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The Study of Infection and Distribution of Beet Mosaic Virus in Khorasan Razavi Province's Fields

N. Gerayeli[1*] - B. Jafarpour[2] - M. Falahati Rastegar[3] - A. Zabihnia Moghaddam[4]

Abstract

Razavi Khorasan province is one of the most important sugar beet growing regions in Iran. Beet mosaic virus (BtMV) is one of the important viruses of sugar beet and is widespread on sugar beet all over the world. This virus causes mosaic, mottling pattern and curling of leaves. A survey was conducted in summer of 2007 to detect and determining distribution of BtMV in Razavi Khorasan province. To achieved these goals some samples were collected randomly and also some based on apparent symptoms from sugar beet fields located in Mashhad, Neyshabour, Ghoochan, Torbat-e-heydariyeh, Torbat-e- jam, Fariman and Kashmar. All samples were tested by DAS- ELISA to find infected samples. In order to carry out molecular tests, virus RNA was extracted from infected leaves using PEG 6000 percipitation method. To performed RT-PCR viral cDNA was synthesized using specific primers. PCR products was run on %1 Agarose gel and the band of 658 bp related to the virus was observed. Presence of this amplified region in the samples confirmed that BtMV infection exists in collected samples. Our survey showed that infection exists in different percentage all tested fields. Fariman (with %33.4) and Neyshabour (with %4.8) have maximum and minimum infection rate respectively. Average infection percentage in Razavi Khorasan province (with 530 collected samples) was %14.9.

Key words: Beet Mosaic Virus, DAS-ELISA, Khorasan, RT-PCR

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Effect of Relative Time of Emergence and Density of Common lambsquarters *(Chenopodium album* L.*)* on Corn *(Zea mays* L.*)* Yield Components

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Abstract

In this experiment relative time of common lambsquarters (*Chenopodium album* L.) emergence on single cross 704 corn yield was studied in different density levels of weed at Faculty of Agriculture of Ferdowsi University of Mashhad, in 2006. The experimental design was split plot based on randomized completed block design (RCBD) with three replications. The emergence time was considered in 3 levels: emergence of the weed 14 days earlier, 7 days earlier and simultaneously with corn as main plot and density of weed in 6 levels: 0, 4, 8, 12, 16 and 20 plants per m^2 as subplot. The results showed a decrease in yield components of corn, when the emergence time of corn was delayed than emergence time of common lambsquarters. The maximum reduction was observed in earlier emergence of common lambsquarters for the 14 days and also in weed densities of 12, 16 and 20 plants per m^2. The minimum reduction in number of seed row in ear, number of seed in row and one thousand seed weight observed at density of 4 plants/m^2 when emergence of corn and common lambsquarters happened simultaneously.

Key words: Common lambsquarters, Competition, Corn, Density, Relative time of emergence

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Study of Onion Seed Borne Fusarium in Razavi and Northern Khorasan Provinces

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Abstract

Fusarium species are one of the most important pathogens on onion in Iran and out of whit few are transmitted by onion seeds. In order to identify onion seed borne Fusaria in Razavi and Northern Khorasan provinces, in the September 2007 seed samples from different field of four localities were studied using cultural media, greenhouse assay and molecular technique respectively. In the first experiment surface disinfested and nonsterlized onion seeds were cultured on PDA, in the second experiment surface disinfested seeds were planted in outoclaved soil under greenhouse condition.. F. proliferatum and F. oxysporum were detected and isolated from seeds cultured on PDA and seedlings grown in greenhouse. The rate of F .proliferatum transmitted by seed found to be 0–15 and 0- 6.7 % on PDA and greenhouse respectively, while it was between 0–48 and 0–10 %. for F. oxysporum. For molecular studies after extracting F. proliferatum DNA isolated from seed samples and performing PCR by selecting specific primers, molecular weights of bands on agarose gel were compared using the labwork 3,0,2 software. Distinctive difference were observed between molecular weights of bands from diverse regions. A positive significant correlation was also observed between the results of culture media and molecular methods. The result of this study confirmed that F. proliferatum and F. oxysporum are both seed borne on onion .

Key word: Onion, Seed borne, Fusarium, Khorasan, Molecular detection

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Species Diversity of Acari and Population dy Namics of the Dominant Injurious Species on Eight Varieties of Pistachio in Mahvelat Region, Razavi Khorasan Province

M. Boutimar [1*] – H. Sadeghi Namaghi[2]

Abstract

During 2007 and 2008, a survey on species diversity of Acari associated with pistachio trees and seasonal dynamics of the dominant injurious species was conducted in Mahvelat region for the first time. 8 varieties of pistachio including Akbari, Owhadi, Badami, Barg siah, Ghermez, Kalah ghochi, Germeh and Momtaz, commonly grown in the region were compared in terms of infestation to the two predominant species of injurious mites. As a result, 9 species of mites belonging to 9 genera, 7 families and 3 orders were identified, 4 of which were phytophagous. Of collected species, the eriophyid species, *Shevtchenkella recki* (Bagd.) and two species namely *Typhlodromus bagdasarjani* Wainstein & Arutunjan and *Tyrophagus brevicrinatus* Robertson were new for Iranian and the province fauna respectively. Among the phytophagous mites, *Sh.recki* and *T. granati* were the dominant species. ANOVA showed a significant difference between varieties of pistachio in terms of infestation to the dominant phytophagous mites. The highest and least level of pistachio infestation to phytophagous mites was observed on Ghermez, Owhadi, Kallah ghochi and Germeh variety respectively. In this study, the highest population of the dominant phytophagous mites was observed on August and September. Among the different varieties of pistachio the least and highest density of *Sh. recki* was observed on Germeh and Kallah ghochi varieties respectively. The least and highest density of *Tenuipalpus granati* Sayed was observed on Germeh and Owhadi varieties respectively. On all sampling dates, the density of both mite species on lower surface was higher than upper surface of leaves.

Key words: Pistachio, Harmful and beneficial mites, Population density, *Tenuipalpus granati*, *Shevtchenkella recki*, Pistachio varieties

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Effects of Salt (NaCl) and Drought (PEG_{6000}) Stresses on Germination Characteristic and Seedling growth of Hoary Cress (*Cardaria draba)*

M. Mojab [1]- Gh. Zamani [2*]

Abstract

Salt and drought stress are two major environmental stress in Iran that affect growth and development of plants. In order to study effects of salt and drought stress (NaCl and PEG6000) on germination characteristic and seedling growth of hoary Cress (*Cardaria draba*) two separate experiment were conducted in growth chamber, at research laboratory of college of agriculture, University of Birjand during 2008. The Experimental design was a completely randomized design (CRD) with four replications. Treatments were salt and drought stress as osmotic and matric potential, respectively, at four levels (0, -0.3, -5, -10 and -15 bars). The Result showed that when stress increased, germination percent, germination rate, root and stem length, root, seedling and stem fresh weight decreased significantly ($p\leq 0.05$), this were higher in drought stress than salt stress. Results showed that reduction percentage for plumul length was higher than the root lenght. When water potential decreased, time to 50% of maximum germination increased. The functional three-parameter logistic model provided a successful estimation of the relationship between salt and drought stress levels and germination response of Hoary cress. This model showed that salinity and drought at -23.997 and -6.22 bar, respectively caused 50% reduction in maximum germination percentage of Hoary cress.

Key words: Germination, Osmotic potential, Biology, Weed

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Effect of Teflubenzuron, Hexaflumuron and Pyriproxyfen Compounds on Nutritional Indices of Confused Flour Beetle, *Tribolium confusum* Duval (Col.: Tenebrionidae)

S. Loni[1]*- H. Farazmand[2]

Abstract

Confused flour beetle, *Tribolium confusum* Duval (Col.: Tenebrionidae) is one of the most important stored product pests of flour in Iran. In this research the effects of insect growth regulators (IGRs): teflubenzuron, hexaflumuron and pyriproxyfen were studied on larval and imago nutritional indices of confused flour beetle. The results showed that they were more effective on relative growth rate (RGR) and relative consumption rate (RCR) in the low concentration of 65 and 250 ppm of pyriproxyfen and hexaflumuron, and concentration of 1000 ppm of teflubenzuron. The results showed that, RGR and RCR indices decreased and feeding detterent index (FDI) index increased the concentration of compounds**.** The lowest efficacy of conversion of ingested food (61.5% in imago and 49,5% in larvae) and the highest feeding deterrent index (92% in imago and larvae) were recorded for confused flour beetle larvae and imago treated with teflubenzuron (1000 ppm). So, the IGRs could be used as safe insecticides to control the confused flour beetle.

Key words: Insect growth regulator, Teflubenzuron, Hexaflumuron, Pyriproxyfen, Confused flour beetle, *Tribolium confusum*, RGR, RCR, ECI, FDI

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Repellent Activity and Fumigant Toxicity of 18 Essential Oil on Indian Meal Moth, *Plodia interpunctella* Hübner (Lep., Pyralidae)

Z. Rafiei Korahroodi[1]*- S. Moharramipour[2]- H. Farazmand[3] – J. Karimzadeh Esfahani[4]

Abstract

Indian meal moth, *Plodia interpunctella* Hübner (Pyralidae) is one of the most important stored-product insects that are controlled by fumigants. However, the use of plant essential oils and their constituents may have the advantage over conventional fumigants in terms of low mammalian toxicity and can be used as alternatives to conventional fumigants. Therefore, in this research, repellent activity of 18 plant essential oils was investigated on adults and last instar larvae of Indian meal moth. Also, fumigant toxicity of the essential oils was studied on the first instar larvae. Repellency of the essential oils on adults showed that *Anethum graveolens* and *Rosmarinus officinalis* at 2 µliter essential oil in 2 grams food had 100% activity. *Hyossopus officinalis* and *Petroselinum sativum* showed the lowest (14.8%) repellency. Consistent with adult repellency, both of *R. officinalis* and *A. graveolens* had high repellency on larvae. The fumigant toxicity results of the oils showed that all plants had LC_{50} values less than 26 µl/l air, indicating strong fumigant toxicity on first instar larvae. Dill was less toxic (LC_{50}= 25.48 µl/l air); while *Cinnamomum zeylanicum, Carum carvi, Achillea millefolium* and *Melissa officinalis* were the most toxic with LC_{50} values of 2.12, 5.06, 5.20 and 5.57 µl/l air, respectively. Consequently, most of these plant essential oils specially Rosemary and Dill may have high potential for using in integrated control of Indian meal moth in storage, in terms of repellency.

Key words: Essential oils, Indian meal moth, Repellency, Fumigant toxicity, Stored product pests

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Effects of Some Alpha-Amylase Inhibitors on the Salivary Alpha-Amylase Activity of the Stripped Bug, *Graphosoma lineatum* (Heteroptera: Scutelleridae)

M. Yazdanian[1]*- R. Farshbaf Pour Abad[2]- M. R. Rashidi[3]- M. Valizadeh[4]- N. Rashtchi Zadeh[5]- A. M. Vatankhah[6]- A. A. Hamidi[7]

Abstract

Digestive enzyme inhibitors are proteinacious or nonproteinacious compounds which reduce an enzyme activity through attaching to its active site and/or its substrate. Nowadays, plant enzyme inhibitors are of great importance because 1) these have considerable effects on insect digestive enzymes and as a result on their development; and 2) the transgenic plants expressing them are safe. In this study, the effects of NaCl, ethylenediamine tetraacetate disodium dehydrate (EDTA), Tris, sodium dodecyl sulfate (SDS) and an alpha-amylase inhibitor derived from wheat kernels (WAAI) on alpha-amylase activity of adults of the stripped bug *Graphosoma lineatum* (L.) during 60 minutes incubation was studied. Distilled water was considered as the control. The results showed that the effects of the inhibitor type on adult alpha-amylase activity was significant ($P<0.01$). In general, enzyme activities in NaCl, EDTA and Tris were the highest (nearly 54% of the control) and there was not significant differences between them. Enzyme activities in SDS (nearly 31% of the control) and in WAAI (nearly 12.5% of the control) showed significant differences to each other and also to 3 previously mentioned compounds. At low concentrations of NaCl, EDTA, Tris and SDS (1 and 2 mM) and at the beginning of incubation period, female alpha-amylase activity was greater than that of the males which shows that the female enzyme has had more resistance against the inhibitors.

Key words: Activity, Enzyme inhibitors, *Graphosoma lineatum*, Salivary alpha-amylase

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The Effect of Experience and Age on Foraging Behavior of a Thelytokous Parasitoid, *Lysiphlebus fabarum* (Marshall) on *Aphis fabae* Scopoli

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Abstract

Parasitic insects face many decisions when foraging for host, some for example frequently have to make decisions with regard to staying in or leaving their current patch. In this study, we investigated how the foraging and oviposition behavior of *Lysiphlebus fabarum* is influenced by (1) a female's previous experience of encountering aphids host and (2) age of female parasitoids. To test this, I released individual *L. fabarum* females onto bean leaf disks with 15 second-third instar of *A. fabae* in the laboratory and made continuous observations, and then females' proportional time allocation to various activities and oviposition decisions were measured. Pre-trial exposure of females to aphids for a period of 24 h, as opposed to one h, showed females that experienced more host deprivation remained more than twice as long in arenas as those from a 24 h exposure to aphids. Furthermore, all measured distinct behavior was higher for less experience females. Because of the large effect of treatment on patch residence time, the incidence or duration of various behaviors was expressed as a fraction of patch residence time and then re-analyzed. Data showed no difference in the incidence and duration of all behaviors. In the second experiment, Five days old females remained more than three times as long in arenas as did one d-old females and scored higher values for the incidence and duration of almost all behaviors. However, when values were expressed as fractions of patch time there were no significant differences between young and old females, suggesting that age like experience, had no effect on proportional time allocation to various behaviors during patch exploitation.

Key words: Patch residence time, Behavior allocation, Aphid defense, Thelytoky

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Laelapidae of Guilan Province, Four New Species Records for the Iranian Mite Fauna and the Identification key for Guilan laelapids

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Abstract

The Laelapidae is a large family with worldwide distribution. Many Laelapids are ectoparasitic on small mammals or associated with arthropods, although some species are free living and predators especially in soil habitat; also they are common in stored products. During three years (2007-2009) of faunestic survey, samples were collected from different habitats such as soil, plant litters and stored products in Guilan Province. A total of 17 species from 5 genera and 2 subfamilies were collected and identified. Among the identified species, 4 species are new records for Iran and 10 species for Guilan province mite fauna. Moreover, the taxonomic characteristics of four new species for Iran mite fauna are mentioned. A key is also provided for Guilan Laelapid mite species. The list of identified species is as follows, new species for Iran mite fauna are marked by an asterisk.

Subfamily Laelapinae Berlese: A- Genus *Androlaelaps* Berlese [1- *Androlaelaps casalis* (Berlese) B- Genus *Hypoaspis* Canestrini [2- *Hypoaspis vacua* (Michael) 3- *H. lutegiensis** Shcherbak 4- *H. karawaiewi* (Berlese) 5- *H. sclerotarsa* Costa 6- *H. lubrica* Voigts & Oudemans 7- *H. nolli* Karg 8- *H. queenslandica* (Womersley) 9- *H. angustiscutata** Willmann 10- *H. aculeifer* (Canestrini) 11- *H. minor* Costa 12- *H. kargi* Costa 13- *H. astronomica** (Koch) 14- *Hypoaspis* (*Laelaspis*) *austriaca** Sellnick C- Genus *Stratiolaelaps* Berlese [15- *Stratiolaelaps miles* (Berlese)].

Subfamily Haemogamasinae Oudemans: D- Genus *Eulaelaps* Berlese [16- *Eulaelaps stabularis* (Koch)] E- Genus *Haemogamasus* Berlese [17- *Haemogamasus pontiger* (Berlese).].

Key words: Laelapinae, Haemogamasinae, New species records

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Faunistic Survey of Injurious Mites Associated with Broad Leaf Trees in Green Spaces of Mashhad Region

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Abstract

During 2008-2009 species composition of injurious mites associated with common broad leaf trees and ornamental shrubs in green spaces of Mashhad region was surveyed. As result, 13 mite species belonging to 10 genera and 3 families, Eriophyidae, Tetranychidae and Tenuipalpidae were collected and identified. In bellow list, the new records for Razavi Khorasan and Iran are indicated with one and two asterisks respectively.

1-Eriophyidae: *Schevtchenkella ulmi** Farkas,1960 ; *Aceria fraxinivora* Nalepa, 1909; *Aculops knowltoni*** Keifer, 1964 ; 2-Tetranychidae: *Schizotetranychus hindustanicus*** Hirst,1924; *Eutetranychus orientalis* Klein,1936; *Eutetranychus africanus*** Tucker, 1926; *Oligonychus yothersi*** Mc Gregore,1914; *Oligonychus mangiferus*** Rahman & Sapra, 1940; *Eotetranychus willametti* Ewing; *Panonychus ulmi* Koch 1836; *Tetranychus turkestani* Ugrov & Nikolaskii, 1937; *Tetranychus urticae* Koch, 1836; 3-Tenuipalpidae: *Cenopalpus pulcher* Canestrini & Fanzago, 1876.

Keywords: Mite, Green space, Tetranychidae, Tenuipalpidae, Eriophyidae, Iran

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Evaluation of Shot Hole Disease Incidence and Severity on Stone Fruit Trees in Razavi Khorasan Province

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Abstract

Disease incidence and favorable condition on disease severity is evaluated. *W. carpophilus* isolated of infected orchards. For fungus overwintering method in buildup were carried out bud washing by centrifuge and spot culturing on nutrient mediums. Evaluation of shot hole in different areas showed that cultivars response to this disease is fixed inside of a climate but it is differ in different areas to each other. Fungus germination optimum was indicated 95% at 15˚C and its minimum 0.5% at 1˚C in experimental conditions. Fungus overwintering were confirmed as hyphae and conidia inside of bud and as hyphae in twig spots. The result of study indicating climatic effective role that is dominant in area in disease incidence and severity.

Keywords: *Wilsonomyces carpopilus*, Shot hole disease intensity, Overwinter, Germination

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Introduction of *Coranus subapterus* De Geer, 1773 (Het.: Reduviidae) From Iran

M. Rahimi Moghbeli[1]- M. Modarres Awal[2*]- J. Karimi Berang[3]

Abstract

Information about Reduviidae is rare in Iran due to few survey on this bugs. A study was conducted for determination diversity of this Heteroptera during 2008 & 2009 in Mashhad region (Khorasan Razavi province in north east of Iran). Several species were collected among there, *Coranus subapterus* De Geer is record for the first time from Iran. This species was collected for Golmakan (Chenaran) in 2008 from soil sample.

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