Arab and Near East Plant Protection Newsletter

Number 58, April 2013

The Arab and Near East Plant Protection Newsletter (ANEPPNEL) is jointly published Triple a year by the Arab Society for Plant Protection and the Near East Regional Office of the FAO. All correspondence should be sent either to Adwan Shehab, Editor (adwanshehab@gmail.com) or to Nouran Attar, Editorial Assistant (n.attar@cgiar.org).

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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

Arab and Near East Plant Protection Newsletter
History, Scope, Continuity and Ways to Improve It

The Arab and Near East Plant Protection Newsletter (ANEPPNEL) has been issued regularly since 1983, presenting recent news and information about plant protection in the region and the world. The newsletter was issued as hard copy twice a year (June and December), and starting in 2011 it has been issued, only electronically, three times per year (April, August and December), and circulated to all members of the Arab Society of Plant Protection (ASPP) and other people interested in plant protection in the Arab and Near East region, in addition to making it available online on the ASPP website.

The ANEPPNEL mission is to disseminate up-to-date information about the new and invasive pests which cause epidemics in field crops and orchards of the region. It also circulates abstracts of up-to-date papers published in recent issues of selected scientific specialized journals.

The newsletter also circulates final updated news and forecast for the situation of desert locust populations in the region, which is provided by the regional team of FAO Emergency Center for Desert Locust.

The ANEPPNEL presents news of scientific specialized meetings (symposia, workshops and conferences) conducted by FAO and other regional and international organizations. It also lists the most outstanding scientific meetings in different fields of plant protection, which will be held during the coming three years.

New regional and international pioneer initiatives and achievements in the field of plant protection are mentioned under a permanent section of ANEPPNEL (General News). New vacancies announced by regional and international organizations involved in plant protection are also listed (when available).

The ANEPPNEL highlights the activities of the Arab Society of Plant Protection (ASPP); news of workshops, symposia, training courses and conferences, either conducted or to be conduct by ASPP. It reports as well the news of the Society active members, whether such news are cheerful (awards, prizes, promotions….), or sad news (eulogy).

Assistance in preparing the newsletter provided by members other than those in the Editorial Board, is acknowledged in the last page of the newsletter. As a matter of fact, the contribution of ASPP members is the corner stone for enriching ANEPPNEL with useful country-specific information and enhances collaboration among members which is an essential component for its continuity.

The regular issuance of ANEPPNEL for 30 years is concrete evidence that ASPP members, who voluntarily contribute to its continuity, are strong believers in its role as a useful link between ASPP members. ASPP is keen to increase the number of annual issues of ANEPPNEL, to become four or even six per year, which permits information to reach the end-users faster and thus increases its usefulness to members.

The new page of ANEPPNEL on face book is:
https://www.facebook.com/pages/Arab-and-Near-East-Plant-Protection-Newsletter/168962429830025

Adwan SHEHAB
General Commission for Scientific Agricultural Research (GCSAR)
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INVASIVE AND NEW PESTS

EGYPT

First record and preliminary evaluation of *Mucor hiemalis* as biocontrol agent on inflorescence brown rot incidence of date palm. In Egypt, inflorescence brown rot disease of date palm trees caused by *Thielaviopsis paradoxa* De Syenes causing high losses of pollen grains and fruits yield productivity. Infection occurs early on spathes even when it still hidden in the leaf bases. White mycelium of pathogenic fungi grows on inflorescence then turned to brown when fungus spores abundant. Isolation trails from diseased spathes showed brown rot, yielded three genus of fungal *i.e. Aspergillus niger* (25%), *Mucor hiemalis* (25%) and *T. paradoxa* (50%). Pathogenicity test by using fungal isolates and male inflorescence of data indicate that, all isolates of *T. paradoxa* were able to induce brown rot of inflorescence. Isolates of *T. paradoxa* were differed in pathogenic activity for producing inflorescence brown rot symptom. Also, *A. niger* isolate could cause slightly decay on inflorescence. Meanwhile, all isolates *of M. hiemalis* recorded as non-pathogenic. *In vitro*, dual culture technique by using *M. hiemalis* showed antagonistic properties against *T. paradoxa*. Scanning electron microscopy (SEM) study revealed that, pollen grains of date palm are susceptible to infection by *T. paradoxa*, accompanied by complete lyses and ruptured. SEM examination of inflorescence treated by each of *M. hiemalis* or/and *T. paradoxa* showed that *M. hiemalis* was able to colonisation on inflorescence and reduced colonisation of *T. paradoxa* on inflorescence and pollen grains. Preliminary evaluation of *M. hiemalis* as a biocontrol agent showed that, spray of inflorescence with *M. hiemalis* suspension two days before or after infestation by *T. paradoxa* were reduced brown rot of inflorescence than the control. Spraying of spathes by *M. hiemalis* before infestation by pathogen was highly effective in reduction brown rot incidence compared with spraying after infestation. These results help to explain the role of *M. hiemalis* in the suppression and biological control of *T. paradoxa*.[El-Sayed H.E. Ziedan, Eman S.H. FarragandA.F. Sahab (Egypt). Archives of Phytopathology and Plant Protection, 46 (5): 617-626, 2013].

LEBANON

A primary surveillance for invasive weeds in Lebanon. A preliminary survey of invasive weeds was carried out with the use of a Global Positioning System (GPS) in the Beq'aa and the North provinces along the Lebanese–Syrian borders between 2011 and 2012. The assessment hinged on the province, region (mountain and coastal), environment (agricultural and non-agricultural) and crop type. In July 2011, the presence of *Abutilon theophrasti* weed was detected in Baalbek (North of Beq'aa) and Zgharta (North Province). Outcomes during November 2012, showed the introduction of the *Solanum elaeagnifolium* weed, locally-known as wild egg lant, to the Northern Beq'aa specifically in the Baalbek and Hermel cazas. This is the first record of the presence of the setypes of invasive weeds in Lebanon and the search is still on-going to include the rest of the provinces. A comprehensive management plan, treatment and prevention to reduce the proportion of damage that could impact farmers and pastoralists will follow. [Mustafa Haidar and Alia Sabra (Lebanon), Email: mhaidar@aub.edu.lb].

OMAN

First report of gladiolus corm rot caused by *Fusarium proliferatum* in Oman. Hybrid gladiolus varieties have potential as a major ornamental crop in Oman. Grown for the cut-flower industry, their production has increased significantly in recent years. In 2010, during a field trial of two hybrid varieties (Red Majesty and Mascagni) grown in sandy soil at Al Moballah, Muscat, approximately 3% of Red Majesty plants and 12% of Mascagni plants showed signs of wilting and yellowing prior to plant death. In all cases, tissue taken from 20 diseased corms yielded Fusarium-like colonies on potato dextrose agar (PDA). Colonies were light to dark purple in color with dense and abundant aerial mycelium; macroconidia were 33.8 × 4.8 µm with 3 to 5 septa per spore; microconidia were 13.5 × 4.8 µm with 0 to 1 septa per spore and were in chains (mean of 50 spores in both cases). No chlamydospores were observed. In vitro characters and spore measurements conformed to previously described features of *Fusarium proliferatum* (Matsushima) Nirenberg. Mycelial plugs (5 mm in diameter) were taken from 5-day-old cultures of *F. proliferatum* grown on 2.5% PDA and wrapped on the base of Gladiolus corms using Parafilm and wet cotton. The Parafilm was removed after 7 days of inoculation. The corms were kept in moistened polythene bags for and symptoms were recorded. Control corms were inoculated using PDA. Artificial inoculations resulted in rot symptoms on all corms within 14 days and fungal colonies identical to initial isolations were recovered from artificially infected corms. Rotting was not observed in corms

inoculated using PDA alone. Identification of *F. proliferatum* was confirmed using sequences of the internal transcribed spacer (ITS) of the ribosomal DNA (ITS1 and ITS4 primers) and sequences of the translation elongation factor alpha (TEF-1) gene (EF-1-986 and EF-728 primers). The ITS and TEF-1 sequences were found to share 99.8% and 99.6% nucleotide similarity to previously published sequences of the ITS (HQ113948) and EF (JN092351) regions of *F. proliferatum* in GenBank, respectively. The ITS sequence of one isolate was assigned GenBank Accession No. JN86006. To our knowledge, this is the first report of the occurrence of *F. proliferatum* in Oman or in the Arabian Peninsula. [I. H. Al Mahmooli, F. Al Balushi, O. Doyle, A.M. Al Sadi and M.L. Deadman (Oman). Plant Disease, 97(2): 248, 2013].

TURKEY

Parasitic bacteria and fungi on common mistletoe (*Viscum album* L.) and their potential application in biocontrol. This study was carried out to identify pathogenic bacteria and fungi on mistletoe (*Viscum album* L.) and investigate their potential use in biological control of this parasitic plant. For this purpose, a total of 48 fungal isolate and 193 bacterial strains were isolated from contaminated *V.album* during the summers 2005–2006. The isolated bacterial strains and fungal isolates were identified by using the Sherlock Microbial Identification System (MIS; Microbial ID, Newark) and microscopic methods, respectively. The bacterial strains that induced hypersensitive reaction (HR) on tobacco (*Nicotiana tabacum* L.) and fungal isolates were tested for pathogenicity on young shoots of mistletoe by using injection methods. The pathogenic bacterial strains and fungal isolates were also tested for their activity against mistletoe using spray methods. Five bacterial strains (two *Burkholderia cepacia*, one each of *Bacillus megaterium*, *Bacillus pumilus* and *Pandoraea pulminicola*) were HR and pathogenicity positive when injected but none of them when sprayed on mistletoe. When fungi were injected, 32 isolates were pathogenic but only thirteen when sprayed on mistletoe. *Alternaria alternata* VAŞ-202, VAŞ-205, VAŞ-217 and *Acremonium kiliense* VA-11 fungal isolates were the most effective ones and caused strong disease symptoms on mistletoe. The present study is the first report on the efficiency of potential biocontrol agents against mistletoe in Turkey. [Recep Kotan, Akif Okutucu, Arzu Ala Görmez, Kenan Karagoz, Fatih Dadasoglu, İsa Karaman, İsmet Hasanekoglu and Şaban Kordali (Turkey). Journal of Phytopathology, 161(3): 165-171, 2013].

RESEARCH HIGHLIGHTS

ALGERIA

Inuloxins A–D, phytotoxic bi-and tri-cyclic sesquiterpene lactones produced by*Inulaviscosa*: Potential for broomrapes and field dodder management. Four phytotoxic bi- and tri-cyclic sesquiterpene lactones, named inuloxins A–D, were isolated together with the known α-costic acid, from the aerial parts of*Inula viscose*(family Asteraceae), a widespread Mediterranean plant well known for its content of pharmacologically active metabolites. The structures of inuloxins A–D were established by spectroscopic and chemical methods and determined to be: (4E,7R*,8R*,10S*)-3-oxo-germacra-4,11(13)-dien-8β-12-olide (A), its 11,13-dihydro analogue (B), (5R*,7R*,8R*,10R*)-1,15-methylene-5β-hydroxy-eudesm-1(15),11(13)-dien-8β-12-olide (C), and (7R*,8R*)-1,4-dimethyl-4-hydroxy-secoeudesm-5(10),11(13)-dien-8β-12-olide (D). The**S**absolute stereochemistry at C-5 of 5-hydroxyhexan-2-yl side chain of inuloxin D was assigned by applying an advanced Mosher's method. The phytotoxic activity of inuloxins A–D, that of the diazo and monoacetyl derivatives (of inuloxin A and C, resply), as well as that of α-costic acid was evaluated against two parasitic plant species, i.e. crenate broomrape (*Orobanche crenata*) and field dodder (*Cuscuta campestris*). Inuloxins A, C and D were the most active on both parasites and caused up to 100% inhibition of the seed germination. Inuloxin B was less active on*Cuscuta*and completely inactive against*Orobanche*. The main metabolite α-costic acid had a suppressive effect on the dodder seed germination but had a stimulating action on the broomrape seed germination. These preliminary results allowed to suppose some structure–activity relationships.[Anna Andolfi,Nadjia Zermane,Alessio Cimmino, Fabiana Avolio, Angela Boari, Maurizio Vurro and Antonio Evidente (Algeria & Italy). Photochemistry, 86: 112-120, 2013].

Study the impact of *Trichoderma harzianum* filtrate on vitality of somehard wheat seeds, and on their interior associated fungi.The aim of this study is to clarify the effect of the treatment with *Trichoderma harzianum* filtrate on vitality of some hard wheat seeds and on their interior associated fungi. Three samples of hard wheat seeds (*Triticum durum* Desf) were brought from Oum-elbouaghi (Algeria) silos yields, follower for varieties: Vitron, Waha, and GTA.Seed treatment with *Trichoderma harzianum* filtrate showed: 1-An increase in the proportion of seed germination in Waha and in GTA with ratios equal to: 0.47% and 05.56% in two cultivars respectively, compared to untreated seeds

(controls).Moreover, improvement in growth and strength of seedlings were clearly evident in three treated cultivars compared to untreated seeds (control), where those which their growth was low, and some deformation and anomalies were clearly evident. 2-A strong decrease in the interior associated fungi numbers, with ratios equal to: 74.074%, 79.166%, and 93.75% in: Vitron, GTA, and Waha respectively, compared with untreated seeds (controls). [Hamitou Mokhtar and Aid Dehimat (Algeria). Agriculture and Biology Journal of North America, 4(1): 48-53, 2013].

Decommissioned dates: chemical composition and fermentation substrate for the production of extracellularcatalase by an *Aspergillus phoenicis*mutant. The recovery of dates downgraded as a fermentation medium for the production of extracellular catalase by *Aspergillus phoenicis* K30 was studied. Analysis of the chemical composition of pulpand kernel flour of dates showed that the pulp had a considerably greater carbohydrate content compared to the kernel (84 vs 2.93% respectively). However, the kernel flour was richer in nitrogen (0.68% vs 0.34), mineral elements (3.63 vs 1.28%) and in essential fatty acids C18: 2 vs C18: 3 than the pulp flour. The soluble extract of the date flour showed that sugars solubilised at 90% consisted of sucrose, fructose and glucose. Therefore, this extract, being an important source of carbon and energy, was used in the current study as a fermentation medium (after supplementation with 20% of corn steep) for the production of extracellular catalase by *A. phoenicis* K30. During the course of this fermentation, the biomass was estimated at 18.6 g/L after 72 h of culture, while the maximum concentration of extracellular catalase (47.5 U/ml) was reached at 96 h of fermentation. The mycelium obtained in pellet form is suitable for industrial exploitation of this process.[N. Kacem-Chaouche, L. Dehimat, Z. Meraihi, J. Destain, K. Kahlat and Ph. Thonart (Algeria). Agriculture and Biology Journal of North America, 4(1): 41-47, 2013].

EGYPT

Efficiency of different methods of extracting the rice root nematode*Hirschmanniellaoryzae*from rice and wheat soil and root samples. The nematode extraction method of centrifugal-floatation proved to be more efficient and significant ($p \leq 0.01$) in extracting the rice root nematode,*Hirschmanniella oryzae*adults and larvae from soil or roots of rice and wheat crops than those extracted by sieving and tissue paper filtration technique. The extracted nematode from rice roots using incubation method is time-dependent and the peak of nematodes occurred four days after incubation. The number of extracted nematode varied according to crop, nematode mobility in soil particles, the number of nematodes present and tissue paper permeability. [M.F.M. Eissa,Nagwa A. Abd-Elbary and M.M.A. Youssef (Egypt). Archives of Phytopathology and Plant Protection, 46 (1): 64-69, 2013].

Nematodes associated with some date palm cultivars in relation to soil type. A survey was conducted during 2010 and 2011 to study the distribution of nematodes associated with certain date palm cultivars in Nubaryia and Giza in Egypt. The results revealed that the root knot nematode, *Meloidogyne incognita* was found at high population density and frequency of occurrence on the surveyed date palm cultivars in sandy loam soil in Nubaryia. The highest population density and frequency of occurrence of the root knot nematode were found on date palm cv. Al-Ekhlas followed by cvs. Barhi, Samani and Zaghlool. The spiral nematode, *Helicotylenchus* was found in soil of Samani and Zaghlool only. In clay loamy soil in Giza, *Helicotylenchus* spp. and *Rotylenchulus renformis* were found in association with certain date palm cultivars. As for *Rotylenchulus reniformis*, it was found at the highest population density and frequency of occurrence in the rhizosphere of Hayani followed by Zaghlool, Samani and Barhi. As for *Helicotylenchus*, it was found that the highest population density, also, was in the rhizosphere of Hayani followed by Samani, Barhi and Zaghlool in a descending order.[M.M.A Youssef&Asmahan M.S. Lashein (Egypt). Archives of Phytopathology and Plant Protection, 46 (3): 273-277, 2013].

Efficacy of soil solarization and post-planting mulch on control of root-knot nematodes. Experiments were carried out in naturally infested soil with root-knot nematodes, *Meloidogyne* spp., in the summer season of 2005 and 2006 at two locations in Beheira governorate, Egypt. Five different color polyethylene sheets (transparent, red, black, green and blue) were used to cover the naturally infested soil as a solarization and post-planting mulch. Reduction in number of galls, egg-masses, females/root system and number of second stage juveniles (J2)/250 g soil was recorded as compared to untreated control. The highest reduction percentage of total nematode population and reproduction rates of *Meloidogyne* spp., were occurred in transparent sheet compared to the others. Tomato plant growth parameters were also markedly enhanced in different color sheets. [R.A. Bakr, M.E. Mahdy and M.E. Mousa (Egypt). Pakistan Journal of Nematology, 31(1): 71-76, 2013].

Effectiveness of ultraviolet radiation as a physical method in controlling the stored product mite, *Tyrophagus putrescentiae* (Acari: Acaridae). Adults and newly laid eggs of the astigmatid mite, *Tyrophagus putrescentiae* were exposed to UV-C (260 nm) and UV-B (315 nm). In adults, the most effective treatments

were observed from distance 10 cm and exposure times ranged between 3-15 min with mortality rates between 85-100% for UV-C and 62-83% for UV-B. Based on the LD_{50} values the UV-C radiation was more effective than the UV-B at different exposure times within each distance tested (5, 10 and 20 cm). A positive correlation was detected between the UV dose and mortality within each distance used for UV-C and UV-B irradiances. Regarding eggs none of the UV-B or UV-C exposed eggs in all treatments hatched. [Anar, A. Bakr (Egypt). Journal of Entomology, 10(1): 43-48, 2013]

Evaluation of some cucurbitaceous rootstocks for resistance or susceptibility to root-knot nematode and Fusarium wilt under greenhouse conditions. Southern root-knot nematode, *Meloidogyne incognita* and Fusarium wilt *Fusarium oxysporum* are the most serious soil borne diseases of cucumber. The present study aimed to evaluate some cucurbit rootstocks for their resistance and/or susceptibility to root-knot nematode and Fusarium wilt fungus in two successive seasons (2009 and 2010) under greenhouse conditions. Data indicated that in autumn season, winter squash (*Cucurbita maxima*) was highly resistant and resistant when the pots were inoculated with *M. incognita* only or nematode plus fungus, respectively. *Lagenaria sicenaria* rootstock was moderately resistant in both cases of inoculation. Other rootstocks were susceptible to nematode or nematode plus fungus except *Cucurbita ficifolia* and *Luffa aegyptiaca*, which were highly susceptible to nematode only. While, in spring season, *Benincasa hispida* and hybrid 6001 were moderately resistant to infection by the root-knot nematode. Other rootstocks were susceptible to nematode or nematode plus fungus except *Luffa acutangula* and *Cucumis sativus* var. Hesham which were highly susceptible. The results obtained on the enzyme content showed that some cucurbit rootstocks exhibited the highest content of polyphenoloxidase, peroxidase and lignin contents being the lowest in some rootstocks. Significant and highly significant reductions in shoot and root fresh weights, root and shoot lengths were recorded in most cucurbit rootstocks in autumn and spring seasons as a result of nematode, nematode plus fungus or fungus infections compared to non-infected rootstocks.[A.W. Amin, Abd-El Wanis, Mona, A. Rahman and Tomader (Egypt). Pakistan Journal of Nematology, 31(1): 45-54, 2013].

Evaluation of some black and yellow seed-rape against *Rotylenchulus reniformis* and other Tylenchids coinhabiting seed-rape field in Egypt. Thirty eight imported oil seed-rape cultivars were evaluated for their relative susceptibility against the reniform nematode, *Rotylenchulus reniformis* and other tylenchids under field conditions. Statistical differences ($P \leq 0.05$ and 0.01) in varieties were found in either final nematode populations or the yield components. The potential of each cultivar to support reproduction of the reniform nematode or other tylenchids was calculated in relation to that of Sedo cv or Semu DNK 86/233 cv, respectively which were regarded as check cultivars. The tested cultivars were classified for their susceptibility against *R. reniformis* as follows: Tower was rated as immune cultivar, while Drakkav, Gloda, Gloda Semu 250/84, Moneta Semu 249/84, Anima Semu 204/83, Semu DNK 235/84, Semu DNK 239/84, Semu DNK 240/84, Semu DNK 85/201, Semu 2080, PF 1/85, PF 2/85 and PF 550/86 were graded as highly resistant. Candle, Hanna, Silva, Duplo, Lirasol, Loras, Topas, Semu DNK 242/84, Semu DNK 246/84, Semu DNK 85/202, Semu DNK 264/84, Semu DNK 232/83 and Semu DN 205/82 were rated as resistant cultivars. Six cultivars graded as less susceptible viz., Global, Semu DNK 249/84, Semu DNK 248/84, Semu DNK 204/83, Semu DNK 232/84 and Semu DA 15/81 cultivars. Only PF 2886/85 cv was categorized as moderately susceptible. On the other hand, four cultivars viz., Sedo, Semu DNK 265/84, Semu DNK 206/84 and Semu DNK 86/233 were ranked as highly susceptible cultivars. It was observed that reproduction of nematode was favored on highly susceptible and susceptible cultivars but inhibited on resistant ones. Therefore, all tested cultivars showed great variability in their reaction to the nematode infection according to the host type. The different yield components of oil seed-rape varieties were also discussed. Finally, the differences among the tested cultivars should serve as a good resource for plant breeders and cropping systems to limit the loss due to the nematode infection. [A.E. Ismail and N.M. Mahrous (Egypt). Pakistan Journal of Nematology, 31(1): 65-70, 2013].

Impact of *Spodoptera littoralis* (Boisd.) and *Agrotis ipsilon* (Hufn.) larval frass on oviposition of conspecific insects. Ethanolic extracts of larval frass of the cotton leaf worm and the black cutworm were prepared and tested to deter the eggs lay of the adults of the same insects. Two different types of food were used for larval feeding. Extracts fractions were identified using gas chromatography–mass spectrometry analysis. High concentrations were more deterrent to oviposition than low. Extracted frass of fed larvae on semi-artificial diet was more effective than others fed on natural host. Sensitivity of the black cutworm adult females to the cotton leaf worm frass extract was clearly observed at high tested concentration of $L_{1–3}$ and L_4 frass extracts which resulted completely oviposition deterrent. Several fatty acids were identified qualitatively and quantitatively in frass extracts of different larval instars of both target insects. Type and quantity of fatty acid depends mainly on larval food source and larval instar,

except palmitic acid which recorded at all larval instars and food sources. Oleic acid and ethyl 9-hexadecaenoic acid were found when semi-artificial diet used as a food source while myrisitic acid was observed only in extracted frass of fed larvae on castor oil leaves.[A.A.I. Ahmed, M.Y. Hashem, Manal M. Adel, S.M. Mohamed&S.H. Shimaa Khalil (Egypt). Archives of Phytopathology and Plant Protection, 46(5): 575-592, 2013].

Potential of biotic inducers on disease severity and variation of Cucumber mosaic cucumovirus in cucumber plants. Six bacterial strains (*Bacillus subtilis*, *Bacillus polymyxa*, *Bacillus circulans*, *Pseudomonas putida*, *Pseudomonas fluorescens* 2 and *Pseudomonas fluorescens* 8) and one fungal isolate (*Trichoderma harzianum*) were tested for their ability to protect *Cucumis sativus* L. cv. Beith Alpha against the disease development of Cucumber mosaic cucumovirus (CMV). Seed treatment with individual bacterial and fungal liquid cultures significantly and consistently reduced the disease severity (DS) of infected cucumber plants, after 14 days from CMV inoculation onto cotyledons. All seven biotic inducers reduced the CMV infection at the range of 16.6–39% and 0–46.5% under sterilised and non-sterilised soils, respectively. The effect of treatment with each biotic inducer has a significant difference in the percentage of CMV DS. In sterilised soil, *B. circulans* has a low percentage of DS (42%), while *P. fluorescens* 8 has a high DS percentage (62.9%). In non-sterilised soil, the low DS percentage was 30% for *T. harzianum*, while *P. putida* had the highest DS percentage (70%). On the other hand, CMV variability on *Chenopodium amaranticolor* revealed that all biotic treatments differed according to the local lesion number, similarity and morphology.[A.A. Megahed, S.M. Lashina, Kh.A. El-Dougdoug, B.A. Othman&M.A. Ibrahim (Egypt). Archives of Phytopathology and Plant Protection, 46(2): 193-200, 2013].

ETHIOPIA

Differential resistance of maize varieties to maize weevil (*Sitophilus zeamais* Motschulsky) (Coleoptera: Curculionidae) under laboratory conditions. A study was conducted with the objectives to determine the resistance of maize varieties to maize weevil, *Sitophilus zeamais*. It was conducted at Jimma University College of Agriculture and Veterinary Medicine in entomology laboratory at room temperature of 25-27°C and 40-60% RH in 2011/2012. The maize varieties were collected from Bako and Holeta Agricultural Research Centers, Ethiopia and local market, Jimma-Merkato. A total of 13 maize varieties were screened for their relative resistance to *S. zeamais*. Dobie index of susceptibility was used to classify the varieties in to different reaction categories. The varieties were significantly different in terms of susceptibility index. Only one variety, 'BHQP-542', had 3.5 index of susceptibility and was regarded as resistant variety to maize weevil attack. However, most of the varieties, namely BH660, BH670, BH543, BHQPY545, Gibe-1, Gibe-2, Wanchi, Argane, Hora and Local variety-Orome, had index of susceptibility 4.6, 5.3, 4.7, 4.8, 4.9, 4.8, 5.2, 5.7, 5.2, 6.0, respectively and are regarded as moderately resistant to maize weevil attack. Two varieties (BH661 and Kuleni) had index of susceptibility 7.11 and 7.09, respectively and are regarded as moderately susceptible varieties to maize weevil attack. The resistant variety produced low numbers of F_1 progenies (51.33), had a high median developmental time (48.33 days), a low percentage of seed damage (15.85%), less production of grain dust (powder (0.03%)), low percentage of seed weight loss (4.11%) and high percent weevils mortality (14.24%) and seed germination (93.66 (undamaged) and 86.60% (damaged)). Weevil progenies emergence is significantly and positively associated with seed damage and weight loss but inversely with median development time. The use of resistant varieties in insect pest management is an eco-friendly and cost effective means that should be promoted for *S. zeamais* management in maize especially for small-scale farmers in the tropics. [Temesgen Keba and Waktole Sori (Ethiopia). Journal of Entomology, 10(1): 1-12, 2013].

IRAN

An annotated checklist of *Pythium*species from Iran. The genus*Pythium*, with slightly over 280 described species has been classified traditionally with other filamentous, coenocytic, sporangia-producing fungi as "Phycomycetes". However, with recent advances in chemical, ultrastructural and molecular studies *Pythium* spp. are now considered as "fungus-like organisms" or "pseudo-fungi" and are placed in the kingdom Chromista or kingdom Straminopila, distinct from the true fungi or the kingdom Fungi. Little is known about the biodiversity of *Pythium*in Iran. This paper attempts to assess the position of the genus *Pythium*and provides details of the historical development of the study of*Pythium*in Iran. The survey list contains 33 species, 4 species groups and 1 unknown species of *Pythium*.[Ali Chenari Bouket, Mahdi Arzanlou and Asadollah Babai-Ahari (Iran). Archives of Phytopathology and Plant Protection, 46(1): 70-83, 2013].

Fumigant toxicity of essential oil of Mugwort (*Artemisia vulgaris* L.) against three major stored product beetles. Application of plants essential oil for the evaluation of their fumigant toxicity and insecticidal properties is the goal of many researches. In this study, aerial parts of *Artemisia vulgaris* L. were subjected to

hydrodistillation using a Clevenger-type apparatus, and the chemical composition of the volatile oils was studied by gas chromatography–mass spectrometry. Alpha-Pinene (23.56) was the main component of the essential oil. Insecticidal activity of the oil was evaluated against *Tribolium castaneum* (Herbst), *Callosobruchus maculatus* (F.) and *Rhizopertha dominica* (F.) after 24, 48 and 72h. After 24-h exposure time, *C. maculatus* was more susceptible (LC_{50}=52.47µl/l air) and *T. castaneum* was more tolerant (LC_{50}=279.86µl/l air) than other species. LT_{50} values were indicated using highest concentration of LC_{50} tests for three species. In general, mortality increased as the doses of essential oil and exposure time increased. These results proposed that *A. vulgaris* oil might have potential as a control agent against *T. castaneum*, *R. dominica* and especially *C. maculates* in storages. [Iman Sharifian, Seyed Mehdi Hashemi&Ali Darvishzadeh (Iran). Archives of Phytopathology and Plant Protection, 46(4): 445-450, 2013].

Seedling stage resistance of Iranian bread wheat germplasm to race Ug99 of *Puccinia graminis* f. sp. *tritici*. Following emergence of Ug99, the new virulent race of *Puccinia graminis* f. sp. *tritici* in Africa, a global effort for identification and utilization of new sources of Ug99-resistant germplasm has been undertaken. In this study, we conducted replicated experiments to evaluate the resistance of Iranian wheat germplasm to the TTKSK lineage of the Ug99 race of *P. graminis* f. sp. *tritici*. We also evaluated for presence of stem rust resistance genes (i.e., *Sr2*, *Sr24*, *Sr26*, *Sr38*, *Sr39*, *Sr31*, and $Sr1RS^{Amigo}$) in wheat cultivars and breeding lines widely cultivated in Iran. Our phenotyping data revealed high levels of susceptibility to Ug99 in Iranian bread wheat germplasm. Our genotyping data revealed that Iranian cultivars do not carry *Sr24*, *Sr26*, or $Sr1RS^{Amigo}$. Only a few salt-tolerant cultivars and breeding lines tested positively for *Sr2*, *Sr31*, *Sr38*, or *Sr39* markers. In conclusion, the genetic basis for resistance to Ug99 in Iranian wheat cultivars was found to be vulnerable. Acquiring knowledge about existing resistance genes and haplotypes in wheat cultivars and breeding lines will help breeders, cereal pathologists, and policy makers to select and pyramid effective stem rust resistance genes. [Mohsen Mohammadi, Davoud Torkamaneh and Mehran Patpour (Iran). Plant disease 97(1): 387-392, 1013].

OMAN

The mango sudden decline pathogen, *Ceratocystis manginecans*, is vectored by *Hypocryphalus mangiferae* (Coleoptera: Scolytinae) in Oman. In Oman, the bark beetle *Hypocryphalus mangiferae* is closely associated with trees affected by mango sudden decline disease caused by *Ceratocystis manginecans*. Although it has previously been assumed that this beetle plays a role in the dispersal of the pathogen, this has not been established experimentally. The aim of this study was to determine whether *H. mangiferae* vectors *C. manginecans* from infected to healthy mango trees. A survey conducted in northern Al Batinah region of Oman revealed that *H. mangiferae* was closely associated with mango sudden decline disease symptoms and it was found on trees in the early stages of the disease. Healthy, 2-year-old mango seedlings were exposed to *H. mangiferae* collected from diseased mango trees. Seedlings were infested by the bark beetles and after 6 weeks, typical mango sudden decline disease symptoms were observed. *Ceratocystis manginecans* was isolated from the wilted mango seedlings while uncolonized control seedlings remained healthy. The results show that *H. mangiferae* vectors *C. manginecans* in Oman and is, therefore, an important factor in the epidemiology of this disease. [A.O. Al Adawi, R.M. Al Jabri, M.L. Deadman, I. Barnes, B. Wingfield andM.J. Wingfield (Oman).European Journal of Plant Pathology, 135(2): 243-251, 2013].

PAKISTAN

Can resistance in *Bemisia tabaci* (Homoptera: Aleyrodidae) be overcome with mixtures of neonicotinoids and insect growth regulators? Tobacco whitefly, *Bemisia tabaci* is an important polyphagous insect pest which has developed resistance to various insecticides worldwide. Mixtures of insecticides with different modes of action may delay the onset of resistance. Bioassays were performed to investigate the effects of various mixtures of neonicotinoid and insect growth regulator (IGR) insecticides against a susceptible and a resistant strain. The results of the study showed that potentiation ratio (PR) of all neonicotinoids+buprofezin or pyriproxyfen mixtures at 1:1, 10:1 and 20:1 ratios was greater than 1 suggesting synergistic interactions between insecticides. Maximum potentiation occurred at the 1:1 ratio (PR=1.69–7.56). The PRs for mixture of acetamiprid, thiamethoxam, thiacloprid or nitenpyram with buprofezin or pyriproxyfen at1:10 and 1:20 ratios were less than 1 indicating antagonistic interactions. Addition of synergists, S,S, S, tri-butyl phosphorotrithioate (DEF) or piperonyl butoxide (PBO) in the insecticide solutions largely overcame the resistance to all tested neonicotinoids, indicating that the resistance was associated with esterases or mono-oxygenases, respectively. Likewise, addition of both DEF and PBO in mixture with neonicotinoids and IGRs also suggested a similar mechanism of resistance in *B.tabaci* to the tested insecticide groups. The mechanism of synergism

between neonicotinoids and IGRs is unclear. Implications of using mixtures to counteract pesticide resistance are discussed. Mixtures of neonicotinoids with buprofezin or pyriproxyfen at a 1:1 ratio could be used to restore the efficacy of these neonicotinoids against *B.tabaci*.[Muhammad Basit, Shafqat Saeed, Mushtaq Ahmad Saleem and Ali H. Sayyed (Pakistan).Crop Protection, 44(1): 135-141, 2013]

Effects of combined thiamethoxam and diatomaceous earth on mortality and progeny production of four Pakistani populations of *Rhyzopertha dominica* (Coleoptera: Bostrichidae) on wheat, rice and maize. Bioassays were conducted to evaluate the effects of combining thiamethoxam at 0.25, 0.5 and 0.75 mg/kg of active ingredient with the diatomaceous earth (DE) formulation, SilicoSec, at the rate of 100 mg/kg against four Pakistan populations of the lesser grain borer, *Rhyzopertha dominica* (F.) (Coleoptera: Bostrichidae). The tests were carried out with adult beetles on wheat, maize, and rice. Mortality increased with increasing application rates and exposure intervals for each population. Individually, thiamethoxam alone was more effective at the high dose rate than DE alone, but after 14 days of exposure in most cases, there was greater mortality with DE than with the low dose of thiamethoxam. There was greater mortality in wheat than in rice or maize. Populations differed in susceptibility to treatments and production of progeny. [Waqas Wakil, Tahira Riasat and Jeffrey C. Lord (Pakistan). Journal of Stored Products Research, 52(1): 28-35, 2013].

Encapsulation of halophytic plant parts powder in suppression of root rot diseases. First attempt was done for the encapsulation of organic matter in which*Rhizophora mucronata*Lam. parts powder was filled in capsule shells and incorporated in soil at one, three and five capsules per pot to assess its impact on the crop growth. The results showed that *R. mucronata*stem at three capsules per pot was found better in the enhancement of growth parameters while leaves and stem of mangrove resulted in greater germination of okra and mung bean seeds. Leaves and stem powder at five capsules per pot significantly reduced colonisation of root-infecting fungi. However, empty shells did not have any effect on root-infecting fungi whereas the growth of crop plants was increased when compared with a control. [Marium Tariq and Shahnaz Dawar (Pakistan). Archives of Phytopathology and Plant Protection, 46(1): 39-45, 2013].

Molecular characterization and phylogenetic analysis of *Citrus viroid V* isolates from Pakistan. *Citrus viroid V* (CVd-V) was recently characterized and belongs to the genus *Apscaviroid* within the family *Pospiviroidae*. 334 CVd-V isolates were identified from Punjab, Pakistan, where CVd-V had not been reported. A total of 68 independent cDNA clones were sequenced from 11 infected trees of different cultivars, ranging from 292 to 295 nucleotides. The nucleotide diversity estimated from the nucleotide distances of the CVd-V Pakistan population was similar to that reported from other countries. Based on genetic diversity and phylogenetic analysis, two main CVd-V groups were identified indicating that Pakistan might be one of the geographic origins of CVd-V worldwide. We demonstrated that this viroid has not emerged recently and it is more widespread than previously expected. [Mengji Cao, Sagheer Atta, Huanan Su, Xuefeng Wang, Qiong Wu, Zhongan Li and Changyong Zhou (Pakistan). European Journal of Plant Pathology, 135(1): 11-21, 2013].

Symptomatic expression of tristeza-infected citrus plants in Pakistan. Variable symptoms were recorded during a survey in the citrus trees infected or suspected to be infected with citrus tristeza virus based on ELISA tests. Sweet orange manifested main symptoms like bud union crease, pin holing, bark cracking, incompatibility, yellowing and dropping of leaves. Pin holing was particularly prevalent in Sweet orange (*Citrus sinensis*Osbeck), Kinnow (*Citrus reticulate* Blanco) and Grapefruit (*Citrus paradisii*Mcaf.), while incompatibility was only in Sweet orange and Grapefruit.[Yasir Iftikhara, S.M. Mughalb, M.M. Khanc, M.A. Khand, M.A. Nawaze and Z. Hussaine (Pakistan). Archives of Phytopathology and Plant Protection, 46(1): 98-104, 2013].

SAUDI ARABIA

Variability of prenatal maternal investment in the honey bee (*Apis mellifera*). Uneven distribution of food resources to offspring by females plays an important role in adaptation to environmental changes in many taxa. In the honeybee, the differential maternal investment has a potential role in the amplification of intra-colony phenotypic variability which is an important factor in stress resilience. In this study, the repeatability of weight measurements and the optimum stage was determined when the eggs were sampled to minimize the imprecision due to unavoidable intra-sample age differences. Eggs were weighed eggs from fourteen selected colonies and assessed the relative weight variability. A comparison was done between the means and variability of eggs produced in spring and late summer were compared to test the hypothesis that eggs destined to become a mix of summer and winter bees those should be more variable than eggs all destined to become summer bees. The results showed that the optimum age for sampling eggs is 48 h. No systematic

difference was found between spring and summer samples but the difference in sample means from the same queens was up to 22%. Whereas, the difference in weight of eggs laid by the same queen within six hours was up to 58%. A comparison with published data on the effects of difference in egg weight from reared adults showed that the level of variability observed was sufficient to expect phenotypic differences at the adult stage. Therefore, it can be concluded that a considerable level of differential maternal investment exists in the honey bee. The research findings provided an opportunity for further studying its consequences and evolutionary significance in social species. [Saad Naser Al-Kahtani, Jakob Wegener and Kaspar Bienefeld (Saudi Arabia &Germany).Journal of Entomology, 10(1): 35-42, 2013].

SYRIA

Pathogenic and genetic diversity of *Didymella rabiei* affecting chickpea in Syria. Simple sequence repeats and mating type markers were used to estimate the genetic diversity of 133 *Didymella rabiei* isolates collected from nine provinces of Syria. Moreover, phenotyping was done on 56 isolates randomly selected from the different genetic groups using five chickpea genotypes. The genetic diversity of *D. rabiei* population was high with inter-population variability accounting for 83% of the total variation, whereas the genetic diversity among populations was very low (17%). Principal component analysis grouped the isolates from Aleppo, Idlib, Hama, Homs and Hassakeh provinces together, while Daraa and Tartous were in different groups. Isolates from Lattakia and Suweida provinces formed very distinct clusters compared to the others. The 56 isolates were grouped into four pathotypes, namely, pathotype-1 (12 isolates), pathotype-2 (13 isolates), pathotype-3 (5 isolates) and pathotype-4 (26 isolates) with varying degrees of virulence on the chickpea genotypes. Our findings showed a clear genetic shift toward more virulence over time and space in the populations of *D.rabiei* in Syria. These results stress the need for chickpea breeding materials to be tested for resistance to the more virulent pathotypes. Also, concerted action should be taken to ensure the shipment of healthy seeds of international chickpea nurseries to avoid *D.rabiei* genotypes or pathotypes flow from Syria to other countries.[O. Atik, S. Ahmed, M.M. Abang, M. Imtiaz, A.Hamwieh, M. Baum, A. El-Ahmed, S. Murad and M.M. Yabrak. (Syria). Crop Protection, 46(4): 70-79, 2013].

TUNISIA

Dramatic increase in the *Zembretta yelkouan* shearwater breeding population following ship rat eradication spurs interest in managing a 1500-year old invasion. The ship rat (*Rattus rattus*) was introduced 1.500years ago to the Zembra Archipelago (Tunisia) and was eradicated in October–November 2009 on two of its islands, Zembretta and Zembrettina. This eradication was performed 2 years after the discovery of a small colony of Yelkouan shearwaters (*Puffinus yelkouan*), a species recently up-listed to the vulnerable IUCN extinction risk category. For 2years before and 3years after rat eradication, the Zembretta Yelkouan shearwater breeding colony was checked yearly at the end of the breeding season. The number of recorded breeding pairs reaching 176 and 145, respectively, increases of 10.4 and 8.5-fold two and 3years after rat eradication. This experiment shows that eradication of an ancient introduced ship rat population has dramatically improved the Zembretta Yelkouan shearwater breeding population very quickly. This result suggests that managing even long-introduced populations might well be fruitful. [Karen Bourgeois, Ridha Ouni, Michel Pascal, Sylvain Dromzée, Damien Fourcy and Awatef Abiadh (Tunis). Biological Invasions, 15(3): 475-482, 2013].

Natural variation of *Medicago truncatula* resistance to *Aphanomyces euteiches.* We analysed the resistance variation in 14 natural populations of *Medicago truncatula* from Tunisia to *Aphanomyces euteiches* infection. The reaction of *M. truncatula* lines to *A. euteiches* infection varied from susceptibility to full resistance. Of the overall level of phenotypic variation, 65.4% was found to occur within populations. Principal component analysis showed a high spread of lines belonging to the same population, indicating no clear structure in the Tunisian *M. truncatula* populations and supporting the hypothesis of gene flow among populations. Likewise, there was no association between local resistance composition and the geographical distances between populations, ruling out isolation by distance as an explanation. Furthermore, significant correlations were observed between quantitative traits and ecological factors consistent with the local adaptation hypothesis. A cluster analysis of the populations showed the presence of three groups. The first group comprised the populations originating from the centre of the country, containing the main resistant lines. The second group included the populations collected in the south and the mountain region of Thala and contained the main partially resistant lines. The third group comprised the populations sampled from the north regions and saline soils and included the main susceptible lines. Overall, we found that the natural *M. truncatula* lines were more likely to be susceptible (71.3%) than resistant (28.7%) to *A. euteiches* attack. Nevertheless, many resistant lines exhibiting new reaction patterns to *A. euteiches* attack were identified in

the natural populations and these can be used for the identification of potentially new resistance genes. [Naceur Djébali, Souha Aribi, Wael Taamalli, Soumaya Arraouadi, Mohamed Elarbi Aouani and Mounawer Badri (Tunisia). European Journal of Plant Pathology, 135(4): 831-841, 2013].

TURKEY

Characterization of hypovirulent isolates of the chestnut blight fungus, *Cryphonectria parasitica* from the Marmara and Black Sea regions of Turkey. Chestnut blight caused by the introduced fungus *Cryphonectria parasitica* has been responsible for the decline of *Castanea sativa* in Turkey since the 1960s. In this study, 72 *C. parasitica* isolates were recovered from the Marmara and Black Sea regions of Turkey showing white or cream-coloured culture morphology and were subjected to various tests to determine if they were infected by *Cryphonectria hypovirus* 1 (CHV-1). The vast majority of the isolates (69 out of 72) were vc type EU-1. Both mating types were found among a subsample of the isolates. The hypovirus was detected in 55 isolates by dsRNA extraction and/or virus specific RT-PCR on total RNA extracts. All but one isolates showed no or only weak phenol oxidase activity on agar medium containing tannic acid, typical of CHV-1 infected isolates. Through sequencing of a specific region of the hypovirus genome, we found that 24 hypovirus isolates belonged to the CHV-1 subtype I and six to the CHV-1 subtype F2. The distribution of the two CHV-1 subtypes in Turkey showed a clear geographic pattern. CHV-1 subtype I was only detected in the Marmara and western Black Sea region, whereas subtype F2 was restricted to the eastern part of the Black Sea region. The effectiveness of 23 hypovirulent isolates was tested against a virulent isolate on 2–3 years old chestnut sprouts. Ten hypovirulent isolates, all infected by CHV-1 subtype I, prevented canker development by more than 80% suggesting that they might be suitable for biological control of chestnut blight in Turkey.[Seçil Akıllı, Çiğdem Ulubaş Serçe, Yakup Zekai Katırcıoğlu, Salih Maden, Daniel Rigling (Turkey). European Journal of Plant Pathology, 135(2): 323-334, 2013].

Virulence of *Puccinia triticina* in Turkey and leaf rust resistance in Turkish wheat cultivars. Leaf rust caused by *Puccinia triticina* is a common disease on wheat in the coastal regions of Turkey. Collections of *P. triticina* from infected wheat leaves were obtained from the main wheat production zones of Turkey in 2009 and 2010. A total of 104 single uredinial isolates were tested for virulence on 20 lines of Thatcher wheat that differ for single leaf rust resistance genes. Forty-four different virulence phenotypes were identified over both years. Four phenotypes were found in both years. Phenotype FHPTQ found in 2009, with virulence to genes *Lr2c, Lr3, Lr16, Lr26, Lr3ka, Lr17a, Lr30, LrB, Lr10, Lr14a, Lr18, Lr3bg,* and *Lr14b*, was the most common phenotype at 15.4% of the total isolates. Forty-three winter and spring wheat cultivars from Turkey were tested as seedlings with 13 different *P. triticina* virulence phenotypes from Canada, the US and Turkey. The infection types on the cultivars were compared with infection types on the Thatcher near isogenic lines to postulate the presence of seedling leaf rust resistance genes in the cultivars. Resistance genes *Lr1, Lr3a, Lr10, Lr14a, Lr17a, Lr20, Lr23,* and *Lr26* were postulated to be present in the Turkish wheat cultivars. DNA of the wheat cultivars was tested with PCR markers to determine the presence of the adult plant resistance genes *Lr34* and *Lr37*. Marker data indicated the presence of *Lr34* in 20 cultivars and *Lr37* in three cultivars. Field plot evaluations of the wheat cultivars indicated that no single *Lr* gene conditioned highly effective leaf rust resistance. Resistant cultivars varied for combinations of seedling and adult plant resistance genes. [J. A. Kolmer, Z. Mert, K. Akan, L. Demir, R. Ünsal, C. Şermet, M. Keser, B. Akin andA. Morgounov (Turkey). European Journal of Plant Pathology, 135(4): 703-716, 2013].

❖Some Plant Protection Activities of FAO and Other Organizations

DESERT LOCUST SITUATION

Situation level: Threat

General Situation of the Desert Locust during March 2013 and Forecast until mid-May 2013

provided by the FAO Emergency Center for Desert Locust (ECLO)

The Desert Locust situation remained serious during March in the winter breeding areas along both sides of the Red Sea as control operations continued against hopper band and swarms. Locust numbers declined after mid-month due to control operations, dry vegetation and migration to the Nile Valley in Sudan and Egypt, and northwards to the Sinai Peninsula, Israel, Palestine, Jordan and Lebanon. Substantial egg laying, hatching and hopper band formation occurred near crops along a 1,000 km stretch of the Nile in northern Sudan. Swarms could form in May and threaten crops, and a second generation of breeding could take place before the summer. There is also a risk that breeding will occur in the interior of the Arabian Peninsula where good rains fell during March. In Northwest Africa, locust numbers increased in Algeria and Morocco where breeding will occur during the forecast period.

Western Region -The locust situation remained generally calm in the region during March. A few small swarms formed in Western Sahara where breeding had nearly ended. An increasing number of adults, including a few small groups and a swarmlet appeared in the spring breeding areas south of the Atlas Mountains in Morocco and Algeria, and started to lay eggs in the central Sahara of Algeria. Isolated adults were present in northwest Mauritania and southwest Libya. Limited control operations were undertaken in Morocco and Algeria. Small-scale breeding will cause locust numbers to increase further in Morocco and Algeria during the forecast period.

Central Region -As vegetation dried out along both sides of the Red Sea during March, adult groups and swarms formed, some of which moved north along the Red Sea in Egypt, reaching Cairo and continuing to the Sinai Peninsula, Israel, Palestine, Jordan and Lebanon. Egg laying was reported in Israel and Palestine. Swarms that reached the Nile Valley in northern Sudan in February and early March matured and laid eggs that hatched, causing numerous small but dense hopper bands to form near crops. More hopper bands will form during April and swarms could form in May that would threaten crops and probably remain along the Nile to mature and lay eggs. Groups and swarms that moved north along the Red Sea coast in Saudi Arabia also laid eggs that hatched, causing hopper bands to form. Good rains in the interior of Saudi Arabia and Yemen may allow a generation of breeding to occur during the spring that could lead to swarms forming by June. Control operations were carried out in all affected countries.

Eastern Region - No locusts were reported in the region during March. Low numbers of adults are probably present in parts of Baluchistan in western Pakistan and southeast Iran, and will breed on a small scale in areas of recent rainfall. No significant developments are likely.

For more information please visit the FAO's Desert Locust website:
//www.fao.org/ag/locusts/en/info/info/index.html

Source: The FAO Desert Locust Bulletin issued monthly in English and French by the Desert Locust Information Service, AGP Division (Rome, Italy; and Arabic version by the Commission for Controlling the Desert Locust in the Central Region FAO Regional Office for Near East, Cairo, Egypthttp://crc-empres.org).

INTERNATIONAL PLANT PROTECTION CONVENTION ANNUAL MEETING
Rome, 8-12 April 2013

Global annual crop yields are reduced by somewhere between 20 and 40 percent due to plant pests and diseases, according to the FAO-based Secretariat of the International Plant Protection Convention (IPPC). Significant numbers of these plant pests were introduced via international trade.

With the volume of trade in agricultural products and increasing hazards associated, the international community came together in 1952 to establish a mechanism through which countries could work together to prevent plant pests and diseases from spreading via agricultural commerce.

The IPPC serves as a network for information sharing between countries on pest occurrences, active control measures, phytosanitary regulations and best-practices supporting their efforts to protect plant resources and trade safely. Other IPPC core activities include implementation of standards through capacity development and trade dispute settlement.

The main IPPC activity is the formulation of science-based, internationally-agreed standards which detail how plants and plant products should be handled during trade, known as International Standards for Phytosanitary Measures, or so called ISPMs.

Fifty ISPMs have been developed so far, covering issues ranging from how plant products or wooden packing materials should be treated prior to export, to recommended procedures and methodologies used by agricultural inspectors, to procedures for conducting risk analysis and required formats for phytosanitary certificates. Another 90 proposed topics for new ISPMs are under consideration.

The IPPC's governing body, the Committee on Phytosanitary Measures (CPM), in its annual 8th Session (8-11 April 2013) approved two revised ISPMs.

The first was an update to existing **ISPM 11: Pest risk analysis for quarantine pests including analysis of environmental risks and living modified organisms** which adds detailed guidance on how authorities should undertake risk analysis for determining if a imported plant might be a pest to cultivated or wild plants, whether they should be regulated, and how to identify phytosanitary measures that reduce the risk to an acceptable level.
Additionally, **ISPM 15: Regulation of wood package material in international trade** was revised to provide more specific guidance on approved treatments of wood packaging material.

The CPM also agreed to continue moving ahead on a new ISPM aimed at reducing the transmission of plant pests and diseases via sea containers. (Shipping containers account for around 90 percent of all of the goods transported into the world, with about 5 million in transit by sea at any given moment).

CPM members also discussed options for improving monitoring and pest controls for international shipments of grain and agree on development of new standard regulating the international movement of grain.

WORKSHOP: APPLICATION OF THE INTERNATIONAL STANDARDS OF PHYTOSANITARY MEASURES
Dubai, 3-7 February 2013

For the purpose of supporting the implementation of the International Standards for Phytosanitary Measures (ISPMs), the FAO Regional Office for the Near East in collaboration with the International Plant Protection Convention (IPPC) and the Ministry of Environment and Water in UAE (MoEW) organized training workshop on the Application of the Phytosanitary Measures related to the international trade.

The workshop was held at the Dubai Flower Centre during 3-7 February 2013. The workshop contributed to the better understanding of requirements and practical application of international standards related to international trade. Around 20 participants attending the workshop were drawn from several relevant authorities in the various Emirates.

The workshop included lectures/presentations on the IPPC provisions, early warning in context of phytosanitary control, surveillance, import regulation, Pest Risk Analysis (PRA), diagnostic protocols and the regulation of wood packaging material in international (ISPM15). Group sessions activities were based on case studies all dealing with import regulation and designed to cover a range of situations including procedures for inspection as a phytosanitary measure, decisions taken regarding incidences of regulated pests and non regulated pests accompanying consignments, application of national regulation and consistency with the IPPC, as well as cooperation between National Plant Protection Organization and Customs at the borders. A tour as well took place in the centre to see import, re export and quarantine facilities and operations.

As well a demonstration of the early warning measures was carried out with Mc Phail traps for early detection of fruit fly *Bactrocera invadens* which not recorded in the region, but embodies an imminent threat to the region.

PEST RISK ANALYSIS TRAINING IN KINGDOM OF SAUDI ARABIA
Riyadh, 9-21 February 2013

In the framework of the FAO project UTF/SAU/038/ Capacity Building in Integrated Plant Health Management and in collaboration with the Ministry of Agriculture in the Kingdom of Saudi Arabia, a training on Pest Risk Analysis (PRA) and import regulation was held at the Ministry of Agriculture in Riyadh in the period 9-21 February 2013. The training aimed at building the capacity of the staff of the Department of Plant Protection and Department of Plant Quarantine and establishing a national pest risk analysis team of the staff trained to address import regulation issues. This team will undertake the tasks of preparing PRAs, developing import requirements for various commodities form different origins and prepare a national plant quarantine pest list.

The training was delivered through the presentations, discussions and practical sessions. Import regulation and pest risk analysis was presented and discussed at length before the PRA practice sessions. The four stages of PRA and the use of PRA to develop the national regulated pest list and establish technically justifiable import requirements for regulated articles from different origins were discussed.

PEST RISK ANALYSIS TRAINING IN LEBANON

A training on Pest risk analysis and import regulation was held in the framework of the FAO project GCP/LEB/021/ITA Strengthening Production and Marketing of Lebanese Agricultural Products. The training targeted the staff of the National Plant protection Organization (NPPO) in the MoA in Lebanon in order to assist in creating a risk analysis team to address import regulation issues. Twenty four participants attending the workshop were drawn from the Plant Protection, Plant Quarantine, Research and Universities.

The workshop included lecture/presentations, group sessions as well as a tour of the Lebanese Agricultural Research Institute.

Effective Import regulation was presented as a national effort and response to external threats of pest introduction. Pest Risk Analysis (PRA) as a basis for applying technically justifiable measures in import regulation was discussed at length. The four stages of PRA were explained. The use of PRA to develop the national regulated pest list and establish technically justifiable import requirements for regulated articles from different origins were discussed.

Based on the training in PRA, 10 persons as part of a core national PRA team to be established worked after the training to review and update the list of regulated pests for stone fruit and citrus applying the IPPC criteria for regulated pests as well as available surveillance data for stone and citrus fruits.

❖Short Plant Protection Notes

- A summary of over 100 programs for eradicating environmental weeds, conducted by the NEW ZEALAND Dept. of Conservation, revealed that progress has been slow and difficulty significantly underestimated. For more information contact C.J. Howell, CHowell@doc.govt.nz
- A volunteer network established in the U.S. to monitor Drosophila suzukii, (spotted wingdrosophila) an invasive pest of fruit crops, has provided stakeholders with informationin an accessible and interactive format while involving them as direct participants indata collection and other activities. H.J. Burrack, Hannah_Burrack@ncsu.edu
- Trial results in SOUTH AFRICA determined that a combination of Spinosad and a protein-based attractant was an effective replacement for the organophosphate malathion in fruit fly control in citrus orchards. For more information contact A. Manrakhan, Aruna@cri.co.za
- Native nematodes are being harnessed as biocontrol agents against pest snails in areas of AUSTRALIA. For more information contact G. Ash, Gash@csu.edu.au
- Through the efforts of scientists in Western Australia state, AUSTRALIA has gained a new national protocol to detect the serious rice fungal disease, rice blast, caused by Magnaporthe oryzae. For more information contact V. Lanoiselet, VLanoiselet@agric.wa.gov.au

❖GENERAL NEWS

IPM NETWORKS AROUND THE WORLD

French IPM website created.- In collaboration with ENDURE, the European IPM information locus, the French Ministry of Agriculture has opened a new website specifically for marshaling IPM information for the national edification of growers, advisers, and trainers, according to ENDURE's website. The new French language website, Ecophyto PIC, "Le Portail de la Protection Integree des Cultures," at www.agriculture.gouv.fr/Ecophytopic, relates to France's National Action Plan and its lofty goal of cutting the nation's pesticide use by 50 percent over the next decade. The site not only contains links to various information sources and crop protection methodology, but also discusses a number of related concepts such as decision support, monitoring, and innovation.

FREE ELECTRONIC PLANT PROTECTION INFORMATION

- The Book of Abstracts for the 22nd. International Congress on Virus and Other Graft Transmissible Diseases of Fruit Crops (03-08 2012, Rome, ITALY) has been published and can be freely downloaded from http://tinyurl.com/bk79yle

- eSci. Journals are open access, peer reviewed, international scientific journals published in PAKISTAN. In 2012 the title eSci Journal of Plant Pathology was launched. The new periodical charges an "article processing fee" on a sliding scale dependent on country of origin. www.escijournals.net/index.html

- Issue no. 62 of Haustorium, the official newsletter of the International Parasitic Plant Society, was recently published under a December 2012 dateline. Among the many items in its 25 pages there are links to a source for videos on Striga. Both current and back issues are freely available at www.parasiticplants.org/ipps_newsletter.asp

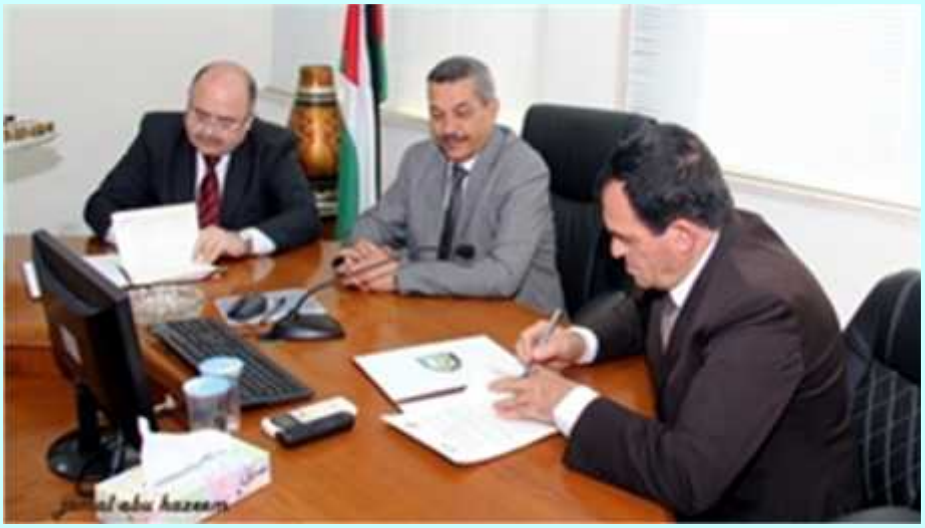
- Utah Pests and Utah State Univ. Cooperative Extension have jointly published a series of freely available 'how to' video fact sheets showing how to make and use a beating tray and pheromone traps as well as aids for monitoring and identifying certain pest species. http://tinyurl.com/a87amrn

- A 2012 publication from the International Crops Research Institute for the Semi-Arid Tropics, Community Watershed Management for Sustainable Intensification in Northeast Thailand, contains a paper by S. Chuachin, et al, entitled "Simple and Effective Integrated Pest Management Technique for Vegetables in Northeast Thailand" describing use of a sugarcane byproduct (molasses) in traps for management of pest insects in regional cabbage fields. http://tinyurl.com/akse35r

- Crop protection-related U.S. Agricultural Research Service articles appearing in recent issues of Agricultural Research, at www.ars.usda.gov/is/pr/, in either html or pdf form

11TH ARAB CONGRESS OF PLANT PROTECTION 2014

The Executive Committee of the Arab Society of Plant Protection received a kind invitation from the Al-Balqa Applied University, Faculty of Agricultural Technology, to host the 11th Arab Congress of Plant protection in Amman, Jordan in 2014. On Sunday, April 7, 2013 a memorandum of understanding (MoU) was signed between ASPP and the Al- Balqaa Applied University to jointly organize the 11th Arab Congress of Plant Protection in Amman, Jordan during the period 9-13 November, 2014. The first announcement for the 11thACPP will be circulated in the very near future. http://www.bau.edu.jo/News/NewsDetails.aspx?news_id=425

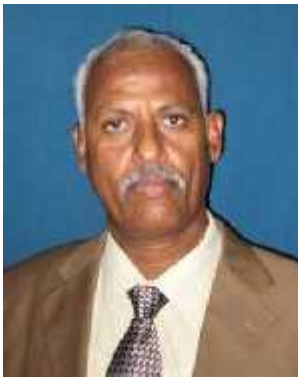


Dr. Majd Jamal, ASPP president and Dr. Samih Abou Bakr, Dean of the Faculty of Agricultural Technology, signing the MoU in the presence of the President of Al- Balqaa Applied University Dr. Nabil Al-Shawakfeh)

THE ARAB JOURNAL OF PLANT PROTECTION WILL BECOME AVAILABLE ONLY ONLINE STARTING 2013

The Executive Committee of the Arab Society of Plant Protection, following a discussion on the high cost of printing and mailing the Arab Journal of Plant Protection, decided to move to electronic online publishing of the journal starting in 2013. The last paper version of the journal was issued in December 2012. At the same time and because of cutting down the cost of printing and distribution, it was decided to publish three issues of the journal in 2013 and hopefully four issues in 2014 and thereafter instead of two issues per year at the present time. The positive result of such a change is that the waiting period for authors from the moment the article is accepted until it is published will be shorter. In 2013, a user name and a password will be distributed to all society members who paid their subscription fees.

THE DEPARTURE OF DR. MOHAMMED ALI HUBAISHAN (1954-2012)



On October 15, 2012, The Arab Society for Plant Protection lost one of its active members, Dr. Mohammed Ali Hubaishan (1954-2012): A pioneer in Agricultural Research in Yemen

Dr. Mohammed Ali Hubaishan was born in Alhami District of Hadhramout Province in December 1954. He completed his BSc. Degree in the Nasser's Faculty of Agricultural Sciences, Lahj province, the University of Aden in 1977. He then joined El-Kod Agricultural Research Center as an assistant researcher. He was granted a scholarship to pursue his higher education in the Slovak Science Academy, Institute of Entomology and Pathology, and completed his PhD degree in 1987 after which he returned back home and continued working as a research scientist. He held different positions and performed a variety of roles including chairmanship of a horticulture research team, industrial crop research team, and a national coordination of oil crops project. He was also appointed as a first director general of the Regional Agricultural Research Station of the Eastern Coastal Areas established in 1996 at Al-Mukala, Hadharamout. In view of his active scientific research contributions, he was promoted to the rank of "senior researcher" in 2005.

Dr. Hubaishan was also designated as a National Coordinator of the Yemeni-German Biodiversity Project that covered a number of Yemeni areas such as Huf and Fartak of Al-Mahra Province, Sukatra and Kor siban of Hadhramout, and Alaraees Mount of Abyan province.

In his capacity as a crop protection researcher and more particularly as an entomologist, he was appointed as a technical advisor for the Datepalm Control Campaigns (DOCC) in 2004. He was also assigned as a member of both the Steering Committee and the Technical Committee of DDCC in Hadhramout province in 2006. He further continued as a head of the Datepalm Duabs's field inspection team till the last day of his life.

The deceased has also made some academic achievements represented in his teaching efforts of two courses in the Nasser's faculty of agricultural sciences, Aden University. Ten years after graduation, he returned back to his college as a teacher of "Pest Control" and "Insect Physiology and Morphology" during the period 1988-1989. Additionally, he served as a supervisor or co-advisor for graduate students. Dr. Hubaishan has published at least 38 scientific research papers and technical reports.

Dr. Hubaishan was an active member of the Arab Plant Protection Society and a member of the Yemeni Biological Sciences Society and also was a chairman of Al-Hamy Agricultural Cooperative Association, Hadhramout. In addition to his mother tange (Arabic), he mastered English and fairly speaks German and Slovak languages.

The passing away of Dr. Hubaishan was a great loss for agricultural research and the scientific community in Yemen and the Arab region. May his soul rest in peace.

Ismail Muharram
Dhamar, Yemen

THE DEPARTURE OF DR. WALID IDRAW (1954-2013)

With great sorrow we announce the passing away of Dr. Walid Idraw on 08/02/2013. Dr. Idraw was born on April 8, 1954 and completed his secondary school education in Aleppo, Syria, and received his B. Sc. degree from the Faculty of Agriculture, Plant Protection department in 1977. He received his Ph. D. degree in integrated pest management from the Polish Agricultural Sciences Academy in 1991. Immediately after receiving his Ph. D. degree he returned to Aleppo and was appointed as an assistant professor in the Faculty of Agriculture, University of Aleppo (Deir-Ezzor Branch, at the time. Now University of Al- Furat) and promoted to an associate professor in 2004. In 2009 he moved to the main university campus in Aleppo.

Dr. Idraw was an active member of the Arab Society of Plant Protection, and over the past few years he served as a member of the Editorial Board of the Society journal, The Arab Journal of Plant Protection. He published two books, one on “Morphology and Taxonomy of Insect Pests” in 2003, and the second on “Pest Control” in 2004. Dr. Idraw published nine scientific papers and supervised two M. Sc. and one Ph. D. students.

Dr. Idraw was known to be a good teacher, very much liked by students and other members of the faculty. He taught several courses, including: economic entomology, pest control, horticultural and forest pests, morphology and taxonomy of insect pests, pests of field crops, biological control, integrated pest management and storage insects. He also attended and participated in many scientific meetings and missions.

Dr. Walid Idraw is a great loss to his family, friends and the community of plant protection scientists in the Arab World. May his departed soul rest in peace.

Prof. Dr. Bassam BAYAA
Department of Plant Protection, Faculty of Agriculture
Aleppo University, Aleppo, Syria

IN LOVING MEMORY OF
HASSINE BEN SALAH (1944 - 2013) TUNISIAN ENTOMOLOGY RESEARCHER

Mr. Hassine was born in Sousse, Tunisia, in 1944. He served as a Research Officer in the Entomology Laboratory of the National Institute of Agricultural Research of Tunisia (INRAT) from 1970 to 2004.

Agronomist engineer, he has one of the major contributions in the field of IPM in Tunisia. He had a contribution both at the institutional level and the human relationship.

He participated to Medfly SIT in Tunisia, desert locust control campaigns, citrus scale control and an IPM program to control the potato tuber moth which is presently largely used by Tunisian farmers. After his retirement, he participated in the PASP as a national adviser for 7years.

Mr. Hassine Ben Salah obtained the First Price of the Technology Innovation CAT/CIT in 1995 and the National Order of Merit (Chevalier) in the Agriculture Field in 1995.

Prof. Bouzid NASRAOUI
Laboratory of Phytopathology, National Institute of Agronomy of Tunisia,
University of Carthage, Tunis, Tunisia

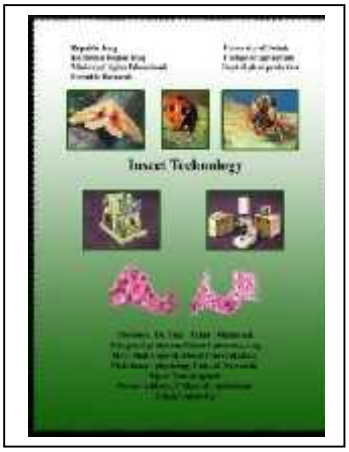
❖Publications

NEW BOOKS

Insect Technology

Author: Talal Taher Mahmoud

A new book entiteled “Insect Technology” has been published by the University of Duhokt, Ministry of higher Education and Scientific Research. The content of the book comprises eightchapters. The first one is a general classification and the body structure, dealing with the structureof most popular organs of the body. The second chapter mentioned the microscope and microscopical techniques, such as; looking after the microscope, calculation themagnification power, how the phase contrast microscope setting, measuring and counting with microscope, automatic image analysis, photography with the microscope. How the electron microscope work. The third chapter mentioned the insect collection and culture; collection methods and apparatus need, general treatment of collection, the insect growth chamber, structure and requirement, different methods for insect cultures. The fourth chapter mentioned the methods for killing and preserving insects, anaesthetization, killing methods, preparation of killing bottle, fixation of specimens, preservation, and special preparation of arthropods. The fifth chapter described the physiological techniques, preparation of haemocyte smears, smear technique, preparation of wet blood smear, techniques for blood counting and staining, vital staining, techniques for insect blood coagulation, haemostasis, coagulation processes, effect of some factors on haemocytes, histological preparation of haemocytes, chromatographic separation of amino acid from haemolymph, detection of enzymes from salivary gland, demonstration of chemoreception in house fly and measuring the oxygen consumption. The sixth chapter gave general idea about the histological techniques; methods for dissection of various insect orders, methods for observation, preparation of materials, examination of living materials, micromanipulation, examination of isolated cells, narcotization, types of faxatives, dehydration chart, preparation of paraffin sections, staining sections, chart of difficulties during sectioning, preparation of celloidin sections, frozen section, the maintenance of microtome, staining techniques, principles of dye chemistry, preparation of staining solution, drawing, reconstruction and micrometry. The seventh chapter including the; haematological stains, staining techniques; supravital staining of blood, Staining methods of internal organs, micro-organisms, fat stains. The eighth chapter is the last one in the book which deal with the museum techniques; structure of the museum, labeling and cataloguing.



SELECTED RESEARCH PAPERS

Bacteria

Genetic variability of Iranian strains of *Pseudomonas syringae* pv. *syringae* causing bacterial canker disease of stone fruits.Valeh Abbasi, Heshmatollah Rahimian, Mohammad Ali Tajick-Ghanbari (Iran). European Journal of Plant Pathology, 135(2): 225-235, 2013.

Fungi

***Ceratocystis manginecans* associated with a serious wilt disease of two native legume trees in Oman and Pakistan**. A. O. Al Adawi, I. Barnes, I. A. Khan, A. M. Al Subhi, A. A. Al Jahwari, M. L. Deadman, B. D. Wingfield and M. J. Wingfield (Oman and Pakistan). Australian Plant Pathology, 42(2): 179-193, 2013

Differential Expression of Potato Defence Genes Associated with the Salicylic Acid Defence Signalling Pathway in Response to Weakly and Highly Aggressive Isolates of *Verticillium dahliae*. H. Derksen, M. Badawi, M.A. Henriquez, Z. Yao, A.F. El-Bebany and F. Daayf (Egypt). Journal of Phytopathology, 161: 142–153, 2013.

Diversity of sooty blotch and flyspeck fungi from apples in northeastern Turkey. Derrick A. Mayfield, Aziz Karakaya, Jean C. Batzer, Jennifer M. Blaser and Mark L. Gleason (Turkey).European Journal of Plant Pathology, 135(4): 805-815, 2013.

Effect of oil suspended conidia of *Metarhizium anisopliae* var. *major* on mortality of the sunn pest, *Eurygaster integriceps* Puton (Hemiptera: Scutelleridae).Neda Sedighia,Habib Abbasipoura, Hassan Askaryb &Aziz Sheikhi Gorjanc (Iran). Archives of Phytopathology and Plant Protection, 46(2): 128-140, 2013.

Entomology

***Aphytis alexandrina* (Hymenoptera: Chalcidoidea: Aphelinidae) a new species from Alexandria, Egypt.**Ramadan M. Hanan and Karam H. Hedaya (Egypt).Journal of Entomology, 10 (1): 49-52, 2013.

Grain damage, viability and weight loss in different barley cultivars due to *Sitotrogacerealella* (Oliv.) infestation. S. Bushra, M. Aslam, M.A. Aziz&M. Ahmed (Iran). Archives of Phytopathology and Plant Protection, 46(2): 205-214, 2013.

Sensory receptors on abdominal and thorax segments in male and female red palm weevil *Rhynchophorus ferrugineus*. Mona Mohammed Saleh Al- Dawsary (Saudi Arabia). Agriculture and Biology Journal of North America, 4(1): 23-32, 2013.

Nematodes

Effect of certain abiotic and biotic materials on the mortality of *Meloidogyne incognita.* H.A. Osman, M.M.A. Youssef, A.Y. El-Gindi, H.H. Ameen, N.A. Abd-Elbary and A.M.S. Lashein (Egypt). Pakistan Journal of Nematology, 31 (1): 61-64, 2013.

Population dynamics of some plant–parasitic nematodes associated with banana cvs. Williams and Hindi in relation to soil temperature in Egypt. M.F.M. Eissa, A.E. Ismail, M.M. Abd-Elgawad&W.A. El-Nagdi (Egypt). Archives of Phytopathology and Plant Protection, 46(4): 436-444, 2013.

Yield of maize as influenced by population densities of the root lesion nematode, *Pratylenchus zeae*. M.M.A. Youssef (Egypt). Archives of Phytopathology and Plant Protection, 46(4): 445-450, 2013.

Pesticides

Evaluation of susceptibility of *Rhyzopertha dominica* (F.), *Sitophilus granaries* (L.) and *Cryptolestes ferrugineus* (Stephens) to spinosad. Golam Reza Sadeghi, Peyman Namvar&Hossain Afshari (Iran).Archives of Phytopathology and Plant Protection, 46(1): 46-51, 2013.

Weeds

Suppressive ability of selected fodder plants on the growth of *Parthenium hysterophorus.*N. Khan, C.D. O'Donnell, D. George and S.W. Adkins(Pakistan and Australia). Weed Research, 53(1): 61-68, 2013.

Viruses

First Report on the Association of *Squash leaf curl virus* and *Watermelon chlorotic stunt virus* with Tomato Yellow Leaf Curl Disease. F. Haj Ahmad, W. Odeh, and G. Anfoka (Jordan), Plant Disease 97(3): 428, 1013.

CONTENTS OF THE ARAB JOURNAL OF PLANT PROTECTION
Volume 31, issue 1, April 2013

EVENTS OF INTEREST

2013

*** 14-16 May**

ISOFAR /MOAN Symposium. Crop Protection Management in Mediterranean Organic Agriculture. Sousse, Tunisia. E-mail: Prof. Mohamed Ben Khedher.benkheder.Mohamed@iresa.agrinet.tn

*** 4-7 July**

Biodiversity and Integrated Pest Management: Working together for a sustainable future. Manado, North Sulawesi, Indonesia. Contact: biodivipm2013@gmail.com, http://www.oired.vt.edu/ipmcrsp/biodivipm2013/

*** 28 July–2 August**

International Organisation of Citrus Virologists Conference 2013 in Kruger National Park, South Africa. Contact: Gerhard Pietersen at e-mail; gerhard.pietersen@up.ac.za

*** 25-30 August**

10th International Congress of Plant Pathology (ICPP2013), Beijing, China. Email:infoicpp2013@yahoo.com, http://www.icppbj2013.org/

*** 3-6 September**

2nd International Symposium on Plum Pox Virus (continuation of Middle European Meetings on Plum Pox Virus) in Olomouc, Czech Republic**.** http://isppv2013.upol.cz

*** 22-27 September 2013**

9th European Vertebrate Pest Management Conference (EVPMC9) in Turku, Finland. For

more details Please visit: www.evpmc.org , or contact Dr. Otso Huitu, e-mail: otso.huitu@metla.fi .

*** 8-12 November 2013**

2nd Global Conference on Entomology, Kuching, Malaysis. E-mail: info@gce2013.com http://www.gce2013.com/

*** 19-20 November**

II International Plant Protection Conference,Al-Mousel University, Iraq. e-mail: ppconf2013@gmail.com,http://agriculture.uomosul.edu.iq/

*** 25-28 November**

19th Australasian Plant Pathology Society Conference,Auckland, New Zealand. http://www.apps2013.co.nz/

2014

*** 16-18 March**

5th International Date Palm Conference. Abu Dhabi, UAE. Contact: Prof. Abdelouahhab Zaid (zaid@uaeu.ac.ae).

*** 14-18 April**

21st Biennial International Plant Resistance to Insects Workshop. Marrakech, Morocco. http://www.ars.usda.gov/Research/docs.htm?docid=22994

*** 4-9 May**

6th International Congress of Nematology. Cape town, South Africa. e-mail: info@6thICN.com. See: http://www.6thicn.com/

*** 7-9 May**

IOBC/WPRS Working Group on Integrated Control in Citrus Fruit Crops. Adana, Turkey. E-mail: Dr. Serdar Satar (hserhat@cu.edu.tr),http://www.iobcwprscitruswg.org/default.asp

*** 6-10 July**

XVI Congress of the International Society of Molecular Plant-Microbe Interactions (IS-MPMI 2014) on Rhodes Island, Greece. Contact: Prof. Eris Tjamos: ect@aua.gr, http://www.mpmi2014rhodes-hellas.gr/index.php

*** 13-18 July**

Eight International Symposium on Chemical and Non-Chemical Soil and Substrate Disinfestation. Torino, Italy. www.sd2014.org

*** 27 July-1 August**

XIVth International Congress of Mycology, the XIVth International Congress of Bacteriology and Applied Microbiology and the XVIth International Congress of Virology in Montreal, Canada. http://www.montrealiums2014.org/; Contact:iums2014@nrc-cnrc.gc.ca

*** 3-8 August**

10th International Mycological Congress (IMC10), Bangkok, Thailand. Contact: Leka Manoch; e-mail: agrlkm@ku.ac.th

*** 09-13 August**

APS Annual Meeting in Minneapolis, Minnesota, USA.http://www.apsnet.org

*** 10-14 August**

13th IUPAC International Congress of Pesticide Chemistry,San Francisco, California, USA. Email:info@iupac2014.org, http://www.iupac2014.org/

*** 17–24 August**

29th International Horticultural Congress, "Horticulture - sustaining lives, livelihoods and landscapes", in Brisbane, Australia.www.ihc2014.org

*** 9-13 November**

11th Arab Congress of Plant Protection. Amman, Jordan.

2015

*** 24–27 August**

XVIIIIPPC (International Plant Protection Congress), Berlin, Germany.http://www.ippc2015.de

ACKNOWLEDGMENT

The Editorial board of the Arab and Near East Plant Protection Newsletter highly appreciates the contribution of several Arab Scientists in this issue, namely:

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