# ARAB AND NEAR EAST
# PLANT PROTECTION NEWSLETTER




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

# EDITORIAL

## CROP HEALTH MANAGEMENT AND FOOD SAFETY

In the Arab countries as well as in the rest of the world, consumers have become increasingly concerned about the safety and quality of the food they eat. These concerns, combined with increased environmental awareness, have led to a need for sustainable agricultural production systems based on good agricultural practices and consequently crop health management have become an essential component of sustainable agriculture. Crop health management is an ecological approach to crop production and protection that combines different management strategies and practices to grow healthy crops and minimize the use of pesticides. It is a broad concept that also includes nutrient and water management with an increased attention for food safety.

The Arab Society for Plant Protection (ASPP) organized on May 11-12, 2010 a workshop on "crop health management and food safety" in collaboration with the Ministry of Agriculture and the Lebanese National Council for Scientific Research in Lebanon. The workshop was held at a time when the Lebanese public, through several incidents raised by the press, is very much worried about the publicized news concerning serious contamination of several food products with harmful chemical pollutants. In order to deal in depth such complicated issue, it was essential to shed light on all the agricultural practices that can influence positively or negatively chances of food products contamination with harmful pollutants. The workshop presentations covered food safety issues from different angles and permitted the participants at the end of the second day to arrive to a set of doable recommendations.

Several ASPP members from Egypt, Jordan, Syria and Lebanon in addition to experts from FAO that have a wide experience in the themes of the workshop contributed to this effort. The workshop participants were able to develop by the end of the meeting general guidelines that will help Lebanon to develop a national food safety policy (see detailed recommendations in this issue). Since food safety issues are of serious concern in all Arab countries, this activity can be repeated in other locations within the Arab World which permits further discussion on this topic and will enrich and accelerate the debate and adoption of food safety laws across the region.

*Editorial Board*

## DISEASE AND PEST OUTBREAKS

### EGYPT

**First Record of Dill Powdery Mildew Caused by *Erysiphe heraclei* DC in Egypt.** In Egypt, powdery mildew was observed for the first time on dill plants, during annual disease surveys of March-May 2003 and 2005. Typical symptoms of powdery mildew of dill plant (*Anethum graveolens* L.) were observed in Gharbeia Governorate. Symptoms of powdery mildew became common on leaves, stems inflorescences and fruits as white irregular areas. These symptoms appeared at vegetative and early flowering stages then gradually increased through fruiting and pre-maturity stages. Samples of infected leaflets, stem, inflorescences and fruits were collected for examination by light and scanning electron microscope (SEM). Microscopic examination revealed that conidiophores were short, erect-69, 6-10 µm in dimension, conidia were observed without conspicuous fibrosin bodies singly, elliposid to ovoid 25-33, 10-16 µm in dimension, and the length to width ratio of conidia ranged from 1.7 to 2.0 and were produced singly. Cylindrical foot cells (22.0, 8.0 µm) were followed by one or two shorter cells (12.5 × 7.5 µm). In spring, the sexual stage (cleistothecia) appeared on infected leaves and stems in spherical, gregarious measures 105-117 (111) × 100- 87.5 µm in diameter. Each cleistothecium contained (2-4) round to ovoid asci, 45-55 (50) × 45-25 (35) µm in dimension. The ascus contained (3-4) ellipsoid to ovoid ascospores, 20-17.5, 15-10 (13.2) µm. Cleistothecia appendages are simple myceloid branched tips measuring 80-200 (140) µm in length and 3-5 (4) µm in diameter. Based on the observations of the morphology of its anamorph and teleomorph stages, the causal agent of dill powdery mildew was identified as *Erysiphe heraclei* which is reported for the first time in Egypt. [El-Sayed Hussein El-Sayed Ziedan (Egypt). *Archives of Phytopathology and Plant Protection*, 43: 728-735, 2010].

**First Report of *Rhizoctonia solani* AG-7 on Cotton in Egypt.** Eighty-two isolates of *Rhizoctonia solani* were recorded from roots of naturally-infected seedlings of the Egyptian cotton (*Gossypium barbadense* L.). Anastomosis groups (AGs) of the isolates were determined by using 13 different AGs testers. Three (3.7%) of the isolates were identified as *R. solani* AG7, while the remaining isolates were belonging to the AG 2-1, AG4 and AG5. The identification of the three isolates was based on the frequency of the C2 reaction with the AG7 tester isolate. No fusion was observed between AG7 and isolates representing the other 13 AGs. Colonies of AG7 isolates grown on potato dextrose agar (PDA), malt yeast agar (MYA) and malt peptone agar (MPA) were brown to dark brown with aerial mycelium and sclerotia. The isolates had pitted sclerotial clusters and brownish exudates after 21 days of culturing on PDA, but without clear zonation. Pathogenicity test under greenhouse conditions revealed that AG7 caused the common symptoms of damping–off, which included seed rot, lesions on the hypocotyls and root rot. [Kamel A. Abd-Elsalam, Moawad R. Omar and Aly A. Aly (Egypt). *Journal of Phytopathology*, 158: 307-309, 2010].

### IRAN

**Incidence and Molecular Analysis of *Potato leafroll virus* in Iran.** *Potato leafroll virus* (PLRV) is one of the most prevalent potato viruses in Iran. This report describes the distribution of PLRV in four Provinces from south-eastern, southern, north-eastern and north-western Iran and phylogenic relationships of Iranian PLRV to other previously reported PLRV isolates. PLRV was detected in *c*.15% (126 of 836) of symptomatic potato samples (showing yellowing and leaf roll) by double antibody sandwich enzyme-linked immunosorbent assay. The coat protein (CP) gene of four isolates was amplified by reverse transcription-polymerase chain reaction using specific primers. The nucleotide sequence showed a high degree of sequence identities between all PLRV isolates. Three of the four Iranian isolates were 100% identical at the amino acid level (for the domain sequenced), but the fourth isolate differed by one amino acid. [Najmeh Pooramini, Jahangir Heydarnejad and Hossian Massumi (Iran). *Journal of Phytopathology*, 158: 182-185, 2010].

**Introducing *Bacillus licheniformis* as the Causal Agent of Pistachio Dieback in Iran.** During 2004 and 2006 growing seasons some pistachio trees in Kerman province of Iran showed dieback symptoms. Initial symptoms were observed at the beginning of the growing season and they developed during two weeks after green tip stage, as shoot tips turned black and dieback occurred. During the growing season, the symptoms developed and vessel destruction was observed. If these stems were not pruned during winter, dieback developed in the spring. During the growing season affected pistachio samples were collected and surface disinfected with 0.01% mercury chloride. Pieces of affected vessels were grown on nutrient agar (NA) and incubated at 25°C for three-to-four days. Bacterial colonies with Bacillus characteristics were isolated and 15 representative strains were selected for further characterisation. The pathogenicity of selected strains was verified on 2-3 year-old pistachio seedlings using injection of bacterial suspension ($10^7$ cfu p/ml) and control plants inoculated with distilled water; vessel destruction developed after 20 days, and bacterial causal agent was isolated from seedlings. No symptoms were observed in control plants. The strains were Gram positive, motile, with central spores and caused a hypersensitivity reaction (HR) on tobacco and geranium; they were positive for anaerobic growth, nitrate reduction, utilisation of citrate, VP test, urease, catalase, growth at pH 5.7, 7% NaCl and 45°C, acid production from arabinose, xylose, glucose and mannitol, and anaerobic fermentation of glucose. They could hydrolyze starch, aesculin, Tween

80 and gelatin but indole production was negative. Based on the characteristics of the isolated strains, they were identified as *Bacillus licheniformis*. This is the first report of *Bacillus licheniformis* as a causal agent of pistachio dieback. [Gholam Reza Baradaran and Abolghasem Ghasemi (Iran). *Archives of Phytopathology and Plant Protection*, 43: 597-601, 2010].

**First Report of Citrus viroid V in Moro Blood Sweet Orange in Iran.** Citrus viroid V (CVd-V, genus Apscaviroid, family Pospiviroidae) was initially identified in Spain and later found to be present in the United States, Nepal, and the Sultanate of Oman. Like other members of this genus, CVd-V has a restricted host range but it is able to infect a wide range of citrus and citrus related species. Within the framework of a comprehensive survey of the sanitary status of the citrus industry in Iran, a sample from a private orchard of symptomless Moro blood sweet orange (*Citrus sinensis*) trees grafted on Mexican lime (*C. aurantifolia*) located at Javanan in the southern inland region was found to be infected with CVd-V. Briefly, RNAs of nucleic acid preparations from bark tissues were separated by 5% polyacrylamide gel electrophoresis (PAGE), electrotransferred to positively charged nylon membranes, immobilized by UV cross-linking, and hybridized with a full length CVd-V specific digoxigenin (DIG)-labeled DNA probe. A positive identification of CVd-V was made in these extracts. This positive detection of CVd-V was confirmed by reverse transcription-PCR using CVd-V specific primers. Analysis of the sequence of the 293-bp amplicon (Genbank accession no. GQ466068) revealed 99% identity with the reference sequence (Genbank accession no. NC010165) of CVd-V. Among the viroids that have been found naturally infecting citrus, the members of the genus *Apscaviroid* are not associated with specific diseases but they cause a reduction of tree size and fruit harvest, an effect that is enhanced when several viroids coinfect the same plant. Therefore, the presence of CVd-V should be considered in further indexing tests aimed at the production and distribution of pathogen-free plants in Iran. [S.M. Bani Hashemian and H. Taheri, N. Duran-Vila and P. Serra (Iran). *Plant Disease*, 94: 129, 2010].

**Association of *Microascus cirrosus* (Microascaceae, Ascomycetes) with Brown Leaf Spot of Pistachio in Iran.** Iran is the largest pistachio-producing and exporting country in the world with an annual production of approximately 200,000 t. In July 2009, brown spots were noticed on the leaves of an unknown cultivar of pistachio (*Pistacia vera* L.) in the Mazhan Region of Birjand, South Khorasan, Iran. Nearly 20% of the trees in the surveyed area (1 ha) showed irregularly shaped leaf spots that were mainly on the abaxial surface, measured 4 to 6 mm in diameter, and were initially pale brown but progressively became dark brown. Lesions were cut from diseased tissues, surface sterilized, and placed on acidified potato dextrose agar (APDA). An anamorphic fungus was consistently isolated from the tissues. The fungus was identified as *Microascus cirrosus* Curzi. Colonies on PDA at 25°C reached 9 mm in diameter in 7 days and appeared olivaceous brown and zonate, and perithecia developed in 14 days. Perithecia were black, superficial or partially immersed, spherical, 110 to 200 µm in diameter, with cylindrical necks measuring up to 60 µm long by 25 to 35 µm broad; asci were globose to ovate, eight spored, and 9 to 11 × 8 to 10.5 µm; ascospores were pale reddish brown, variable in shape, ranging from concavo-convex, sometimes plano-convex to oval, and 4.5 to 6 × 3 to 4 µm. The associated anamorph on PDA was a *Scopulariopsis* sp. with annellophores borne singly or in groups of two or three, 10 to 16 × 2.5 to 3.5 µm, with abruptly narrowed apices; conidia were produced in chains, globose to subglobose, basally truncate, pale olive to fuscous, and 4 to 5 × 3 to 4 µm; chlamydospores were globose to pyriform, terminal or intercalary, and 8.5 to 17.5 µm in long axis. Pathogenicity of two isolates was tested using the filter-paper method of Takahashi. Mycelial plugs (5 mm in diameter) as well as filter papers containing conidia were placed on five needle-wounded or nonwounded attached leaves of pistachio cv. Kale-Ghuchi in triplicate. The leaves were covered with a translucent plastic bag for 4 days. Inoculated detached and inoculated wounded attached leaves showed symptoms after 6 and 9 days on 5-month-old and 2-month-old leaves, respectively. Control leaves (five in triplicate) remained symptomless. The pathogen was frequently reisolated from the margins of the lesions. To our knowledge, this is the first record of *M. cirrosus* occurring on pistachio as well as the first report of a member of this genus from Iran. The same fungus has been reported as the causal agent of stored corn deterioration in the United States. *M. cirrosus* also produced a dimorphic yeast phase on PDA but not on malt extract agar or water agar. Cultures with partial reversion developed chlamydospore-like cells. Higher temperatures (25 to 30°C) and surface-sterilized pistachio leaves placed on PDA accelerated the reversion of the yeast phase to hyphal phase. Although dimorphism has been reported in other plant pathogenic fungi, this is the first report of dimorphism in this fungus and of a dimorphic fungus attacking pistachio. Further investigations are needed to determine the relation between dimorphism and pathogenicity. A culture (IRAN 1497 C) of the fungus is preserved by R. Zare. [M. R. Mirzaee, B. Asgari, R. Zare and M. Mohammadi (Iran). *Plant Disease*, 94: 642, 2010].

## PAKISTAN

**First Report of Tomato leaf curl Palampur virus on Bitter Gourd in Pakistan.** Bitter gourd (*Momordica charantia* L.) is widely grown and consumed as a vegetable in Pakistan and other countries in the region. In 2007, a severe disease appeared on bitter gourd that reduced yield significantly. Symptoms of the disease included chlorosis, leaf crumpling, vein thickening, and stunting of plants that were suggestive of a virus infection. Symptomatic leaf samples were collected from fields in Thikriwala near Faisalabad, Pakistan . Seven infected samples were tested for the presence of *Zucchini yellow mosaic virus* (ZYMV), *Cucumber mosaic virus, Papaya ringspot virus, Melon necrotic spot virus* and *Squash mosaic virus* by double-antibody sandwich-ELISA.. All samples of bitter gourd were found to be negative for all five RNA viruses, whereas

melon samples collected from the same area were infected by ZYMV as reported earlier. Samples were also screened for begomoviruses by molecular tests. All seven symptomatic samples were positive for a begomovirus when DNA A of *Tomato leaf curl New Delhi virus* (ToLCNDV) was used as a general probe by Southern hybridization. A probe of the movement protein (MP) gene of ToLCNDV was also positive by Southern hybridization, suggesting the infection of a bipartite begomovirus. The presence of a begomovirus was confirmed by PCR with universal primers designed for amplification of begomoviruses. A fragment of the expected length (approximately 2.8 kb) was cloned and partially sequenced. Sequence analysis of partial sequences showed maximum identity (97%) with Tomato leaf curl Palampur virus (ToLCPaV) recently reported from India and Iran. To our knowledge, this is the first report of ToLCPaV in Pakistan and the first report of the virus on bitter gourd. [I. Ali, A.H. Malik and S. Mansoor (Pakistan). *Plant Disease*, 94: 276, 2010].

## SYRIA

**Tomato Leaf Miner *Tuta absoluta* Invade East Mediterranean Countries.** Tomato Leaf Miner *Tuta absoluta* (Meyrick), (Lepidoptera: Gelechiidae) is considered to be one of the most serious invasive insect which attack tomato's leaf and fruits. It tomato and sometimes potatoes and eggplant. Insect larvae burrow in plant leaves and lead to loss of the chlorophyll and causing heavy losses of infected, and causing to distort the fruits-shape in addition to the entry of fungal diseases to the fruits rot and become unfit for marketing. The rate of damage up to 80% in general, and can reach up to 100% in fields that don't know how to manage it. The original home to Latin America, but it entered the Mediterranean basin conuntries four years ago, as a new invasive insect in the region. It is now officially exists in Morocco, Algeria, Tunisia, Libya, Spain, France, Italy, Malta, Greece, Switzerland, Russia, Kuwait, Bahrain. *Tuta absoluta* entered the eastern Mediterranean countries in the past few weeks, despite all the strict quarantine procedures, where known to exist today in the Gaza Strip and occupied Palestine, Jordan Valley, Lebanon, the Syrian coast, Cyprus and several regions of Turkey, and it is unlikely to extend to all countries in the Middle East very soon. The fact that this serious pest to any area would lead to terrible consequences for the tomato cultivation in terms of the on their export possibilities to countries currently free of the pest, in addition to the decreasing of production and increased costs of its control and the consequent substantial losses to farmers and consumers. The most important means to manage the insect: external and internal plant quarantine by integrated monitoring system with pheromones are the most important means of monitoring insect at border crossing points and places of its possible presence in the fields. Pheromones can be used later in th mass trapping process of the moths. Biological control using suitable natural enemies is very promising step in the IPM program. Chemical control in the right way is also advised. Preventive methods through tight closing of greenhouses, covering grown tomato with fine nets to prevent the entry of moths specially in the nursery. Information and leaflets to be accessible to technicians and farmers. Destruction of crop residues after harvest and not leave residues on the ground. It is desirable to breed tomato varieties building resistance against this pest, highly productive marketable fruits. [Wael Almatni, Directorate of Plant Protection, Damascus, Syria; Email: almatni@scs-net.org].

***Eucalyptus* Gall-Wasp *Leptocybe invasa* Fisher & LaSalle (Eulophidae, Hymenoptera), a New Insect in the Mediterranean Region and Syria.** This insect is a new genus and species of *Eulophidae*, displays thelytokous reproduction, and attacks *Eucalyptus* trees. It thought that it is originated from Australia and it was introduced to several Middle East and Mediterranean countries (Syria, Jordan, Israel, Turkey, Iran, Morocco, Spain and some other countries) without its natural enemies, which resulted an outbreak attack to *Eucalyptus* trees. It was discovered in Tartous, Syria in 2001 in an *Eucalyptus* nursery belongs to the Ministry of Agriculture. It recorded later in Sifsafa, Safita and several locations at the coastal basin. John La Salle identified it later (CSIRO Entomology, Australia, Australian Journal of Entomology, 2004, 43 (2): 101-113). It continued its distribution until it covers most *Eucalyptus* trees now even the forests in Al-Qunaitera near Golan hights at the end of 2004. This insect forms typical bump-shaped galls on the leaf midribs and stems of new growth of several *Eucalyptus* species. It may prevent further growth of the infested shoots. It becomes a key pest in *Eucalyptus* nurseries and in some *Eucalyptus* forests in Syria. Control measures is still under tests. [Wa'el Almatni[1] and Mohammed Mayhoob[2]. (1) Department of Plant Protection, Ministry of Agriculture, Damascus, Syria, Email: almatni@scs-net.org; (2) Director of Plant Protection Division in Tartous, Syria].

## TUNISIA

**First Report of Olive Anthracnose Caused by *Colletotrichum gloeosporioides* in Tunisia.** Ripe and overripe olive fruits (cv. Meski, Manzanilla and Picholine) showing circular spots 1 to 10 mm in diameter, slightly depressed and reddish-brown in color, were collected from local markets and orchards located in the regions of Takelsa, Zarzis and Rgueb in Tunisia. *Colletotrichum gloeosporioides* was isolated from symptomatic fruits and Koch's postulates were fulfilled. This is the first report of *Colletotrichum gloeosporioides* causing anthracnose of olives in Tunisia. [Ali Rhoumn, Mohamed Ali Triki and Monj Msallem. (Tunisia). *Phytopathologia Mediterranea*, 49: 95-98, 2010].

## TURKEY

**First Report from Turkey of European Plum Line Pattern Caused by *Apple mosaic virus.*** European plum line pattern was first described in Bulgaria and can now be found nearly worldwide. Characteristic symptoms in

infected plum (*Prunus domestica*) include line and oak leaf patterns with chlorotic lines and rings in leaves. The causal agent of this economically damaging plum disease is *Apple mosaic virus* (ApMV). ApMV has been reported to naturally infect a number of hosts in the Rosaceae, including *Rosa, Malus,* and *Rubus* spp. as well as *Humulus, Betula*, and *Corylus* spp. in other plant families, but has not been reported to naturally infect plum in Turkey. In this study, disease symptoms were observed in only one local cultivar (Süt eriği) during the growing season of 2008–2009 in Amasya and Tokat provinces, situated between the Black Sea and inner Anatolia regions. Leaf samples were collected from 22 plum trees and tested by serological and molecular methods. In serological tests, double-antibody sandwich-ELISA was used with antisera to ApMV and *Prunus necrotic ringspot virus* (PNRSV) according to the manufacturer's (Agdia, Inc., Elkhart, IN) protocol. While none of the samples reacted positively to PNRSV antisera, 19 samples reacted positively to ApMV antisera. The presence of ApMV in symptomatic plum trees was confirmed by reverse transcription (RT)-PCR. RT-PCR was conducted with ApMV-specific primers to amplify a 262-bp product from viral sequences. Total RNA was extracted from plum leaf samples. Using serological and RT-PCR tests, ApMV was detected in all 19 samples that showed virus symptoms, but not from symptomless plants. To our knowledge, this is the first record of the presence of European plum line pattern in Turkey and provides a starting point for investigation of the incidence of ApMV in plum orchards of Turkey. [B. Akbaş and K. Değirmenci (Turkey*). Plant Disease*, 94: 641, 2010].

**First Report of the Occurrence of *Grapevine leafroll-associated virus*-5 in Turkish Vineyards.** Surveys were made in the main grape growing region (Southeast Anatolia) of Turkey for the occurrence of *Grapevine leafroll-associated virus-5* (GLRaV-5). Plant samples with typical leafroll symptoms and mealybugs, *Planococcus ficus* (Signoret) were used for assessing the occurrence of GLRaV-5 by RT-PCR. A 272 bp band representing GLRaV-5 infection was successfully detected in plants and mealybugs in some vineyards of the Southeast Anatolia region and this is the first report of this virus in Turkish vineyards. [Nihal Buzkan, Serpil Karadağ, Abdulmurat Kaya, Saadttin Baloğlu, Angelantonio Minafa and Yair Ben-Dov (Turkey). *Journal of Phytopathology*, 158: 448-449, 2010].

# RESEARCH HIGHLIGHTS

## ALGERIA

**The talc formulation of *Streptomyces* antagonist against *Mycosphaerella* foot rot in pea (*Pisum sativum* l.) seedlings.** Pea is highly susceptible to pre-emergence damping off and post-emergenc foot rot caused by *Mycosphaerella pinodes* in western Algerian regions. Rhizosphere Actinomycetes which were antagonistic to the growth of this pathogen were isolated from chellif soils. An isolate of *Streptomyces* St7c5 provided superior seed protection. An increased in both germination and plant growth were recorded following treatment of seeds with *Streptomyces* formulated with inert or organic charge when compared to control. Application of the antagonist agent resulted in a significant reduction of *Mycosphaerella* foot rot to 5% compared with untreated seeds (25%). Hence, the talc formulation of *Streptomyces* agent can be recommended as one of the crop strategies for the management of foot rotting and blight caused by *Mycosphaerella pinodes*. [Bencheikh Mohamed and Setti Benali (Algeria). *Archives of Phytopathology and Plant Protection*, 43: 438-445, 2010].

## EGYPT

***Fusarium* spp. Suppress Germination and Parasitic Establishment of Bean and Hemp Broomrapes.** Thirty-nine *Fusarium* isolates were obtained from newly emerged infected bean broomrape *(Orobanche crenata)* and hemp broomrape (0. *ramosa)* collected from infested fields offaba bean *(Vicia faba)* and tomato *(Lycopersicon esculentum)* respectively, in two governorates located in the south of Giza, Egypt. AIl *Fusarium* isolates were identified to species level and the effect of their culture filtrates on the germination of seeds from the two *Orobanche* species was tested *in vitro.* The inhibition of seed germination differed between the tested *Fusarium* isolates, depending on the plant part from which they were isolated, with isolates from the shoots of *Orobanche* inhibiting seed germination more than isolates from the inflorescences. The culture filtrates of *Fusarium* species from *O. crenata* were more toxic to the seeds of both *Orobanche* species than the *Fusarium* filtrates from *O. ramosa.* Seeds of *O. crenata* were more resistant to *Fusarium* culture filtrates than seeds of *O. ramosa.* The highest inhibition of *Orobanche* seed germination was achieved by six *Fusarium* isolates, one of which was identified as *F. oxysporum*, one as *F. equiseti*, whilst the other four were all *F. compactum.* Aqueous mixtures of mycelia and conidia of all the *Fusarium* isolates were directly sprayed on *O. ramosa* tubercles attached to the roots of tomato plants grown in transparent plastic bags, and were also used to infest soil in pots seeded with both faba bean and O. *crenata.* Two of the four *F. compactum* isolates (22 and 29) were significantly more pathogenic against *O. crenata* and *O. ramosa*, respectively, than the other *Fusarium* isolates tested in the pots and plastic bags. The study clearly shows the potential ofbiocontrol agents originating in one *Orobanche* sp. (e.g. *O. crenata)* to control another *Orobanche* sp. (e.g. *O. ramosa),* as many *Fusarium* isolates deriving from *O. crenatd* were found to be more pathogenic to *O. ramosa* seeds than the isolates from *O. ramosa* themselves. This may widen the host range of these fungal pathogens, with the use of isolates from one *Orobanche* species effective against other species as well. [Mohamed A. Abouzeid and Khaled A. El-Tarabily (Egypt & United Arab Emirates). *Phytopathologia Mediterranea*, 49: 51-64, 2010].

**Population Fluctuations and Interspecific Competition Between Tephritid Flies Attacking Fruit Crops in the New Valley Oases, Egypt.** Population fluctuations of the Mediterranean fruit fly *Ceratitis capitata* (Wiedemann) and the peach fly *Bactrocera zonata* (Saunders) were monitored with lure trap collections in three provinces in the New Valley oases, Western Desert, Egypt. Results showed marked temporal differences in peak trap catches of the two flies in the selected sites all over the entire studied areas. One annual peak of *C. capitata* was recorded during both October 2005 and February 2006 and coincided with the ripening period of citrus trees in Kharga oases. However, two annual peaks were recorded during June and September 2005 in Bodkholow province and coincided with the ripening period of apple and mango. On the other hand, two annual peaks of *B. zonata* were recorded in Kharga oases throughout May and September and coincided with the ripening periods of apricot, mango and guava. One annual peak only was recorded in the round up of September and/or October in both Moot and Bodkholow in Dakhla oases and coincided with the ripening period of mango, guava and citrus. The occurrence of *C. capitata* was very limited in comparison with *B. zonata*. Population fluctuations of the two pests in the studied sites were significantly different. The ability of the traps used in capturing both *C. capitata* and *B. zonata* indicated that the yellow sticky trap was more effective in capturing *C. capitata*. However, the Abdel-Kawi trap was significantly efficient at trapping *B. zonata*. The occurrence of *B. zontata* in high numbers all over the study period compared to *C. capitata* is considered as good proof that this invading fly may be considered as a vigorous competitive tephritid fly to the native fly *C. capitata*. [F.A. Abdel-Galil, M.A. Amro, A.S.H. Abdel-Moniem and Ola O. El-Fandary (Egypt). *Archives of Phytopathology and Plant Protection,* 43: 647-659, 2010]

**Effect of Certain Organic Materials in Controlling *Meloidogyne incognita* Root-Knot Nematode Infesting Banana.** Efficacy of certain plant wastes as onion bulb envelope, dry leaves of sugar beet, fleabane and jojoba, filter cake or mud as sugar cane industrial residue and nile fertile mineral bio-fertilisers were studied under field conditions for managing *Meloidogyne incognita* on banana Cv. Williams. All the tested treatments significantly ($P \leq 0.05$ and 0.01) proved to be effective in reducing the studied nematode criteria during the growing season of banana. The highest percentage reductions of 87.5 and 85.5% were recorded in the number of second-stage juveniles caused by fleabane at vegetative and harvest stages, respectively. As for galls, the highest percentage reductions of 80.4 and 79.6% were achieved at harvest stage by sugar beet waste and filter cake residue, respectively. Also, sugar beet waste was the best at increasing banana fruit yield per feddan (77.0%), followed by jojoba (53.1%) and fleabane (50.4%). The number of fingers and hands per bunch increased by the different materials at various degrees. [M.M.A. Youssef and Wafaa M.A. El-Nagdi (Egypt). *Archives of Phytopathology and Plant Protection,* 43: 660-665, 2010].

**Biology of *Agistemus olivi,* a New Predator of Eriophyid Mites Infesting Olive Trees in Egypt.** Life history and prey consumption of the predatory stigmaeid mite *Agistemus olivi* Romeih, as affected by feeding on the motile stages of the olive bud mite *Aceria oleae* Nalepa and the olive rust mite *Tegolophus hassani* Keifer (Acari : Eriophyidae), has been studied for the first time at different temperatures and 70-75% r.h. A greater capability was shown for consuming the olive bud mite than the olive rust mite and the former prey relatively induced more fecundity. The rise of different temperatures from 20°C to 25°C and 30°C shortened development and increased reproduction and prey consumption. The maximum reproduction (6.92 and 6.08 eggs ♀ day) was recorded at the higher temperature, while the minimum reproduction (1.50 and 1.30 eggs ♀ day) was observed for *A. oleae* and *T. hassani*, respectively. [B.A. Abou-Awad, M.F. Hassan and A.H.M. Romeih (Egypt). *Archives of Phytopathology and Plant Protection*, 43: 817-824, 2010].

## IRAN

**Isolation and Selection of Virulent Isolates of *Beauveria bassiana* for Biological Control of *Ommatissus lybicus* in Kerman Province.** Date palm (*Phoenix dactylifera*) is the most important economic crop in Kerman province. The palm date leafhopper (*Ommatissus lybicus*) is one of the most important and key pests that causes high level damage to date crop. Date is an organic fruit in this area, and biological control has been introduced as the best long-term strategy in this region. To investigate appropriate biological control agents in Kerman province during 2005-2007, 178 isolates were collected from naturally infected *O. lybicus* for the first time recorded in the world, and *Beauveria bassiana* was introduced as a suitable biological control agent for control of this pest. [Mohammad Mehdi Aminaee, Rasool Zare and Mohammad Javad Assari (Iran). *Archives of Phytopathology and Plant Protection*, 43: 761-768, 2010].

**Antifungal Activities of the Essential Oils on Post-harvest Disease Agent *Aspergilus Flavus.*** Antifungal activities of the essential oils obtained from *Hyssopus officinalis, Cuminum cyminum, Thymus vulgaris* and cones of *cupressus arizonica* were investigated against *Aspergilus flavus.* Different concentrations of the essential oils on conidial germination and germ tube elongation were determined *in-vitro*. Essential oils applied in 5 levels, included 0 (as control), 0.125, 0.25, 0.375 and 0.5 %. The antifungal activities of these essential oils were evaluated by disc diffusion method on PDA medium. The results showed that the essential oil of all plants affected the growth of *Aspergillus flavus* under *in-vitro* conditions. *Aspergillus flavus* sopres in control treatment filled the petridish medium on second day of experiment, but essential oils treatments in some levels inhibited and in others decreased the growth of *Aspergillus flavus*. GC–MS analysis of the chemical composition of essential oils were investigated to determine their different component. Data showed essential oil of *Cuminum cyminum* was more

effective in comparison whit others. Furthermore, the study suggests that these essential oils can be used as preservatives in foods. [Saeed Karbin, Ali Baradaran Rad, Hossein Arouiee and Sasan Jafarnia (Iran). *Advances in Environmental Biology*, 3: 219-225, 2009].

**Stored Product Pests and their Parasitoid Wasps in Mashhad, Iran.** Pests and their parasitoid wasps associated with stored products were surveyed from 2006 to 2007 in the urban area suburb of Mashhad. Seventy-four samples from several cereals, dried fruits, legumes and processed food products were collected in 10 locations. A total of 11 insect pest species from 5 families in 2 orders, Coleoptera and Lepidoptera were recorded. Among them, the Cowpea weevil, *Callosobruchus maculates* (Fabricius), (Col.: Bruchidae) and the Indian meal moth, *Plodia interpunctella* (Hubner) (Lep.: Pyralidae) were the most abundant species. The Rust-red flour beetle, *Tribolium castaneum* (Herbst) (Col.: Tenebrionidae), and the Sawtoothed grain beetle, *Oryzaephilus surinamensis* (L.) (Col.: Silvanidae), were the most numerous and widely distributed species sampled in the rest of food products. We found 5 species of parasitoid of storage pests recruiting from insects: *Habrobracon hebetor* (Say) (Hym.: Braconidae), *Cephalonomia tarsalis* (Ashmead) (Hym.: Bethylidae), *Anisopteromalus calandrae* (Howard) (Hym.: Pteromalidae), *Theocolax elegans* (Westwood) (Hym.: Pteromalidae), and *Venturia canescens* (Gravenhorst) (Hym.: Ichneumonidae). The occurrence of parasitoid attacking stored product pests indicated their potential for biological control in Mashhad stores. [Mohammad Hossein Akbari Asl, Ali Asghar Talebi, Hashem Kamali and Somayeh Kazemi (Iran). *Advances in Environmental Biology*, 3: 239-243, 2009].

## JORDAN

**Essential Oils Yield and Heavy Metals Content of Some Aromatic Medicinal Plants Grown in Ash-Shoubak Region, South of Jordan.** The use of aromatic medicinal herbs to relieve and treat many human diseases is increasing in Jordan and worldwide due to their mild features and low side effects. It is important to have a good quality control for aromatic medicinal herbs in order to protect consumers from contamination. The aim of the present study was to carry out a comparative evaluation of essential oils yield and heavy metals content in some medicinal herbs such as *Thymus vulgaris* L., *Thymus serpyllum* L. and *salvia officinallis* L. grown in Ash-Shoubak region-south of Jordan**.** The essential oils were hydro-distilled from studied dried aerial herbs using Clevenger- type system. The heavy metals content in collected herbal samples were analyzed by using atomic absorption flame emission spectrometry by method described by Al-Alawi & mandiwana.Analytical results have evaluated by statistical analysis system. The mean values of essential oils yields of *T.vulgaris, T. serpyllum*, and *S. officinalis* were 4.0, 2.5 and 1.9 %, respectively. The contents of heavy metals in the samples were determined in the ranges of 1.26-32.03, 0.47-23.85, 7.66-13.23, 14.7-44.0, 15.8-114.91, 141.3-756.17ppm for Pb, Ni, Cu, Mn, Zn, Fe, respectively.Cobalt has been detected only in *T. serpyllum*, while Cd and Cr were not detectable in all studied samples. The highest Pb, Ni and Cu content has been detected in *T. vulgaris* (32.03 ppm, 23.85 ppm and 13.23 ppm, respectively. *S. officinalis* had the highest Mn, Zn and Fe content 44.0ppm, 114.91ppm and 756.17 ppm, respectively. The essential oils and heavy metals contents in studied plants are affected by environmental conditions. Moreover, the obtained results showed that the studied plants grown in Ash-shoubak region (with respect to the lead content in *T.vulgaris)* can safely be used for pharmaceutical and ethno-pharmacological purposes without any hazardous effect. [Mohammad Sanad Abu-Darwish (Jordan). *Advances in Environmental Biology*, 3: 296-301, 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 and A. Ziouti (Morocco). *Phytopathologia Mediterranea*, 48: 430-438, 2009].

## PAKISTAN

**Virulence variation of *Puccinia striiformis* Westend. f. sp. *tritici* in Pakistan**.Yellow rust populations of Pakistan were characterised for their virulence pathotypes/races and pathogenetic variation using seedling evaluation of differential genotypes under glasshouse conditions in Murree (6000 feet above sea level). Differential genotypes comprised a world set, an European set, near isogenic lines and the universally susceptible bread wheat cultivar “Morocco”. Over the two-year study, a total of 18 race groups were identified. Out of these 18 race groups, several (68E0, 64E0, 66E0, 70E0, 6E0, 71E0, 6E0, 2E0, 67E0, and 68E16) were found previously. The new race group 70E32 found probably evolved because of mutation from the previously existing 70E16. Virulence frequencies of yellow rust (*Yr*) resistance genes were also determined on near isogenic lines. The highest virulence frequencies (%) were found for *Yr7* (88%), *Yr9* (57%), *Yr18* (70%), and *Yr24* (69%). Virulence frequencies were low for *Yr* 1 (4%), *Yr5* (7%), *Yr10* (10%) and *Yr15* (4%). Our studies indicated that

virulence existed for almost all *Yr* genes, necessitating regular monitoring of the yellow rust populations and intensifying efforts to identify new sources of resistance to this pathogen. [Sumaira Rizwan, Ahmad Iftikhar, Abdul Mujeeb Kazi, Ghulam Mustafa Sahi, Javed Iqbal Mirza, Attiq-ur-Rehman, Muhammad Ashraf (Pakistan). *Archives of Phytopathology and Plant Protection*, 43: 875-882, 2010].

**Phenotypic and Molecular Characterization of Wheat for Slow Rusting Resistance against *Puccinia striiformis* Westend. f.sp. *tritici***. Race-specific resistance of wheat (*Triticum aestivum* L.) to yellow rust caused by *Puccinia striiformis* Westend. f.sp. *tritici* is often short-lived. Slow-rusting resistance has been reported to be a more durable type of resistance. A set of sixteen bread wheat varieties along with a susceptible control Morocco was tested during 2004–05 to 2006–07 in field plots at Peshawar (Pakistan) to identify slow rusting genotypes through epidemiological variables including final rust severity (FRS), apparent infection rate (*r*), area under disease progress curve (AUDPC), average coefficients of infection (ACI) and leaf tip necrosis (LTN). Epidemiological parameters of resistance were significantly ($P < 0.01$) different for years/varieties in three seasons, while variety × year interactions remained non-significant. Sequence tagged site (STS) marker, csLV34 analyses revealed that cultivars Faisalabad-83, Bahawalpur-95, Suleman-96, Punjab-96, Bakhtawar-93, Faisalabad-85, Shahkar-95 and Kohsar-95 possessed *Yr18* linked allele. Faisalabad-83, Bahawalpur-95, Suleman-96, Punjab-96, Bakhtawar-93 and Faisalabad-85 were relatively more stable over 3-years where FRS, AUDPC and *r* values were reduced by 80, 84 and 70% respectively compared to the control "Morocco" These six varieties therefore could be exploited for the deployment of *Yr18* in breeding for slow rusting in wheat. Both FRS and ACI are suitable parameters for phenotypic selection. [Syed Jawad Ahmad Shah, Muhammad Imtiaz and Shaukat Hussain (Pakistan). *Journal of Phytopathology*, 158: 393-402, 2010].

## PALESTINIAN AUTHORITY

***Trichoderma harzianum* in Combination with Sheep Manure Amendment Enhances Soil Suppressiveness of Fusarium wilt of Tomato.** The effect that the biocontrol agent *Trichoderma harzianum* (isolate Jn14) in combination with an amendment of sheep manure has on the soil suppressiveness of Fusarium wilt of tomato was investigated over a 28-month period. A combination of *T. harzianum* and organic amendment at concentrations (w:w) of 6 and 10% reduced tomato wilt by 21–36 % and 29–36% respectively, after 0–28 months of soil incubation. When the amendment was added at concentration of 2%, the wilt was suppressed only after 18–28 months. A combination of *T. harzianum* and the amendment at 6% also increased tomato plant fresh weights by 52% after 28 months, and the 10% amendment increased fresh weights by 56, 40, and 63%, after 18, 24, and 28 months respectively, compared to the experimental controls. Organic amendment at the higher concentrations further stimulated *T. harzianum* populations, enhanced microbial activity against *Fusarium oxysporum* in the soil and reduced pathogen populations. Without *T. harzianum*, the organic amendment at a concentration of 10% reduced disease by only 22, 24, and 23% and only after 18, 24 and 28 months of soil incubation respectively, compared with the controls. However, tomato wilt was not reduced at a 2% manure concentration in less than 12 months of incubation. Organic amendment alone at 6 and 10% reduced the pathogen population by 25% and 37% respectively after 28 months of soil incubation compared with the control. *T. harzianum* produced fungitoxic metabolites that reduced mycelial growth of *Fusarium* by 37% and conidium germination by 55% when the pathogen was grown on potato dextrose agar amended with a *T. harzianum* culture filtrate. [R.M. Barakat and M.I. Al-Masri (Palestinian Authority). *Phytopathologia Mediterranea*, 48: 385-395, 2009].

## SAUDI ARABIA

**Antifungal Activity of Six Saudi Medicinal Plant Extracts Against Five Phyopathogenic Fungi.** Six medicinal plants such as *Amaranthus spinosus*, *Barbeya oleoides*, *Clutia lanceolata*, *Lavandula pubescens*, *Maerua oblongifolia* and *Withania somnifera* collected from different locations in the southwestern part of Saudi Arabia were tested for antifungal activities against five plant pathogenic fungi causing serious diseases of vegetable crops. These fungi were *Alternaria brassicae*, *Alternaria solani*, *Botrytis fabae*, *Fusarium solani* and *Phytophthora infestans*. Aqueous plant extracts reduced mycelial growth and inhibited spore germination of all fungi tested. It is clear that the aqueous extract of *Lavandula pubescens* leaves was the best for controlling all phytopathogenic fungi under study. These results suggested that medicinal plant extracts play an important role in controlling the phytopathogenic fungi. [Zakaria A.M. Baka (Saudi Arabia). *Archives of Phytopathology and Plant Protection*, 43: 736-743, 2010].

**Arbuscular Mycorrhizal Fungi: A Biocontrol Agent against Common Bean *Fusarium* Root Rot Disease**. Effectiveness of arbuscular mycorrhizal fungi in the protection of common bean plant (*Phaseolus vulgaris* L.) against *Fusarium* root rot disease was investigated in the present study under natural conditions in pot experiment. A mixture of arbuscular mycorrhizal fungi consists of propagated units of *Glomus mosseae*, *Glomus intraradices*, *Glomus clarum*, *Gigaspora gigantea* and *Gigaspora margarita* in suspension form ($10^6$ unit $L^{-1}$ in concentration) was used at dilution of 5 ml $L^{-1}$ water. The obtained results demonstrated that, arbuscular mycorrhizal colonization significantly reduced the percentage of disease severity and incidence in infected bean plants. On the other hand, mycorrhizal colonization significantly increased the tested growth parameters and mineral nutrient concentrations. While, infection with *Fusarium* root rot disease negatively affected on the mycorrhizal colonization level in bean roots. Finally, mycorrhizal colonization led to a significant

increase in the phenolic content and the activities of the investigated defense related enzymes (Phenylalanine ammonia-lyase, polyphenol oxidase and peroxidase enzyme). From the obtained results, it can be concluded that the application of arbuscular mycorrhizal fungi as a biocontrol agent played an important role in plant resistance and exhibit greater potential to protect bean plants against the infection with *F. solani*. [A.A. Al-Askar and Y.M. Rashad (Saudi Arabia). *Plant Pathology Journal*, 9: 31-38, 2010].

**Distribution of *Culicoides* Latreille (Diptera: Ceratopogonidae) in Saudi Arabia.** Scanty information is available about the *Culicoides* Latreille (Diptera: Ceratopogonidae) fauna of Saudi Arabia. This study was undertaken to investigate the distribution of *Culicoides* species in the kingdom. In this study, which was conducted during the period March 2004 to February 2006, light traps collected 43505 specimens of *Culicoides* biting midges. Eight species of *Culicoides* were identified: *Culicoides bahrainensis* Boorman, *C. imicola* Kieffer, *C. kingi* Austen, *C. navaiae* Lane, *C. newsteadi* Austen, *C. oxystoma* Kieffer, *C. punctatus* Meigen and *C. sahariensis* Kieffer. Among these species, *C. bahrainensis* was reported for the first time in Saudi Arabia. A recent and up to date distribution map of *Culicoides* in Saudi Arabia is provided and the medicinal importance of some of these species was discussed. **[**A.M. Alahmed**,** S.M. Kheir and M.A. Al Khereiji (Saudi Arabia). *Journal of Entomology*, 7: 227-234, 2010].

## SUDAN

**Effects of *Rhizobium* and *Bacillus megatherium var. phosphaticum* Strains and Chemical Fertilizers on Symbiotic Properties and Yield of Faba Bean (*Vicia faba* L.).** A field experiment was conducted for two consecutive seasons to examine the effect of inoculation by different *Rhizobium* and phosphate solubilizing bacteria strains and their interaction on symbiotic properties and yield of faba bean, and to compare between the effects of chemical fertilizers and biofertilizers. Both *Rhizobium* and phosphate solubilizing bacteria significantly increased yield and symbiotic roperties (nodulation, nodules and shoots dry weight, and plant nitrogen and phosphorus content) of faba bean plants. A synergetic effect was observed when the two types of microorganisms were combined. Comparable increments in yield were obtained resulting from either microbial fertilizers (nitrogen fixing and/or phosphate solubilizing bacteria) or chemical fertilizers (nitrogen and phosphorus fertilizers). [Ahmed Mohamed Elhasan Rugheim and Migdam Elsheikh Abdelgani (Sudan). *Advances in Environmental Biology*, 3: 337-346, 2009].

## SYRIA

**Correlative Analysis of *Cochliobolus sativus* Pathogenicity and *in vitro* Xylanase Activity.** Spot blotch (SB) caused by *Cochliobolus sativus* has been the major yield-reducing factor for barley production during the last decade. In this study, the correlation between aggressiveness and *in vitro* xylanase production of 29 isolates of *C. sativus* was investigated. Isolate aggressiveness was evaluated in term of lesion form on barley leaves. Additionally, the isolates were compared for their ability to produce *in vitro* significant levels of xylanase activities when grown in a liquid medium. Aggressive isolates released more xylanase of weakly aggressive isolates. Correlation tests analysis revealed a significant relationship ($r = 0.84$, $r = 0.50$; $P < 0.01$) between the xylanase (per unit fungal mass) and aggressiveness on the two barley cultivars Arabi Abiad and Bowman, respectively. Correlation between the production of this enzyme and the origin of the isolates was not found. The results indicate that the production of xylanase influences the aggressiveness of the isolates of *C. sativus* towards barley seedlings. [Yasser Bakrıı, Mohammed Jawaher and Mohammed Imad Eddin Arabi (Syria). *Journal of Phytopathology*, 158: 444-447, 2010].

## TUNISIA

**Occurrence of *Monosporascus cannonballus* in Watermelon Fields in Tunisia and Factors Associated with Ascospore Density in Soil.** Surveys of 11 watermelon fields throughout production areas of this crop in southern and central regions in Tunisia were conducted in 2007 to determine the aetiology and distribution of watermelon vine decline. *Monosporascus cannonballus* was isolated from diseased roots in all surveyed fields. All the isolates were identified according to morphological features and confirmed by amplification of a fragment of the ITS region with specific primers. Ascospores of *M. cannonballus* were recovered from soil in all watermelon fields surveyed and the average population densities ranged from 3.65 to 10.14 ascospores per g of soil. Multiple linear regression analysis revealed that only four of the crop and soil factors evaluated had a significant correlation with ascospore density at the end of the growing season: vertisol vs. other soils, disease incidence, percentage of clay and pH. The pH of the soil showed a strong significant negative linear relationship with ascospore density, while the other three factors correlated positively. [Naima Boughalleb, Ibtissem Ben Salem, Roberto Beltran, Antonio Vicent, Ana Pérez Sierra, Paloma Abad-Campos, José García-Jiménez and Josep Armengol (Tunisia). *Journal of Phytopathology*, 158: 137-142, 2010].

**Insecticidal Activity of *Pistacia lentiscus* Essential Oil on *Tribolium castaneum* as Alternative to Chemical Control in Storage.** This study reported first investigations on fumigant toxicity of *Pistacia lentiscus* essential oil against third instar larvae and adults of the red flour beetle *Tribolium castaneum*. The essential oil tested was found to be toxic to larvae and adults. The oil showed 51 and 100% mortality of larvae and adults, respectively, at the concentration of 1023 µl/l air after 24 h of exposure. Great differences in insect mortality were observed depending on developmental stage, oil concentrations and exposure time. The fumigant toxicity potential of *P. lentiscus* on adults was

higher (LC50 = 28.03 µl/l, LC95 = 63.46 µl/l) than on the third instar larvae (LC50 = 112.12 µl/l, LC95 = 253.53 µl/l). Results suggested that *P. lentiscus* essential oil may have potential as a control agent against this major stored product insect. [O. Bachrouch, J. Mediouni-Ben Jemâa, I. Chaieb, T. Talou, B. Marzouk and M. Abderraba (Tunisia). *Tunisian Journal of Plant Protection*, 5: 63-70, 2010].

**A New Faba Bean Small Seeded Variety Najeh Tolerant to Orobanche Registered in the Tunisian Catalogue.** Najeh, a small seeded faba bean variety (*Vicia faba* var. *minor*) was developed and released by the Field Crops Laboratory of the *Institut National de la Recherche Agronomique de Tunisie* (INRAT). Najeh, originally designated as XBJ90.03-16-1-1-1-1, was obtained through single plant selection in population coming from a cross between Sel.88Lat.18025 and SP49C. Sel.88Lat.18025 is a line introduced from the International Center for Agricultural Research in the Dry Areas (ICARDA) and carries tolerance genes to *Orobanche crenata* and SP49C is an inbred line from INRAT having high yield performances and adapted to local conditions. Najeh was released on the basis of its high yield potential and its tolerance to broomrapes (*O. foetida* and *O. crenata*). This variety is registered in 2009 in the official catalogue of plant varieties of Tunisia under N° 521 and is mainly recommended for broomrape infested fields in Tunisia. [M. Kharrat, Z. Abbes and M. Amri (Tunisia). *Tunisian Journal of Plant Protection*, 5: 125-130, 2010].

## TURKEY

**Distribution and Identification of Root-knot Nematodes from Turkey.** Root knot nematodes are causing serious losses in protected cultivation fields in the West Mediterranean region of Turkey. Correct and confident identification of the plant parasitic nematodes is important for vegetable growing and breeding. Therefore, ninety-five populations of plant parasitic nematodes were collected from regional greenhouses. Previously described species-specific primers were used to identify Meloidogyne populations. The present study indicated that SEC-1F/SEC-1R and INCK14F-INCK14R primers for identifying of *M. incognita*, Fjav/Rjav and DJF/DJR primers for *M. javanica* and Far/Rar for *M. arenaria* primers can be effective tools to identify the Turkish root-knot nematode species. Dissemination ratios of the population were 64.2%, 28.4% and 7.3% for *Meloidogyne incognita*, *M. javanica* and *M. arenaria*, respectively. The results showed that *M. incognita* was the prominent rootknot nematode species in the West Mediterranean coastal areas of Turkey. [Zu Beyir Devran, Mehme Ali Söğŭt (Turkey). *Journal of Nematology*, 41: 128–133, 2009.].

**Response of Tomato Rootstocks with the Mi Resistance Gene to *Meloidogyne incognita* Race 2 at Different Soil Temperatures.** Rootstocks have been effective against many soil-borne pathogens in protected tomato production. Rootstocks with heat-stable root-knot nematode resistance may prolong the production season since the rootknot nematode resistance gene *Mi-l.2* irreversibly breaks down at soil temperatures above 28°C. The objective of this study was to investigate the effect of soil temperature on root-knot nematode resistance conferred by two genes of tomato, using some commercial tomato cultivars, rootstocks, and PI lines. The response of these genes against *Meloidogyne incognita* race 2 was studied in two commonly used rootstock cv. Beaufort and Vigomax, in tomato cultivars Astona RN F1 and Simita F1, and in *Solanum lycopersicum* L. accessions PI126443 and PI270435, known to possess heat-stable nematode resistance, at 24°C and 32°C under controlled conditions. Each plant was inoculated with 1000 *M. incognita* race 2 second-stage juveniles (J2s) and its response was evaluated 8 weeks post inoculation. The presence of the *Mi-l.2* gene was determined with molecular markers. Astona RN F1, Vigomax, Beaufort, PI126443 and PI 270435 which carried the *Mi-l.2* gene were resistant to *Meloidogyne incognita* race 2 at 24°C. The egg masses and J2s were significantly fewer in these lines than in the susceptible Simita F1 at 24°C, and there were no significant differences among resistant plants. In contrast, there were significant differences in the galling index among heat-stable sources and plants containing the *Mi-l.2* gene. Simita F1, Astona RN F1 and the rootstocks had a susceptible reaction to *M. incognita* race 2 at 32°C, but PI 126443 and PI 270435 were resistant. However, at this temperature there were significant differences in the number of juveniles in the soil, the egg mass and the galling index between the heat-stable and the heat-unstable plants. [Zubeyir Devran, Mehamet Ali Sogut and Nedim Mutlu (Turkey). *Phytopathologia Mediterranea*, 49: 11-17, 2010].

# ❖ SOME PLANT PROTECTION ACTIVITIES OF FAO AND OTHER ORGANIZATIONS

## DESERT LOCUST SITUATION

### *General situation during June 2010 forecast until mid –August 2010*

The desert locust situation remained calm during June. Locusts declined in the spring breeding areas of Northwest Africa and Arabia due to control operations and drying conditions. Limited control was carried out against hopper bands in Saudi Arabia, groups of adults in Algeria and scattered adults in Morocco. Unusually heavy rains associated with Cyclone Phet fell in parts of Oman, Iran, Pakistan and India in early June. Small-scale breeding occurred in southwest Libya, the interior of Saudi Arabia and in eastern Ethiopia. Scattered adults were present in Sudan, Yemen and Oman. Seasonal rains commenced in the summer breeding areas of the Sahel in West Africa and Sudan. During the forecast period, small-scale breeding will occur in the northern Sahel of West Africa and Sudan and along the indo- Pakistan border, causing locust numbers to

increase slightly but remain below threatening levels. No significant developments are expected.

**Western Region.** Locust populations declined in Northwest Africa along the southern side of the Atlas Mountains in Morocco where 303 ha of scattered adults was treated. Ground teams in Algeria treated 350 ha of solitarious hoppers and adults near cropping areas in the central Sahara. Small-scale breeding occurred in southwest Libya where scattered hoppers and adults were reported. No locust surveys were carried out in the summer breeding areas of the Sahel in West Africa. During the forecast period, locusts will decline in northwest Africa as they move towards the southern Sahara in Algeria and the northern Sahel in West Africa. Small-scale breeding is expected to commence in southern Mauritania, northern Mali and Niger, and perhaps eastern Chad where seasonal rain started in June. This will cause locust numbers to increase slightly during the forecast period but remain below threatening levels.

**Central Region.** Locust infestations declined on the Red sea coast of Saudi Arabia where control operations were carried out in May. Ground teams treated 5 ha of hopper bands that formed on the edge of the spring breeding area in the interior. Unusually heavy rains associated with Cyclone Phet fell in northern Oman in early June. Although only scattered adults were present, there is a high risk that additional breeding could occur during the next several months, causing locust numbers to increase. Surveys began in the summer breeding areas in the interior of Sudan and Yemen in June. So far, only low numbers of adults were seen in cropping areas along the Nile in northern Sudan and in a few places in Yemen. During the forecast period, small- scale breeding will occur in Sudan in areas where seasonal rains commenced in June. Isolated adults were seen in the western desert in Egypt. Undetected breeding occurred in eastern Ethiopia during May, giving rise to scattered hoppers and adults in June. During the forecast period, breeding is likely to continue in areas of recent rainfall. No locusts were reported elsewhere in the region.

**Eastern Region**. Low numbers of solitarious locusts began to appear in the summer breeding areas of Cholistan, Pakistan near the border of India in mid-June. Breeding conditions are expected to be unusually favourable this year along both sides of the border because of heavy rains that fell in early June from Cyclone Phet. Consequently, small-scale breeding will cause locusts to increase during the forecast period in both countries but numbers will remain below threatening levels. No locusts were reported in Iran and India during June.

## ❖ SHORT PLANT PROTECTION NOTES

- Despite significant variation among isolates of *Venturia inaequalis* in sensitivity to myclobutanil, it was effective for most isolates report L. Gao and associates at Northwest A&F University, China, and East Malling Research, UK. (Pest Management Science, 65:1241-1249, 2009).
- Landrace Sardari is a feasible parent for deploying resistance in wheat to *Heterodera filipjevi* report T. Akar and associates at Central Research Institute for Field Crops, CIMMYT, and Anatolian Agricultural Research Institute, Turkey; and Monsanto Co., Iowa. (Field Crops Research, 114: 320-323, 2009).
- A peptide mixture from *Trichoderma citrinovirida*, a cork oak endophyte, was strongly antagonistic to seven forest tree pathogens report L. Maddau and associates at Universita de Sassari and Porto Conte Ricerche Sri, Italy. (Microbiology, 155:3371-3381, 2009).
- *Barley yellow dwarf virus* was severe in wheat sown in corn surface debris because aphids were attracted to the yellow debris, report C. Cowger and associates at North Carolina State University and Border Belt Tobacco Research Station, NC, and Purdue University. (Agronomy Journal, 102:688-695, 2010).
- *Pseudomonas fluorescens*, *Enterobacter cloacae*, and mustard meal each can control Fusarium dry rot of potato in the field, reports K. I. Al-Mughrabi at New Brunswick Department of Agriculture and Aquaculture, Canada. (Biology Control, 53:280-284, 2010).
- Heat treatment (37°C for 45 days) eradicated *Grapevine fanleaf nepovirus* but not *Grapevine fleck maculavirus*, report A. Panatoni and E. Triolo at University of Pisa, Italy. (Scientia Horticulturae,125:63-67, 2010).
- Dry bean cultivars Aporé and Quro Negro and snap bean cultivar Macarrao Atibaia in breeding programs provide resistance to root-knot nematodes report S. Ferreira and associates at Universidade Federal de Lavras, Brazil. (HortScience 45:320-322, 2010).
- Cotton seed treated with *Pseudomonas* and *Serratia* spp. can control Verticillium wilt and improve plant growth in the field report O. Erdogan and K. Benlioglu at Cotton Research Institute and Adnan Menderes University, Turkey. (Biology Control 53:39-45, 2010).
- Tolerance to *Potato virus Y* in *Nicotiana africana* was transferred to *Nicotiana tabacum* by two backcrosses with cv. BP-210 reports T. Doroszewska at the Institute Soil Science and Plant Cultivation-State Research Institute, Poland. (Plant Breeding, 129:76-81, 2010).
- Three soybean plant introductions contain unique resistance genes that when combined with PI 200538-derived *Meloidogyne arenaria* resistance improve resistance in soybean to peanut root-knot nematode report J. L. Yates and associates at Monsanto Corp., and University of Georgia. (Crop Science, 50:118-122, 2010).
- Treatment of chili with yeast antagonist reduced disease from *Colletotrichum capsici* and enhanced

activities of three enzymes and phytoalexin in chili report N. Nantawanit and associates at Mahidol University, Thailand. (Biology Control 52:145-152, 2010).

- No tillage to control *Orobanche crenata* is enhanced by application of glyphosate report R. J. López and associates at Córdoba University, Spain. (Agronomy Journal, 101:1394-1399, 2009).
- Spring spray applications of oxamyl or fosthiazate reduced root lesion and dagger nematode population densities for up to 2 years report T. W. Walters and associates at Washington State University, Prosser and Mt. Vernon; USDA-ARS, Corvallis; Dow AgriSciences and Valent BioSciences, WA. (HortTechnology 19:762-768, 2009).

# ❖ GENERAL NEWS

## IRAQI DATE PALM WEBSITE

A website, www.iraqi-datepalms.net, was created, sponsored developed and maintained completely by the author in order to collect, retype and represent the scattered date palm information on internet which is easy accessed to everybody all over the world. The main website homepage menu contains 39 topics include all the date palm and dates activates of which 27 subtitle topics. The number of visitors is increasing significantly in a daily range between150-200. The total visitor's number up to the time of the summary preparation is more than 66500, and the total subjects added to the web site are more than 1000. This web site adds a significant value to the date palm cultivation, marketing, dates industry as well as extension to the farmers, researchers and non professionals. In order to increase the debate between the interested specialist the Iraqi date palm Forum <www.iraqi-date-palm.net> was established to subsidize the web site in announcing the news of date palm activates and to allow the members chatting between each other for solving date palm problems. [Ibrahim J.Al-Jboory, Member Executive Committee ASPP, Email: ijboory@iraqi-datepalms.net].

## ARAB ORGANIZATION FOR AGRICULTURAL DEVELOPMENT AWARD FOR INNOVATION IN AGRICULTURE AND FISHERIES

During the 31st General Assembly of the Arab Organization for Agricultural Development (AOAD) held in Algeria during the period 26-28 April, 2010, Dr. Emad El-Maaroof from Iraq and an active member of the Arab society for Plant Protection (ASPP), was awarded the AOAD Innovation Award in Agriculture and Fisheries for the year 2008 under the theme New Technologies in Agricultural Production for his distinguished work on " Developing the genetic map for resistance to brown rust in Iraqi wheat varieties". Congratulations to Dr. EMAD with best wishes from ASPP for continued success in the future.

## IDENTIFICATION OF OLIVE FRUIT FLY (*BACTOCERA OLEAE* GENL) PARASITOIDS IN SYRIA

During a study on monitoring the population dynamics of the olive fruit fly in the west central region of Homs governorate, three parasitoids wer found and identified at the Faculty of Agriculture, University of Baath as *Euritoma* sp., *Pnigalio* sp. and *Eupelmus* sp. All three parasitoids belonged to the order Hymenopterqa. In the following seasons, studies on the rate of parasitism and the potential use of these parasitoids in the integrared pest management programs will be conducted. [D. Nammour[1], O. Edriss[1] and A. Bashir[2]. (1) Faculty of Agriculture, University of Baath, Homs, Syria, Email: osamaedriss@hotmail.com; (2) Faculty of Agriculture, University of Damascus, Syria].

## SUDDEN DECLINE, MANGO – UNITED ARAB EMIRATES

Thousands of mango trees in the UAE have been hit by a disease resulting in high tree mortality, officials said. A fungus called *Ceratocystis manginecans*, commonly known as mango killer, was identified as the cause of the disease. If left untreated, the disease has the potential to wipe out entire farms. In response, the Ministry of Environment and Water has geared up to protect the trees by containing and controlling the disease. "The disease leads to rapid deterioration of the mango trees. Once infected, the trees die within 6 months," reports the ministry. The ministry is currently working to save the mango farms and will implement serious measures to fight the infection and prevent its spread. The fungus prevents the movement of water and nutrients from the roots to the branches and the twigs. The symptoms of the disease include sudden browning and wilting of leaves. This then progresses gradually to the drying out of branches until the whole plant dies. Insects such as bark beetles [presumably] act as vectors in spreading the fungus. The disease first appeared in the UAE in 2005 in the eastern region. Since then, it has spread to other areas including Bitnah, Masafi, Dadna, Dibba and Kalba. In Oman, the same infection was reported in 2000 and resulted in a huge decline of yield. The cause of the disease remained unknown for a long time. Researchers in Oman were finally able to successfully identify the fungus causing the disease.

http://gulfnews.com/news/gulf/uae/environment/mango-killer-strikes-uae-farms-as-officials-set-out-to-protect-trees-1.581705

### BIOLOGICAL METHOD TO CONTROL PATHOGENIC FUSARIUM OXYSPORUM STRAINS

Researchers at the French National Agricultural Research Institute (INRA) have developed a biological method to control pathogenic strains of *Fusarium oxysporum*. *F. oxysporum* is a common fungus that is found in soils throughout the world. Some of its numerous strains are pathogenic, while others are non-pathogenic and can protect plants against infection by a pathogenic strain. This protection phenomenon has been known for many years, and scientists have now isolated a strain called Fo47 which provides particularly efficient protection. The INRA researchers have studied how strain Fo47 could be introduced directly into the soil, and in particular examined the conditions for its persistence. The researchers found that Fo47 was capable of developing in different types of soil, and its introduction had very little impact on the microbiological equilibrium of the soil measured after one year. These findings mean that Fo47 is a good candidate for the development of a biological agent to control pathogenic strains of *F oxysporum* (Source: Crop Biotech, 19 February 2010). Read the original story at: http://www.inra.fr/

## ❖ ARAB SOCIETY FOR PLANT PROTECTION NEWS

### REPORT AND RECOMMENDATIONS OF THE WORKSHOP ON "CROP HEALTH MANAGEMENT AND FOOD SAFETY" Beirut, Lebanon, 11-12 May, 2010

As a collaborative effort between the Arab Society of Plant Protection, the Lebanese National Council for Scientific Research and the Ministry of Agriculture, a workshop was held during the period 11-12 May, 2010 in Beirut, Lebanon under the title "Crop Health Management and Food Safety". The main objective of the workshop was to present and discuss with different stakeholders the available knowledge on crop health management in relation to food safety. In addition, the status of pesticides and other pollutants in food and feed products was assessed. The workshop also focused on good farming practices which lead to safer food products.

Workshop participants presented 24 scientific papers in six sessions under the following themes:

- Session one: Contaminated food and feed products
- Session two: Regulations and systems needed to enhance food safety
- Session three: Crop health management approaches which reduce or eliminate pesticide Hazards
- Session four: Status of pesticide residues in food products in Lebanon
- Session five: Infrastructure and methodology required to monitor food pollutants
- Session six: Public awareness and food safety

The workshop was concluded by a round table where recommendations were discussed and approved by the participants, and they are as follows:

## Conclusions and Recommendations

**I. Regulations, monitoring and control**

1. The need to establish a national food safety committee. In this committee all governmental agencies as well as private institutions and NGOs concerned with food safety issues should be represented.
2. Update legal regulations and guidelines related to the import, handling and use of pesticides, and make sure that all regulations are properly implemented.
3. Develop a proper system to trace violations in pesticides use at all levels starting from the production field. Fines should be high enough to deter violators. Likewise, there should be incentives for those who abide by the regulations.
4. Develop a system for collecting food samples and implemented by well trained individuals. Samples should be prepared and stored following proper conditions and should be delivered soonest to the accredited laboratory for testing.
5. It is essential to inspect all stores involved in selling pesticides and to make sure that hazardous chemicals are far enough from places selling food items.
6. Participants emphasized the importance of having a national program which regularly monitor pesticide residues in food and feed products, either produced locally or imported, and the responsible party has the authority to eliminate food items which has contamination levels higher than what it is internationally acceptable.

**II. Capacity building, inspection and coordination**

1. Provide extension service with enough well trained personnel and facilities to enable them empower farmers with knowledge and appropriate technology to be able to make the right decisions in selecting the components of integrated pest and crop management that is appropriate under their farm conditions. Such step will automatically lead to less use of pesticides.
2. Identify the Lebanese laboratories capable of analyzing food pollutants, including pesticide residues, as per international standards, and make sure that these labs have all the appropriate equipment and trained staff, and they should be accredited by an international accreditation agency.
3. Adopt standard analytical methods with high sensitivity that can test the largest number of pesticide residues which has defined tolerance limits, or those without a tolerance limit.

4. The national authority on food safety should establish a data base for food pollutants, to be used when establishing risk assessment programs. Data on the use of different pesticides in the neighboring countries, especially those who export food products to Lebanon, will be of utmost importance, as it will facilitate monitoring specific residues on specific food items originating from specific locations.
5. Review the code of conduct of pesticides issued by FAO and evaluate compliance in Lebanon to identify gaps/weaknesses, and based on such study develop a work plan to cover such gaps.
6. Adopt national standards to determine maximum pesticide residues acceptable limits for the different crops based on international standards and those followed by the export and import countries to Lebanon.
7. Develop a national program to dispose obsolete pesticides.
8. Outlets that sell pesticides should include among its staff a well trained individual (B. Sc. or high diploma In Agriculture) who is in charge of prescribing pesticide sales.
9. Make sure that storage conditions for food and feed products, are within acceptable standards (temperature, humidity, aeration) which does not permit the increase of phytotoxin levels because of poor conditions.

**III. Dissemination of good agricultural practices in crop management that enhance food safety and can be applied by farmers**

1. Encourage farmers to use as much as possible integrated pest management with minimal use of pesticides.
2. Inform farmers on the periods when pests natural enemies are active, and how they can make the best use of such component in controlling their pests (e. g. control of citrus scale insects by natural enemies).
3. Encourage expansion in organic production, especially in small farms, and adopt a certification scheme controlled by the government (e. g. Ministry of Agriculture) or by a combined government-private sector agency which guarantees the quality of the final product.
4. Disseminate the use of soil solarization for the control of soil-borne pests as a safe alternative to chemical fumigants, especially in plastic houses which produce fresh vegetables all year around.

**IV. Media and dissemination of information on pesticides hazards and involvement of local communities**

1. Participants stressed the importance of the media's role in public awareness about crop health management and the contamination of food products with different pollutants, especially on the safe and effective use of pesticides, its effect on consumers and how to reduce or eliminate its adverse effect.
2. The need to make decisions by the Ministry of Agriculture related to pesticide hazards based on periodical information and data and risk assessment under local conditions.
3. Issue extention brochures related to the most important crop pests and make it available to farmers, which facilitate accurate identification of the different crop pests, and what is the best way of controlling them. It is essential to make farmers aware of the "safe period" for all the pesticides used.
4. Inform consumers about the health and environmental benefits of agricultural products produced by following crop health management programs.

**V. General recommendation**

1. Importance of close collaboration between ministries and institutions and specialized centers in conducting the needed analysis, and to assure making use of research results to solve real problems facing the farming communities.
2. Encourage joint regional collaboration in studying risk assessment and determine the pollutants maximum residue limits acceptable and arrive to common understanding that serves the region, through the present agencies involved in food safety.
3. Develop unified guidelines among Arab countries in relation to monitoring pesticide residues in food products.
4. Establish a national scientific team from governmental and research institutions, guided by the Ministry of Agriculture in collaboration with Ministry of Economy and Trade, the Arab society of Plant Protection, the Lebanese National Council for Scientific Research and concerned universities in developing appropriate integrated pest management programs with periodical up-dating in the areas of implementation, inspection and legislation.

# ❖ PUBLICATION

# ❖ SELECTED RESEARCH PAPERS

## Entomology and Acarology الحشرات والعناكب

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**Effect of different eriophyid and tetranychid mango mite species on development, longevity, fecundity and predation of *Typhlodromus mangiferus* Zaher and El-Brolossy (Acari: Phytoseiidae).** 2010. Badawi A. Abou-Awad, Abdel-Sattar M.

Metwally and Mahmoud M. Al-Azzazy (Egypt). Archives of Phytopathology and Plant Protection, 43: 390-403.

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

**Downy mildew outbreak on parsley caused by *Plasmopara petroselini* in Turkey**. 2009. S. Soylu, E.M. Soylu and Ş. Kurt (Turkey). New Disease Reports (Plant Pathology), 20: 10.

**First report of *Penicillium ulaiense* as a postharvest pathogen of orange fruit in Egypt.** 2010. K. Youssef, Y. Ahmed, A. Ligorio, A.M. D'Onghia, F. Nigro and A. Ippolito (Egypt & Italy). New Disease Reports (Plant Pathology), 21: 18.

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***Bean yellow mosaic virus* on Cool-Season Food Legumes and Weeds: Distribution and its Effect on Faba Bean Yield and Control in Syria.** 2010. M. Alkhalaf, S.G. Kumari, A. Haj Kasem, K.M. Makkouk and S. Al-Chaabi (Syria). Arab Journal of Plant Protection, 28: 38-47.

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***Streptomyces alni* as a biocontrol agent to root-rot of grapevine and increasing their efficiency by biofertilisers inocula.** 2010. El-Sayed H. Ziedan, Eman S. Farrag, Riad S. El-Mohamedy and Mohamed A. Abd Alla. (Egypt). Archives of Phytopathology and Plant Protection, 43: 634-646.

**Survey of Parasitoids of Codling Moth *Cydia pomonella* L. in Eramo Region in Lattakia Governorate (Syria).** 2010. A. Bashir, L. Aslan and S. Al-Haj (Syria). Arab Journal of Plant Protection, 28: 91-95.

**The Side-Effect of Some Insecticides used in Apple Orchards in Syria on the Life Stages of Egg Parasitoid *Trichogramma cacoeciae* Marchal (Trichogrammatidae: Hymenoptera).** 2010. F. Al-Abbar, M.J. Hajjar and M. Jamal (Syria). Arab Journal of Plant Protection, 28: 85-90.

**Virulence potential of some fungal isolates and their control-promise against the Egyptian cotton leaf worm, *Spodoptera littoralis*.** 2010. Momein H. El-Katatny (Egypt). Archives of Phytopathology and Plant Protection, 43: 332-356.

# ❖ EVENTS OF INTEREST

## 2010

*** 10-12 August**

**New Zealand Plant Protection Society Conference,** New Plymouth, New Zealand. Contact: Fax: 64-3-325-9946; Email: secretary@nzpps.org;
See: http://tinyurl.com/ygtvzcc

*** 14-15 September**

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

*** 20-23 September**

**IUFRO Workshop "Methodology of Forest Insect and Disease Survey in Central Europe**", Freiburg im Breisgau, Germany.
See: http://www.biotic-risks-2010.de

*** 20-24 September**

**11th European Fusarium Seminar – "Mycotoxins, Taxonomy, Pathogenicity and Host Resistance",** Radzikow, near Warsaw, Poland.
Contact: e.czembor@ihar.edu.pl or t.goral@ihar.edu.pl

*** 10-12 October**

**1st Conference of Plant Protection**, Omar Al-Mukhtar University, Al-Bayda, Libya.
Contact: LSPPSconference1@gmail.com

*** 25-28 October**

**International Workshop on Biological Control of Postharvest Diseases: "Challenges and Opportunities",** Leesburg, Virginia, USA.
See: www.ishs.org/calendar/BCPD_Workshop2010. pdf

*** 15-18 November**

**9th Conference of the European foundation for Plant Pathology and 6th Congress of the Sociedade Portuguesa de Fitopatologia,** Evora, Portugal.
Contact: efpp2010.info@uevora.pt
See: www.efpp10.uevora.pt

*** 22-24 November 22-24**

**1st International Conference of Plant Protection, Mosul, Iraq.** Contact: Agr_coll_mosul@yahoo.com; mosul_plant_prot2010@ yahoo.com

*** 7-9 December**

**2010 National Fusarium Head Blight Forum,** Milwaukee, Wisconsin, USA.
See: www.scabusa.org/forum10.html
Contact: scabusa@scabusa.org

## 2011

*** 23-26 January**

**47th Congress of the Southern African Society for Plant Pathology**, Berg-en-Dal, Kruger National Park, South Africa. Contact: Quentin.Kritzinger@up.ac.za; Fax: 27-12-362-5099; See www.saspp.co.za.

*** 4-7 April**

**The third Arab conference for applied biological control in the Arab countries**, Cairo, Egypt.
See: www.esbcp.org

*** 13-15 April**

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

*** 26-29 April**

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

*** 27-29 April**

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

*** 17-20 May**

**4th Conference of the International Working Group on Legume and Vegetable Viruses (IWGLVV)**, Antequera, Málaga, Spain.

*** 23-28 May**

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

*** 1-3 June**

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

*** 26-28 May**

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

*** 7-12 June**

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

*** 20-23 June**

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

*** 2-7 October**

**3rd International Symposium on environ-mental weeds &invasive plants** (Intractable Weeds and Plant Invaders), Ascona, Switzerland.
Contact:. Christian.Bohren@acw.admin.ch;
See: http://tinyurl.com/24wnjxo

## 2013

*** 25-30 August**

**10th International Congress of Plant Pathology (ICPP2013),** Beijing, China.
Contact: Professor You-Liang Peng, Department of Plant Pathology, College of Agriculture and Biotechnology, China Agricultural University, Beijing 100193, PR China. Phone: +86-10-62733607; Fax: +86-10-62733607; Email: president@cspp.org.cn
See: http://www.icppbj2013.org/