotalaria*, and *Senecio* spp. produce nematicidal pyrrolizidine alkaloids usable for nematode management report T. C. Thoden and associates at Albert-Ludwigs-Universitat and Julius Ktihn-Institut, Germany. (Pest Management Science, 65:823830, 2009)

- Forty-eight of 103 cultivars of apple shoots inoculated with *Erwinia amylovora* were highly resistant to fire blight report A. Martinez-Bilbao and associates at Universidad Publico Navarra, NEIKER-Tecnalia, and Universidad Gerona, Spain. (HortScience, 44:1223-1227, 2009)

- Grapevine crown gall in Japan is caused by *Rhizobium radiobacter* report A. Kawaguchi and K. Inoue at Okayama Prefectural General Agriculture Center, Japan. (J. Gen. Plant Pathol., 75:205-212, 2009)

- Melon and watermelon seeds treated with acidic electrolyzed water for 30 minutes eradicated *Acidovorax avenae* without affecting germination or seedlings report J. Feng and associates at China Agricultural University, Beijing; California Seed and Plant Laboratory, Elverta; USDA-ARS, Fort Detrick. (Canadian Journal of Plant Pathology, 31:180-185, 2009)

- Mustard residues incorporated into soil decreased disease incidence from *Rhizoctonia solani* on sugar beet over 3 years compared with bare soil treatment, but the efficacy of growing mustard was variable report N. Motisi and associates at INRA and AgroParis Tech, France. (Field Crops Research, 113: 238-245, 2009)

- Of 274 Iranian landrace wheats tested for resistance to *Pratylenchus thornei*, 34 accessions were resistant, and 25 were more resistant than the best Australian cultivar, report J. G. Sheedy and J. P. Thompson at Leslie Research Center, Toowoomba, Australia. (Australian Plant Pathology, 38:478-489, 2009)

- Plots treated with 1,3-dichloropropene (gel cap and liquid formulations) to control soil-borne diseases and nematodes yielded significantly more than controls report Q. Wang and associates at Chinese Academy Agricultural Sciences and Institute for Control of Agrochemicals, Beijing, China. (J. Agric. Food Chern. DoI: 10.1021/jf901217)

- Snails (*Helix aspersa*) infested with *Phytophthora citrophora* were widely distributed in clementine tree canopies, and 10 days after distribution, symptoms appeared and the pathogen was isolated from trees report L. A. Alvarez and associates at the Universidad Politecnica de Valencia, Spain. (Plant Pathology, 58:956-963, 2009)

- Spot drip fumigation for nematode control in orchards can reduce atmospheric volatile organic compounds from fumigant pesticides 10-fold report D. Wang and associates at USDA-ARS, Parlier, California. (Environ. Sci. Technol. 43:5783-5789, 2009)

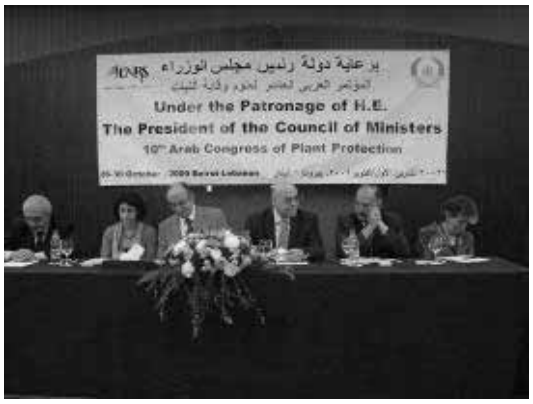
- The same mutant allele that confers resistance of pea to *Pea seed-borne mosaic virus* and the lupine strain of *Bean yellow mosaic virus* also confers resistance to *Clover yellow vein virus* report M. Andrade and associates at Hokkaido University, Japan. (Journal of General Plant Pathology, 75:241-249, 2009).

- To help breeders select the most durable resistance genes, a model predicting potential durability of resistance genes as a function of selective constraints applied on corresponding avirulence factors is proposed by B. Janzac and associates at INRA, Montfavet, France. (Molecular Plant Pathology, 10:599-610, 2009)

❖ ARAB SOCIETY FOR PLANT PROTECTION NEWS

10TH ARAB CONGRESS OF PLANT PROTECTION
26-30 OCTOBER 2009, BEIRUT, LEBANON

Under the patronage of H. E. the President of the Council of Ministers Mr. Fouad Sanioura, the Tenth Arab Congress of Plant protection was held at the Crowne Plaza Hotel in Beirut, Lebanon during the period 26-30 October, 2009. The Congress was organized by the Arab Society for Plant Protection in collaboration with the National Council for Scientific Research (CNRS), and was attended by 550 participants from Lebanon, Syria, Iraq, Jordan, Egypt, Libya, Tunisia, Algeria, Morocco, Sudan, Yemen, Oman, United Arab Emirates, Qatar, Italy, United Kingdom, USA, Greece, Turkey, Pakistan and Azerbaijan. The congress included four days of scientific presentations and one day of an agricultural and touristic trip to south Lebanon.



Opening Sessions

A. Opening Session

H. E. Mr. Khaled Kabbani opened the congress on behalf of H. E. the President of the Council of Ministers Mr. Fouad Sanioura. Other presentations during the opening session were made by Dr. Mouin Hamze, Secretary Genral of the National council for Scientific Research (CNRS), Dr. Wafa khoury, President of the Arab Society for Plant Protection, Dr. Maria Lodovica Gullino, President of the International Society of Plant Pathology and Dr. Khaled Makkouk, Secretary of the Congress Organizing Committee. A key note address was presented during the opening session by Dr. Mahmoud Solh, Director General of the International Center for Agricultural Research in the Dry areas (ICARDA) entitled "The Role of Plant Protection in Food Security in the Arab Countries".

B. Congress Symposia

The congress program included five symposia on different strategic topics as follows:

- **Symposium I**: New Developments in Pest Management
- **Symposium II**: Novel teaching and training methodologies in plant protection for professional practitioners and farmers
- **Symposium III:** Invasive Pest Species: Importance in the Arab Region and Risks Associated With Their Spread
- **Symposium IV**: Systems, standards and information sharing in Plant Protection:
- **Symposium V**: Biotechnology and Plant Protection

C. Oral Presentation Sessions

In addition to the symposia, the congress program included 280 oral presentations organized in 45 sessions covering a wide area of disciplines within plant protection, such as

biological control, natural enemies, integrated pest management, use of plant extracts for pest control, nematode pests, economic entomology, fungal diseases, bacterial diseases, viral diseases, weed control, chemical pesticides. Oral presentations were delivered in four concurrent sessions.

D. Poster Presentations sessions

320 posters were presented during the congress in two poster sessions, each lasted for two days. Posters covered all disciplines of plant protection as indicated in C above.

E. Round Table discussions

During the congress, three round table discussions were held, one on cereal rusts, the second on date palm pests and the third on the Arab society for Plant Protection Publications.

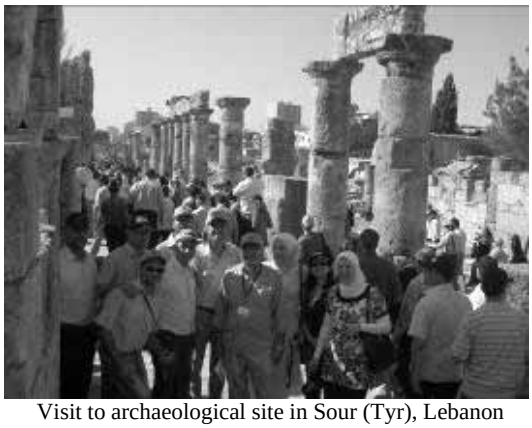
F. Business Sessions

Two business sessions were held during the congress. The general assembly for the Arab Society for plant Protection was held on Thursday afternoon (October 29, 2009) where reports from the society president and secretary- treasurer in addition to reports from chairpersons of different committees were presented. The ASPP general assembly also discussed future activities which ASPP will launch during the coming three years. Immediately after the ASPP general assembly, the Near East Weed Science Society (NEWS) held its general assembly and discussed business matters related to the society. There was an agreement that in the future, NEWS will always organize their scientific meetings as part of the Arab Congress of plant Protection congresses.

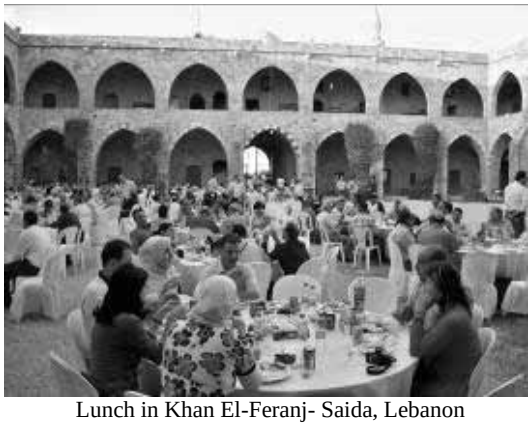
G. An Aricultural and Touristic Visit to the South of Lebanon

Around 400 congress participants joined the agricultural and touristic trip organized on Wednesday, October 28, 2009. The first stop was in Saida at the Hariri Foundation Experimental Farm, where participants visited the modern facilities for vegetables and banana production. The second stop was in Zahrani, where participants visited another Hariri Foundation Experimental Farm dealing with vegetables, fruit trees and ornamental nurseries. At this site, participants also visited citrus and avocado orchards. The third stop was at Nhouli and Solh citrus farm, a well managed citrus orchards which included all citrus varieties planted in Lebanon and employing drip irrigation and fertigation techniques. Following these agricultural visits the participants visited the archaeological sites of Tyr (Sour). Upon arrival to Tyr, the participants were received by the Mayor of Tyr who kindly accompanied the participants during their two hours visit to the city. The participants then traveled to Sidon (Saida) where they had lunch provided by the Hariri foundation at Khan El-Franj. After lunch the participants visited the old souk of Saida and then returned to Khan El-franj and were received by H. E. Mrs. Bahia El-Hariri, Minister of Education and Higher Learning, who welcomed the participants to Saida and had a warm dialogue with them which was very well received.

Visit to an experimental farm at Hariri Foundation, Saida



Visit to archaeological site in Sour (Tyr), Lebanon



Lunch in Khan El-Feranj- Saida, Lebanon

H. Farewell Dinner

On the evening of the last day of the congress, around 450 participants joined the farewell dinner hosted by MedBank at the Crowne Plaza Hotel. After the dinner, a short ceremony was led by Dr. Wafa Khoury, the ASPP president. She acknowledged all those who contributed to the success of the congress, and awards were given to the best graduate students who gave oral or poster presentations. In addition, the Awards Committee of the Arab Society of Plant Protection announced the Society rcognition of Drs. Walid Abu Gharbieh and Khaled Makkouk as “fellows” of the society based on their distinct service to ASPP and for their many scientific contributions

in plant protection. Dr. Khoury also announced the names of the elected members of the ASPP Executive Committee for the period 2010-2012.

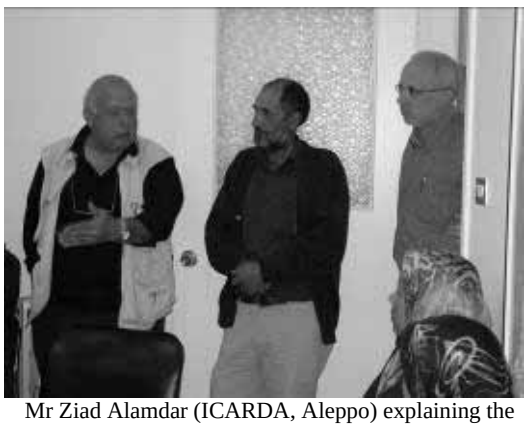
Farwell congress dinner

I. Next Congress

The Executive Committee of ASPP received an official invitation from Egypt to hold the 11th Arab Congress of Plant Protection in 2012 in Cairo, Egypt. The ASPP General Assembly unanimously voted to accept the invitation. An organizing committee for the 11th ACPP will be established soon.

A SIDE EVENT ON WHEAT RUSTS DURING THE 10TH ARAB CONGRESS OF PLANT PROTECTION SPONSORED BY FAO

During the 10th Arab Congress of Plant Protection held in Lebanon 26-30 October, 2009, ASPP held a side event in the form of a round table discussion on cereal rusts with emphasis on the Ug99, the highly virulent wheat stem rust race. This side event was sponsored by FAO and was jointly organized and executed by ASPP in close cooperation and participation of both ICARDA and FAO technical officers. The session was attended by around 30 participants from various countries, including Morocco, Algeria, Tunisia, Syria, Jordan, Lebanon Sudan, and Yemen.



Mr Ziad Alamdar (ICARDA, Aleppo) explaining the process of rust inoculation and resistance evaluation

The side event included introductory presentations by FAO and ICARDA staff on the threats posed by new emerging wheat rust races, the global international efforts to deal with these rusts, the international system for surveillance, pathogen monitoring and information sharing as well as the status of breeding for resistance to Ug99 resistant genetic material available for testing and release. The presentations and discussions provided some indications of the status of the preparedness of the Arab countries to prevent and manage such threats in a timely and effective fashion and the respective needs to face these threats in the future.

Dr Mohammad El-Khalifeh explaining the process and criteria of selection of breeding material in wheat

Ug99 already confirmed in Kenya, Uganda, Ethiopia, Yemen, Sudan, and Iran has not been reported in any new country. In Yemen however, higher levels of stem rust have been reported in the past year. Based on the discussions during the round table discussion, several factors seem to be limiting the ability of several Arab countries to respond quickly and effectively to the threats of evolving virulent races of wheat rust level such as Ug99. Among the most important constraints in this respect is the limited awareness level of policy makers as well as of researcher not directly working on the wheat rusts, on the risks associated with Ug99 and similar virulent races. There is also limited understanding of the importance national contingency planning and preparedness action plans to prevent and manage these threats. Other factors include the limited facilities and human capacity to undertake reliable race analysis nationally in most of the Arab countries - with few exceptions- as well as the limited availability of trained wheat breeders or the presence of a clear breeding and gene deployment strategy that will limit the risk of emergence of new rust races and their establishment in the country. Another factor limiting the Arab countries' preparedness capacity to face and manage the wheat rusts threats is the lack of effective cooperation and information sharing mechanism between stakeholders within each country and between countries in the region. These needs will have to be addressed both nationally and regionally with the support of regional and international organizations to reduce further threats to wheat productivity and food security in the Arab World. The areas of varietal

registration, rapid seed multiplication and distribution and disease management in the field were not discussed during the round table discussion, but remain to be also critical for the management of threats of wheat rusts in the region.

Participants examining the reaction of plants to rusts

A SIDE EVENT ON DATE PALM PESTS DURING THE 10TH ARAB CONGRESS OF PLANT PROTECTION

As part of the activities of the 10th Arab Congress of Plant Protection held in Beirut, Lebanon, 26-30 October, 2009, a round table discussion on date palm pests was organized. This activity was convened by Drs. Ibrahim Jboory and Emad El-Turaihi, and attended by around 60 participants.

The activity started by Dr. Ibrahim Jboory presenting a short introduction on date palm pests and their importance in the Arab region, followed by Dr. Hasanein Abdelrahim who gave a short talk on date palm weevil in Italy, followed by a short presentation on "El-Khamej" fungal disease of date palm in Saudi Arabia by Dr. Khaled Hudayb. The Chairman than gave five minutes to colleagues from different Arab countries to reflect briefly on the status of date palm pests in their respective countries, followed by a general discussion. The participants agreed on the following recommendations:

1. Allocate more time to date palm pests in future congresses, with special sessions dedicated to major pests.
2. Organize once every three years a special meeting on date palm pests independent from the regular congress of the Society.
3. Develop a consultancy group on date palm pests which includes specialists with known research experience to extend help to those who needs it either regionally or globally. Dr. Ibrahim Jboory volunteered to make the necessary arrangements to establish such group.
4. Participants suggested to make some changes in the outline of the book on date palm pests planned to be published by the Arab Society for Plant Protection and encourage more contributors in writing the different chapters of this book.
5. Implement strict internal and external quarantine regulations to prevent the spread of serious date palm pests into regions which are free from such pests at present.
6. Encourage scientists working on developing warning systems for early detection of serious pests such as the red date palm weevil and stem borers and apply research results conducted in the Arab region related to "temperature degree days" and "life tables" to develop better timing of control applications.
7. Because of the importance of date palm as a major component of food security in the region, the participants recommended that ASPP develop extension programs prepared by known experts which can be sold to the media and can also be used by extension workers.
8. One of the reasons for the low price of date palm products is their infestation with storage pests which also affect exportation. More attention is needed to control storage pests using different approaches other than chemical pesticides.
9. Participants expressed concern on the lack of progress in using biological control as the preferred method for controlling date palm pests mainly because of lack of collaboration and harmonization of research efforts among scientists in the region and globally. The participants stressed the need to discuss this issue in the next meeting and develop a large Arab project that can bring scientists and resources together and harmonize efforts to produce appropriate technology which can be adopted in the region.
10. Because of the importance of having a single device for piercing and injecting treatments in the date palm stem to control hidden pests, the participants proposed to develop such device in the near future and an award is given to the developer of the best device during the next ASPP congress in 2012.
11. Encourage research groups in the Arab region to rear and release parasitoids and predators of date palm pests, especially the egg parasitoid *Pseudoligosita* collected from Iraq, Oman and Yemen.

The participants hoped that further discussion on many other important issues can be carried out in the first future gathering of Arab scientists interested in date palm pests management.

❖ GENERAL NEWS

GLOBAL BT RESISTANCE ANALYZED

An international trio of experts systematically analyzed results from more than 40 studies, as conducted on five continents, that investigated insect reaction or resistance to *Bacillus thuringiensis* (*Bt*) transgenic crops and concluded that existing theories and strategies can be used effectively to predict, monitor, and manage insect resistance to *Bt* crops. Writing in the Journal of Economic Entomology (JEE), B.E. Tabashnick, *et al*, present insights gained from their analysis, information that in fact may help forestall the expansion of insect resistance and thus enhance the durability of transgenic insecticidal crops. The refuge strategy--that is, growing an area of a non-*Bt* crop near the main *Bt* crop--remains a valid procedure the authors advise and a useful means to increase potential for cross mating between resistant and non-resistant insects to produce non-resistant offspring thereby slowing evolution of insect resistance. In their paper, "Field-Evolved Insect Resistance to *Bt* Crops: Definition, Theory, and Data," in the December 2009 issue of JEE, 102(6), 2011-2025, (www.entsoc.org/btcrops.pdf) the researchers found that, after more than a decade of commercial introduction of *Bt* crops, most pest insect populations are still susceptible, though there have been instances of field-evolved resistance. The data analysis also indicated that crops incorporating (pyramiding) two or more *Bt* toxins are better able to limit insect resistance when grown independently from single *Bt* toxin crops. In effect considering 'to *Bt* or not to *Bt*, that is the question' (with profound apologies to W. Shakespeare --ed.) Dr. Tabashnik and colleagues answer that through systematic analysis of the extensive data acquired for this study, "we can learn what accelerates resistance and what delays it, knowledge that can more effectively predict and thwart pest resistance." The team recommends continued use of the long-standing definition of 'resistance,' and encourages "discussions about which regulatory actions, if any, should be triggered by specific data on the magnitude, distribution, and impact of field-evolved resistance." [B.E. Tabashnik, Head, Dept. of Entomology, Univ. of Arizona, Forbes 410A, PO Box 2100, Tucson, AZ 85721-0036, USA. Voice: 1-520-621-1141; Email: BruceT@ag.arizona.edu].

FUNGAL BIOCONTROL FOR ASCOCHYTA BLIGHT

Ascochyta blight, caused by the fungus *Ascochyta rabiei*, is one of the most devastating diseases of chickpea. The fungus attacks all above-ground parts of the host. During the winter, *A. rabiei* survives on chickpea stubble and forms sexual spores, called ascospores, which can infect plantings of the crop in the spring. Symptoms include necrotic spots in leaves, leading to severe defoliation, stems and pods. Severe outbreaks, fueled by cool, wet conditions, can wipe out the entire crop. Now researchers from the U.S. Department of Agriculture's Agricultural Research Service (ARS) have identified another fungus that could be used to control *A. rabiei*. Frank Dugan and colleagues isolated *Aureobasidium pullulans* strains that inhibit *A. rabiei's* ability to form or release ascospores, thereby curbing its infection of chickpea seedlings. ARS noted that although there exist other ways to control the blight, such as treating chickpea seeds with fungicides, planting resistant varieties, plowing crop fields before planting time, and rotating chickpeas with non-host crops, biocontrol is worth exploring for its potential to provide chickpea growers with greater flexibility in how they manage the disease. Field trials showed that treating chickpea stubbles with *A. pullulans* spores reduced Ascochyta blight by 38 percent. The ARS scientists expect that this can be improved using adjuvants and other standard ingredients often used in biocontrol formulations. Read the original story at http://www.ars.usda.gov/is/pr/2009/091204.htm

❖ EVENTS OF INTEREST

2010

*** 5-7 January**

International Advances in Pesticide Application, Cambridge, UK. See: http://www.aab.org.uk

*** February, 23-25**

National Conference on Innovations in Nematological Research for Agricultural Sustainability, "Challenges and a Roadmap Ahead, "Coimbatore,, India. Website: www.nemaindia.com

*** 23 February - 3 March**

Global Biosecurity 2010, Safeguarding Agriculture and the Environment, Brisbane Convention Center, Queensland, Australia.
See: www.globalbiosecurity2010.com.

*** 1-3 March**

IOBC/WPRS Working Group on "Integrated Control in Citrus Fruit Crops", Agadir, Morocco

*** 4-5 March**

National Workshop on Paradigm Shifts in Research on Crop Resistance to Pests, Tamil Nadu, India. Contact: V. Selvanarayanan, Faculty of Agriculture, Annamalai University, 608002, Tamil Nadu, India, email: crpworkshop.au@gmail.com; Fax: 91-4144–238080.

*** 7-12 March**

Phytophthora Diseases in Forest Trees and Natural Ecosystems – 5th Meeting of the IUFRO Working Group, Rotorua, New Zealand.
Email: pam.taylor@scionresearch.com

*** 18-20 March**

Virocon 2010, XIX National Conference, "Recent Trends in Viral Diseases Problem and Management". Indian Virological Society (IVS), Silver Jubilee Year. Contact address: Prof. D.V.R. Sai Gopal, Chairman of Organizing

Committee, VIROCON-2010, Department of Virology, Sri Venkateswara University, TIRUPATI-517 502, A.P, India, Email: dvrsaigopal@gmail.com.

*** 26-30 April**

IFLRC V & ECGL VII, Legumes for Global Health: Legume Crops and Products for Food, Feed and Environmental Benefits, Antalya, Turkey, See web: http://www.iflrc-ecgl.org

*** 13-14 May**

SE-USA Ornamental Entomology Workshop, Apopka, FL. USA. Contact: S. Arthurs, MREC, 2725 Binion Rd, Apopka, FL 32703, USA. Voice: 1-407-884-2034, Fax: 407-814-6186, Email: SPA@ufl.edu.

*** 25-27 May**

Climate Change and the Implications for Plant Protection Symposium, at the University of Guelph, Guelph, Ontario, Canada.
See: http://www.cropprotection.open.uoguelph.ca

*** 30 May-4 June**

XV International Botrytis Symposium, Cadiz, Spain. See: www.xvbotrytiscadiz10.com

*** 7-11 June**

12th International Conference on Plant Pathogenic Bacteria, Ile de La Reunion, France.
See: http://www.icppb2010.org/

*** 20-24 June**

11th International Plant Virus Epidemiology Symposium & 3rd Workshop of the Plant Virus Ecology Network, which will be in held in Cornell University, Ithaca, New York, USA, http://www.isppweb.org/ICPVE/

*** 20-25 June**

13th Congress of the Mediterranean Pytopathological Union, Rome, Italy**.** See: www.mpunion.com. Contact: laura.mugnai@unifi.it or mpucongress.2010@entecra.it

*** 20-24 June**

International Plant Virus Epidemiology Symposium, Cornell, New York, USA.
See: http://www.isppweb.org/ICPVE/; Contact: Professor Alberto Fereres, Email: afereres@ccma.csic.es

*** 29 June – 1 July**

IOBC Workshop on Landscape Management for **Functional Biodiversity**, Cambridge, UK. Info: J. Holland, Game & Wildlife Conservation Trust, Fordingbridge, Hampshire SP6 1EF, UK. JHolland@gwct.org.uk; Fax: 44-1425-651026. Voice: 44-1425-651035.
Www.iobc-wprs.org/events/index.html

*** 4-8 July**

12th IUPAC International Congress of Pesticide Chemistry, Melbourne, Australia.
See: http://www.iupacicpc2010.org/

*** 11-15 July**

10th International Colloquium on Invertebrate Pathology and Microbial Control and 43rd Annual Meeting, Society for Invertebrate Pathology, Trabzon, Turkey. Info: www.sip2010.org

*** 21-23 July**

NETS2010, New Zealand Biosecurity Institute Annual Conference, Blenheim, New Zealand. Info: C. Lewis, CL.sb@xtra.co.nz

*** 25-30 July**

3rd International Symposium on Tomato Diseases, Ischia, Naples, Italy. See: http://www.3istd.com/

*** 7-11 August**

APS Annual Meeting 2010 at Opryland, Nashville, Tennessee, USA. See: http://www.apsnet.org

*** 1-6 August**

9th International Mycological Congress (IMC9) "The Biology of Fungi", Edinburgh, Scotland, UK.
See: http://www.imc9.info/

*** 2-6 August**

2nd International Workshop, Invasive Plants in the Mediterranean Type Regions of the World, Trabzon, Turkey. Info S. Brunel, Brunel@eppo.fr, Http://tinyurl.com/yjxz6hp

*** 9-11 August**

6th Australasian Soil-borne Diseases Symposium, Twin Waters, Sunshine Coast, Queensland, Australia. See: http://www.asds6.org/

*** 22-27 August**

XXVIII International Horticultural Congress (IHC2010), Lisbon, Portugal.
Contact: info@ihc2010.org; See: http://www.ihc2010.org

*** 23 August**

One-day Seminar: 2010 - The challenge of emerging fruit tree and pathogens in the Mediterranean free-trade area. **22-27 August, 2010, 28th International Horticultural Congress**, Lisbon, Portugal**.** Contact the convener: Anna Maria D'Onghia, CIHEAM/Mediterranean Agronomic Institute, Bari, Italy, e-mail: donghia@iamb.it, or Secretariat: IHC Lisboa 2010 - Instituto Superior de Agronomia, Tapada da Ajuda, 1349-017 Lisboa, Portugal. Tel. +351 961 068 237 +351 961 068 237 Email: info@ihc2010.org, for more information you can visit the Visit website www.ihc2010.org

*** 25-31 August**

10th International Congress of Plant Pathology 2013 (ICPP2013) "Bio-security, Food Safety and Plant Pathology: The Role of Plant Pathology in a Globalized Economy" in Beijing, China. http://www.isppweb.org/congress.asp

*** 31 August - 3 September**

8th International Conference on *Pseudomonas syringae* and Related Pathogens, Oxford, UK.
See: www.reading.ac.uk/Psyringae2010
Contact: syringae2010@plants.ox.ac.uk

*** 5-7 September**

International Advances in Plant Virology, Arnhem, the Netherlands. See: www.aab.org.uk/contentok.php?id=98&basket=wwsshowconfdets

*** 7-10 September**

6th European Conference "Pesticides And Related Organic Micropollutants in the Environment" and 12th Symposium on Chemistry and Fate of Modern Pesticides, Matera, Italy. Contact: Secretariat of the Conference, Fax: +39 0971 206226; Email: info@pesticides2010.org
Website: www.pesticides2010.org

*** 12-17 September**

IOBC/WRS Working Group Integrated Protection of Fruit Crops, Tremiti Islands, ITALY. Info: C. Ioriatti, Istituto Agrario San Michele all'Adige, Plant Protection Dept., Via Edmondo Mach, 2, I-38010 S. Michele all'Adige (TN), Italy. Fax: 39-0461-615 500. Voice: 39-0461-615 514. Claudio.Ioriatti@iasma.it

*** 14-15 September**

3rd Symposium on Potato Cyst Nematodes, Newport, UK. See: http://www.aab.org.uk

*** 3-7 October**

A Conference on Biological Control for Nature is being held in Northampton Massachusetts, USA. Information on the conference can be found at: http://biocontrolfornature.ucr.edu/

*** 10-12 October**

1st Scientific Conference of Libyan Society of Plant Protection Scineses, University of Omar Almokhtar, Al-Baida, Libya. Email: lsppsconferencel@gmail.com

*** 1-3 November**

British Crop Protection Council Congress 2010, ExCeL London, UK. See: http://www.bcpccongress.com

*** 1-5 November**

8th International Workshop on Biological Control and Management of *Chromolaena odorata* and other Eupatorieae; and 1st IOBC International Workshop on Management of *Parthenium hysterophorus*, Nairobi, KENYA. Info: C. Zachariades, ARC-PPRI, Private Bag X6006, Hilton, 3245, SOUTH AFRICA. Fax: 27-33-355-9423; Email: ZachariadesC@arc.agric.za

*** 15-18 November**

9th Conference of the European Foundation for Plant Pathology & the 6th Congress of the Sociedade Portuguesa de Fitopatologia, Évora, Portugal. See: http://www.efpp10.uevora.pt/

*** 14 December**

Advances in Nematology, London, UK. See: http://www.aab.org.uk

2011

*** 4-7 April**

3rd Arab Conference for Applied Biological Control in the Arab Countries, Cairo, Egypt. Registration form available on the following website: //www.esbcp.org/. For more information please contact Dr. Yahia Husien Fayad, e-mail: esbcp3rd2001@gmail.com

❖ PUBLICATIONS

❖ Selected Research Papers أوراق علمية مختارة

Entomology and Acarology الحشرات والعناكب

Biological activity of some nonconventional insecticides against cotton leafworm, *Spodoptera littoralis*. 2009. Mohsen Mohamed Ali (Egypt). Egyptian Journal of Agricultural Research, 87(1):37.

Ecological studies on the white peach scale insect *Pseudaulacaspis peniagona* (Targion-Tozzetti) (Hemiptera: diaspididae). 2009. Mohamed, G.H., Zinat K. Mohammad and Fatma Abd-Elhalim Moharum (Egypt). Egyptian Journal of Agricultural Research, 87 (1): 85.

Investigations on economic injury level and relationship between trap catch and crop loss in mandarin orchards by infestation of the Mediterranean fruit-fly *Ceratitiscaptata* (Wied.) (Diptera: Tephritidae) in Egypt. 2009. Aida M. El-Hakim T.S. El-Abbassi and A.M.Z. Mosallam (Egypt). Egyptian Journal of Agricultural Research, 87(1): 137.

Matting and prey stage affecting life history, reproduction and life table of the predacious mite *Phytoseiulus macropilis* (Banks) (Acari: Phytoseiidae). 2009. Amira Abdel Khalk and Faten Momen (Egypt). Archives of Phytopathology and Plant Protection, 42(8): 751-765.

Mites (Acari) of sycamore trees in Egypt. 2009. E.M.A. Yassin, Saiwa M.E. Shalla and M.A. Mahmoud (Egypt). Egyptian Journal of Agricultural Research, 87(1): 125.

Prey preference of *Orius niger* (Wolf.) and *O. minutus* (L.) from *Thrips tabaci* (Lind.) and *Tetranychus urticae* (Koch.). 2009. S.A.A. Fathi and G. Nouri-Ganbalani (Iran). Journal of Entomology, 6(1): 42-48.

Diseases أمراض

Bacterial البكتيريا

Field evaluation of bacterial symbionts of entomopathogenic nematodes for suppression of hairy rose beetle, *Tropinota squalida* Scop., (Coleoptera: Scarabaeidae) population on cauliflower in Egypt. 2010. A.S. Abdel-Razek (Egypt). Archives of Phytopathology and Plant Protection, 43(1):18-25.

First report of bacterial stalk and head rot disease caused by *Pectobacterium atrosepticum* on sunflower in Turkey. 2009. **K. K. Baştaş**, **H. Hekimhan**, Bahri Dağdaş **S. Maden**, and **M. Tör** (Turkey). Plant Disease, 93(12): 1352.

Identification of rice blast disease-suppressing bacterial strains from the rhizosphere of rice grown in Pakistan. 2009. Zakira Naureen, Adam H. Price, Fauzia Y. Hafeez, Michael R. Robert (Pakistan). Crop Protection, 28(2): 1052-1060.

Population genetic structure of *Sclerotinia sclerotiorum* on canola in Iran. 2009. Roghayeh Hemmati, Mohammad Javan-Nikkhah and Celeste C. Linde (Iran & Australia). European Journal of Plant Pathology, 125(4):617-628.

Viruses فيروسات

Biological and molecular characterization of the *Cucurbit aphid-borne yellows virus* Affecting Cucurbits in Tunisia. 2009. **M. Mnari-Hattab**, **N. Gauthier**, and **A. Zouba** (Tunisia). Plant Disease, 93(10):1065-1072.

Characterization of phytoplasmas associated with almond diseases in Iran. 2009. L. Zirak, M. Bahar and A. Ahoonmanesh (Iran), Journal of Phytopathology, 157: 736–741, 2009].

Contribution of host plant resistance and geographic distance to the structure of *Potato virus Y* (PVY) populations in pepper in northern Tunisia. 2009. M. Ben Khalifa, V. Simon, M. Marrakchi, H. Fakhfakh and B. Moury (Tunisia & France). Plant Pathology, 58(4):763-772.

Incidence and molecular analysis of *Potato leafroll virus* in Iran. 2009. Najmeh Pooramini, Jahangir Heydarnejad and Hossian Massumi (Iran). Journal of Phytopathology, 158(2):105 – 110**.**

Fungi الفطور

Biology of *Phomopsis cinerascens*, the cause of fig canker in Iran. 2009. Z. Banihashemi, A. R. Javadi (Iran). Phytopathologia Mediterranea, 48(3): 454-460.

Characterization of phytoplasmas associated with almond diseases in Iran. 2009. L. Zirak, M. Bahar and A. Ahoonmanesh (Iran). Journal of Phytopathology 157(11-12):736–741.

Chemical analysis of mucus from certain land snails under Egyptian conditions. 2009. **A.A.A.** Sallam, S.A. El-Massry and I.N. Nasr (Egypt). Archives of Phytopathology and Plant Protection, 42(9): 874-881.

Controlling grey and blue mould disease of apple fruits using acetic acid yapours. 2009. Yehia Omar Fotouh (Egypt). Archives of Phytopathology and Plant Protection, 42(8):777-782.

Effects of different abiotic agents on *Fusarium roseum* var. *sambucinum*, the causal agent of dry rot of potato tubers. 2009. B. Mejdoub-Trabelsi and M. Chérif (Tunisia). Tunisian Journal of Plant Protection, 4:1-14.

Effects of neem and diatomaceous earth against *Myzus persicae* and associated predators in addition to indirect effects on artichoke growth and yield parameters. 2009. Nabil E. El-Wakeil and Said A. Saleh (Egypt). Archives of Phytopathology and Plant Protection,42(12):1132 -1143.

Efficiency of different application methods of biocontrol agents and biocides in control of Fusarium Root Rot on some Citrus Rootstocks. 2009. Riad Sedki Riad El-Mohamedy (Egypt). Archives of Phytopathology and Plant Protection, 42(9) 819-828.

Evaluation of combining ability of some agronomic traits and susceptibility to fusarium wilt in watermelon hybrids. 2009. W.I.A. Shaban and M.M.M. Abdelssalam (Egypt). Tunisian Journal of Plant Protection 4: 15-28.

Evaluation of resistance of selected sesame (*Sesamum indicum*) genotypes to fusarium wilt disease caused by *Fusarium oxysporum* f. sp. *sesami*. 2009. M.A.S.A. El-Bramawy and O.A. Abd Al-Wahid (Egypt). Tunisian Journal of Plant Protection 4: 29-39.

Evaluation of the nematicidal activity of *Haplophylum tuberculatum* on *Meloidogyne javanica*. 2009. S. Kallel and M.Z. Ben Ouadday (Tunisia), Nematologia mediterranea. 37:45-52.

First report of *Botrytis cinerea* causing gray mold of pomegranate (*Punica granatum*) in Greece. 2009. **G.A. Bardas, G.D. Tzelepis, L. Lotos** and **G.S. Karaoglanidis (**Greece**)**. Plant disease, 93(12):1346.

First Report of *Pyrenophora seminiperda* in Turkey and Greece. 2009. **T.E. Stewart** and **P.S. Allen** and **S.E. Meyer** (Turkey and Greece). Plant disease, 93(12):1351.

Fungi pathogenic on wild radish *(Raphanus raphanisfrum* L.) in northern Tunisia as potential biocontrol agents. 2009. Nacer Djebali, John K. Scott, Mireille Jourdan and Yhouraya Souissi (Tunisia). *Phytopatholgia Mediterranea*. 48: 205-213.

Genetic and phenotypic diversity among *Botrytis cinerea* isolates in Iran. 2009. Soheila Mirzaei, Ebrahim Mohammadi Goltapeh, Masoud Shams-Bakhsh, Naser Safaie and Mehrdad Chaichi (Iran). Journal of Phytopathology, 157: 474–482.

Genetic diversity of Iranian AG1-IA isolates of *Rhizoctonia solani*, the cause of rice sheath blight, using morphological and molecular markers. 2009. Mahdiyeh Khodayari, Naser Safaie and Masoud Shamsbakhsh (Iran). Journal of Phytopathology, 157: 708–714.

Impression of natcom oil and *Adhatoda vasica* nees extracts on hatchability *of Spodoptera littoralis* (Boisd) eggs under laboratory conditions. 2009. Amany S. El-Hefny, H.A. Saleh and Sh.S. Yacoub (Egypt). Egyptian Journal of Agricultural Research, 87 (1):101.

In vitro selection of resistant rice plants against rice blast caused by Pyricularia oryzae via tissue culture technique. 2009. A.A. El-Kazzaz,M.S. Hanafy and M.M. Abdel-Kader (Egypt). Archives of Phytopathology and Plant Protection, 42(9): 847-856.

Laboratory evaluation of three bioagent against the Egyptian subterranean termite *Psammotermes hypostoma* (Desn.). 2009. S.A. El-Dossoki, S. M. El-Awady, Y. El-Sebay and A.R. El-Bassiouny (Egypt). Egyptian Journal of Agricultural Research, 87 (1).

Maturation of pseudothecia and discharge of ascospores of *Leptosphaeria maculans* on oilseed rape stubble. 2009. B. Naseri, J. A. Davidson and E. S. Scott (Iran). European Journal of Plant Pathology, 125:523–531.

***Sclerotium hydrophilum* newly reported on rice in Turkey.** 2009. E. Demirci, I. Erper and C. Eken (Turkey), Plant Pathology, 58: 1176.

Tomato varietal response to *Alternaria solani* and *Fusarium solani* infection. 2009. I.A. El-Samra, M.A. Amer, M.R. Abd El-Hamid, M. El-Saadani, S.S. Kabeil, A.M. El-Alwany and Y.A. Tayeb (Egypt). World Journal of Agricultural Sciences, 5(6): 737-745.

Nematodes النيماتودا

Growth and physiological responses of okra (*Abelmoschus esculentus* (L) Moench) to simulated acid and root-knot nematode (*Meloidogyne Incognita*). 2009. S.S. Shaukat and M.A. Khan (Pakistan). Nematologia Mediterranea, 37:17-23.

Identification and characterization of hydrolytic enzymes from the midgut of sunn pest of wheat (*Eurygaster integriceps*). 2009. E. Özgür, M. Yücel and H.A. Öktem (Turkey). International Journal of Pest Management, 55(4):359–364.

Induced systemic resistance in mung bean plant against root-knot nematode *Meloidogyne javanica* by DL-β-amino butyric Acid. 2009. N. Ahmed, M.W. Abbasi, S.S. Shaukat and M.J. Zaki (Pakistan). Nematologia Mediterranea, 37: 67-72.

Molecular and conventional identification and pathogenicity of *Rhizoctonia solani* isolates from tobacco (*Nicotiana tabacum* L.) in Samsun, Turkey. Tolga Gurkanli, Ibrahim Ozkoc and Islam Gunduz (Turkey). Journal of Phytopathology, 157(11-12):686–696.

Physiological changes in leaves of mungbean plants infected with *Meloidogyne javanica*. 2009. Naeem Ahmed, M. Waseem Abbasi, S. Shahid Shaukat and M. Javed Zaki (Pakisatn). Phytopathologia Mediterranea, 48(2): 262-268.

Physiological effects of gibberellic acid on the reproductive potential of *Locusta migratoria migratoria*. 2009. K. Abdellaoui, M. Ben Halima-Kamel and M.H. Ben Hamouda (Tunisia). Tunisian Journal of Plant Protection, 4: 67-75.

The antifeeding and repellent properties of gibberellic acid against asiatic migratory Locust *Locusta migratoria*

***migratoria*.** 2009. K. Abdellaoui, M. Ben Halima-Kamel, and M.H. Ben Hamouda (Tunisia). Tunisian Journal of Plant Protection, 4: 57-66.

Control مكافحة

Discrimination among aphid parasitoids through characteristics of their mummies. 2009. A.H. El-Heneidy and D. Adly (Egypt). Egyptian Journal for Biological Control of Pests, 19(1): 37-40.

Ecological and biological studies on some parasitoid species associated with *Scolytus amygdali* Guer. (Coleoptera: Scolytidae) in Fayoum governorate, Egypt. 2009. Nadia A. Abd El-Latif, R.H.A. Solaiman and A.A. Abd El-Gayed (Egypt). Egyptian Journal for Biological Control of Pests, 19 (1): 1-4.

Effect of neem Azal T/S on some biological aspects of *Chrysoperla carnea* Steph. and *Coccinella undecimpunctata* L. and their protein contents. 2009. Fatma A. Atalla, Mona A. Shoeb and I. M. Kelany (Egypt). Egyptian Journal for Biological Control of Pests, 19 (1): 17-24

Increasing the efficacy of *Metarhizium anisopliae* var. *acridum* (Metchnikoff) soroken and *Beauveria bassiana* (Bals.) Vuill. using certain essential oils against desert locust and grasshoppers. 2009. Gehan A. Mohamed (Egypt). Egyptian Journal for Biological Control of Pests, 19(1): 67-72.

Interaction between the entomopathogenic fungus, *Beauveria bassiana* and some insecticides against the whitefly, *Bemisia tabaci* (Genn.) (Homoptera: Aleyrodidae). 2009. A.A. Ibrahim, H.H. Shalaby and H.M. El-Saadany (Egypt). Egyptian Journal for Biological Control of Pests, 19(1): 41-48.

Joint action of reduced-risk insecticides spinetoran with chlorofluazuron or fenpropathrin against cotton leafworm, *Spodoptera littoralis* (Boisd.) (Lepidoptera: Noctuidae). 2009. Hanan F. Abdel-Hafez and E.M. Mohamed (Egypt). 2009. Egyptian Journal for Biological Control of Pests, 19(1): 25-30

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