



## Study the Effect of Different Concentrations of Manure Aqueous Extracts and Sterile and Non-Sterile Manure on Seed germination of Redroot Pigweed and Barnyardgrass

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### Abstract

This experiment was conducted to evaluate the effect of different concentrations of manure aqueous extract (14.3, 20, 33%), sterile manure and non sterile manure on rate, percentage and mean germination of redroot pigweed and barnyardgrass seeds. The experiment was done in a CRD with 4 replications under laboratory condition. The treatments were include concentrations of manure aqueous (14.3, 20 and 33%), sterile and non-sterile manure. The results indicated that germination rate and percentage, were decreased with increasing concentration of manure aqueous extracting in these two weeds. Between sterile and non-sterile manure treatment did not observe differentiatio.

**Keywords:** Germination rate, Redroot pigweed (*Amaranthus retroflexus*), Barnyardgrass (*Echinochloa curs-galli*)

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## Effect of Rye (*Secale cereale*) and Wild Mustard (*Sinapis arvensis*) Competition on Yield and Yield Components of Two Winter Wheat (*Triticum aestivum* L.) Cultivars

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### Abstract

This research was investigated to evaluate yield and yield components response of two wheat cultivars in interference with two narrow leaf and broad leaf weed species in two separated experiments based on a randomized complete block design with 3 replications at Agricultural Faculty of Bu-Ali Sina University, in 2008-2009 growing season. In both Experiments, Alvand and Sayson cultivars were planted with densities of 450 plants m<sup>-2</sup>. In the 1<sup>st</sup> experiment, rye with target densities of 0, 20, 40, 60 and 80 plants m<sup>-2</sup> were planted in between wheat rows. In the 2<sup>nd</sup> experiment, wild mustard density was 0, 8, 16, 24 and 32 plants m<sup>-2</sup>. The results showed that increasing plant density of both weed species reduced significantly biologic and grain yield, number of spikes and reproductive tillers per unit area, grain number per spike, 1000 seed weight and harvest index. In weed density treatments for both weeds, individual plant of wild mustard damaged more than rye individual plant on wheat cultivars. Overall, however in non-interference condition Sayson had higher yield and yield components than Alvand, but was affected more than Alvand by both weed species.

**Keywords:** Interference, Yield loss, Model

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## Investigating Efficacy and Host preference of *Bruchidius fulvus* (Col.: Bruchidae) for Biological control of Camelthorn in Birjand

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### Abstract

*Bruchidius fulvus* Allard is a biological control agent of camelthorn weed (*Alhagi camelorum* Fisch.) in Birjand region. Efficiency of *B. fulvus* for biological control of Camelthorn weed was studied by separate experiments in laboratory and natural conditions based on CRD in 2009. So in average, 35±1.15 and 48±1.04% of the seeds in the legumes destroyed in the spring sampling (Early of May) and in fall (Early of November), respectively. Also the percent of seed germination was 65±2.8, 33.5±2.13 and 27±2.59% in average under the laboratory conditions and control and in spring and fall sampling, respectively. The results of this study indicated that the activity of this seed beetle caused a significant decrease ( $p \leq 0.001$ ) in the seeds camelthorn and percent of seed germination (viability) rather than the control. The mean percents of parasitism for spring and fall sampling were 12.1±0.52 and 15.16±0.42%, that it can be decrease the efficiency of *B. fulvus* in biological control programs in natural conditions. The results of host preference experiments that studied under constant temperature of 25±1 °C and relative humidity 65±5% based on Sherratt and Harvey (1993) method indicated that *B. fulvus* is probably a monophagous species and only hurt to the camelthorn weed.

**Keywords:** Non chemical weed control, Seeds Destruction, Germination, Host Preference

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## Relationship between Aflatoxin Production and Sclerotia Formation in *Aspergillus flavus* and *Aspergillus parasiticus* and Compare the Effects of Certain Chemicals and Aloe Vera Extract on Colony Growth of *Aspergillus parasiticus*

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### Abstract

Different species of *Aspergillus* growth on food and feed and by producing of secondary metabolites including aflatoxin, cause a lot of damage and reduce the value of their food. In this study the effect of different concentrations of citric acid, propionic acid and aloe vera extract on colony growth of the *Aspergillus flavus* and *Aspergillus parasiticus* were evaluated, for this purpose, the desired concentration of the compounds prepared and was added to Czapek media. Then this environment was inoculated by five-millimeter discs containing fresh culture *Aspergillus parasiticus*, and the results showed that propionic acid at concentrations of 0.5, 0.8, 1 and 1.5 % completely prevented the growth of the colonies. Citric acid at concentrations of 0.5, 0.8, and 1 % has moderate anti-fungal properties, and the concentration of 1.5 % had no effect on reducing the diameter of the colony. Aloe vera plant extract with a concentration of 2, 4 and 6 % showed a deterrent effect. The relationship between aflatoxin production and sclerotia formation, isolates of *Aspergillus flavus* and *Aspergillus parasiticus* were cultured in medium Chapk, And high-pressure liquid chromatography was used to measure aflatoxin level. Compared with the total amount of aflatoxin produced by the isolates, a small sclerotium group produced more aflatoxin than the group without sclerotium and large sclerotium.

**Keywords:** Aloe vera extract, *Aspergillus flavus*, *Aspergillus parasiticus*, Citric acid, Propionic acid

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## Toxicity of Imidacloprid Bait to *Microcerotermes diversus* (Silvestri) (Isoptera: Termitidae) under Laboratory Conditions

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### Abstract

*Microcerotermes diversus* (Silvestri) is a major pest of buildings and a wide variety of crops and trees in Khuzestan province, because of consuming on materials containing cellulose. One new environmentally safe tactic for the control of subterranean termites is baiting world-wide. In laboratory bioassays, toxicity of imidacloprid bait at concentrations of 25, 50 and 100 ppm, was evaluated under choice and non-choice feeding conditions. A probit analysis of the data using time instead of dosage indicated that the level of mortality and the speed of death were dependent on dose. An inverse relationship between time mortality (LT<sub>50</sub> and LT<sub>90</sub>) and dose was observed. Total feeding inhibition was not observed in any concentration although feeding decreased with increasing of imidacloprid concentration. In choice trials, termites preferred baits over wood and filter paper. cellulose bait impregnated with imidacloprid at a concentration of 100 ppm elicited high mortalities after 7 days in non-choice and choice trials (97% and 89%, respectively). Overall, the results indicated that imidacloprid bait is effective for controlling *M. diversus* and the baiting tactic may present a suitable approach for protecting structures from termite attack in Iran.

**Keywords:** *Microcerotermes diversus*, Toxicity, Imidacloprid bait

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## Study of Biological Control of Rice Sheath Blight Caused by *Rhizoctonia solani* with Some Antagonistic Bacteria in the Guilan Province

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### Abstract

Among 160 samples collected from rice paddy of the Guilan province including rice plant, seed, rhizosphere, paddy's soil, paddy's water and sclerotium of the causal agent of rice sheath blight (*Rhizoctonia solani*), 610 bacterial strains were isolated. 71 bacterial strains (11.64%) had the ability of inhibition mycelial growth fungus in dual culture test on PDA medium. According to two characteristics of inhibition zone in dual culture and the inhibition percent from vegetative growth of causal agent of sheath blight in antifungal volatile metabolites production test, 37 antagonist strains were grouped in cluster analysis. The strains of antagonist which placed in the highest group on the based of antagonistic ability, identified and selected for next experiments. Disease severity of sheath blight were evaluated under greenhouse conditions by the seed, soil and plant treatments at the presence of the antagonist strains. Results showed that there was significant difference between the plant treatment to other methods. The 152 (*Pseudomonas aeruginosa*) and 7S (*Pseudomonas fluorescens* bv3) strains with 26.59% and 33.59% on the reduction of disease severity respectively showed the highest effect and placed in separated group in comparison with control. Among three methods used, 152 (*Pseudomonas aeruginosa*) strain with 14.46% on the reduction of disease in comparison with control showed the lowest disease severity.

**Keywords:** Rice, Biological Control, Guilan province, *Pseudomonas*, *Rhizoctonia solani*

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## Occurrence of Resistance in Grapevine Powdery Mildew (*Erysiphe necator*) to Penconazole and Hexaconazole in Khorasan Razavi Province

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### Abstract

Thirty seven isolates of *Erysiphe necator* were collected from different vineyards from three regions and nine cities Khorasan Razavi province within two time periods i.e. May to June and August to September 2009. A leaf disk bioassay was carried out to determine the resistance of powdery mildew isolates on the basis of  $EC_{50}$  values derived from log-logistic dose-response curves. Treatments were consisted of penconazole at doses of 0, 0.125, 1.25, 12.5 and 125 ppm and hexaconazole at doses of 0, 0.3, 3, 30 and 300 ppm. The results showed that maximum values of  $EC_{50}$  (maximum resistance) for penconazole and hexaconazole on *E. necator* subcultures were 0.932 mg/l in Dargaz and 3.15 mg/l in Qoochan, respectively. For hexaconazole  $EC_{50}$  values for early-formed ascospores were higher than that of conidia. In other words early-formed ascospores were more resistant than conidia to both fungicides. However, penconazole  $EC_{50}$  values for conidia were higher than that of early-formed ascospores. Results revealed the occurrence of resistance of *Erysiphe necator* to penconazole and hexaconazole in different levels and cities.

**Keywords:** Grapevine, Fungicides, DMI, *Erysiphe necator*, Resistance

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## Effect of Nitrogen on Critical Period of Weed Control in Sunflower (*Helianthus annuus* L.) in Birjand Region

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### Abstract

In order to study of nitrogen effect on critical period of weed control in sunflower (*Helianthus annuus* L.) in Birjand region, a split plot experiment based on randomized complete block design was conducted with 24 treatments and 3 replications in research farm of college of agriculture of Birjand University in 2010. The main factor was three levels of nitrogen (0, 100 and 200 Kg.ha<sup>-1</sup>) and the sub factor was different weed competition periods containing of three levels of weed free, 3 levels of weed infested until phonological stages of V<sub>2</sub>, V<sub>4</sub> and V<sub>R</sub> with two control (all season weed free and weed infested) treatments. The critical periods of weed control based on 5%, 10% and 15% of acceptable yield loss, were estimated by fitting of Gompertz and Logistic functions to driven data of respective yield of sunflower in weed free and weed infested treatments respectively. Results showed that increasing of weed infested period and decreasing of weed free periods, increased weed dry weight but decreased their density. The most weed dry weight and competition and so the least yield of sunflower was observed in 100 Kg ha<sup>-1</sup> nitrogen. So, the longest period of weed control was obtained at this level of nitrogen fertilizer. The critical periods of weed control based on 5% of acceptable yield loss were 1-66, 3-91 and 2-76 DAE for 0, 100 and 200 Kg ha<sup>-1</sup>nitrogen, respectively.

**Keywords:** Competition, Fertilizer, Gompertz, Logistic, Oil crops

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## Effect of isolates of *Trichoderma harzianum*, *T. virens* and *Bacillus subtilis* for controlling *Heterodera schachtii* in field conditions

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### Abstract

In this survey, the effect of two commercial products Trichodermin (*Trichoderma harzianum* Bi ) and Subtilin (*Bacillus subtilis* S) along with one strain of *T. virens* VM1 isolated from sugar beet farms of Mashhad were used for controlling *Heterodera schachtii* in field conditions. *T. virens* VM1 was formulated as two other commercial products. In this order, this strain was sub cultured on P.D.A. Then, spores of each petridish was washed in 10 ml distilled water after 10 days and was mixed with Talk powder for preparing the powder containing 10<sup>7</sup> propagule/ g. The three products were applied as seed coating and dispersal in furrow with cucupit. An infested field to *H. schachtii* was selected in Jolgeh Rokh in Torbat Hydarieh area in Razavi Khorasan province and initial population of nematodes were detected. The experiment was conducted as Randomized Complete Blok Design with nine treatments and four replications in 2010 in field conditions. Analysis of variance for the bio control potential of isolates, final population of nematodes, reproductive factor of beet cyst nematode, fresh root and leaves weight was carried out. The results revealed a significant difference ( $P < 0.05$ ) between treatments and control according to Duncan's Multiple Range Test. Treatments *T. virens* VM1, separated from Mashhad, decreased significantly ( $P < 0.05$ ) the population of nematode at the rate of 52% and 51% in seed coating and dispersing in the furrow, respectively. The resistant check, Paulina, decreased population of nematodes by 68% compared with the control. It seems two treatments that the mentioned could be used for decreasing population of nematode.

**Keywords:** Biological control, *Heterodera schachtii*, *Trichoderma harzianum*, *T. virens*, *Bacillus subtilis*

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## The Effects of Weed Interference Durations on Phosphorus and Potassium Percentage and Uptake Efficiency of Black Seed (*Nigella sativa* L.) and its Weeds

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### Abstract

One of the most problems in black seed yield reduction is weed interference with this medicinal plant for resources such as macro nutrients. A field experiment was conducted at Agricultural Research Station, Ferdowsi University of Mashhad, Iran, during 2009-2010 growing season. The experiment was laid out in Randomized Complete Block Design (RCBD) with 12 treatments and three replications. Two sets of treatments consisting of weed-infested and weed-free periods were used. In the first set of treatments, weeds compete with black seed until 0, 14, 28, 42, 56 and 70 day after emergence (weed-infested periods). In the second set, plots were kept free of weeds until the mentioned stage (weed-free periods). Results indicated the contents of phosphorus and potassium in weed biomass significantly increased by increasing weed competition durations. However, the percentage and content of phosphorus and potassium in black seed biomass significantly showed a decreasing trend as the weed-black seed competition periods increased. Weed interference with black seed for full growth season decreased contents of phosphorus and potassium in black seed biomass more than 7 and 8 times, respectively. In addition, effects of weed-free and weed-infested periods on decreasing uptake and phosphorus and potassium use efficiency in black seed were significant. Reduction in phosphorus and potassium uptake efficiency of black seed was indicating weak competitiveness of this medicinal plant with its relative weed community.

**Keywords:** Weed-free periods, Weed-infested periods, Uptake efficiency, Use efficiency, Medicine plant

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## Study on Genetic Variability in Fungi Associated with Esca Disease in North Khorasan Province Vineyards with RAPD-PCR

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### Abstract

One of the most important and elusive diseases of grapevine is Esca disease. Esca is a complex disease that comprises a combination of symptoms caused by various fungi including growth retardation, decrease in productivity and decline of the plant and usually affecting adult plants (8 to 10 years and older). The purpose of this research was to study the genetic variations of fungal agents associated with Esca disease in Khorasan province which was performed by using the molecular marker RAPD. Sampling carried out done from the grapevines of Bojnourd (North Khorasan) and *Phaeoacremonium parasiticum*, *Phaeoacremonium aleophilum*, *Phaeomoniella chlamydospora* were isolated from wood brown decay while *Fomitiporia mediterranea* was isolated from wood white decay. The isolates with the most variability in morphology were selected and DNA polymorphism of the isolates was studied by RAPD-PCR. For this purpose after extracting DNA, RAPD-PCR was performed in 25 microliter reactions with 10 random primers. The results of RAPD analysis demonstrated that remarkable genetic variations existed in *F. mediterranea* while rather uniformity in *Pa. chlamydosporare*.. The results showed that RAPD-PCR technique have a great potential in determining genetic variations of the fungi associated with Esca disease. This is the first study of genetic variability in Iranian isolates of fungal agent of Esca using RAPD molecular markers in the populations of this species.

**Keywords:** Grapevine, Esca, Genetic variation, RAPD-PCR

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## Discrimination of the Invasive Plant Species, *Myriophyllum* spp., From Native Relatives Using DNA Barcoding

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### Abstract

This study included 81 samples which belonged to 13 species from *Myriophyllum* genus. Both nrDNA *ITS1* and *ITS2* and cpDNA *matK*, *rbcL* and *trnH-psbA* loci were used for diagnose of invasive from native plant. The nrDNA *ITS1* and *ITS2* data proved highly variable and could differentiate between all but had low PCR amplification success, based on these results they would not recommend as a suitable barcode in *Myriophyllum* genus. Although *matK* had high amplification success but had low sequencing success which could not be ideal barcode among studied species. Based on result Non-coding *trnH-psbA* spacer region and a portion of the coding *rbcL* gene are recommended as ideal barcode that provide the necessary universality and species discrimination among *Myriophyllum* species. A limited investment in DNA barcoding can generate an identification tool for plant material, specifically useful for cases where morphology is inadequate to assess species identity.

**Keywords:** Chloroplast loci, Non-coding spacer, *ITS1*, *ITS2*, *matK*, *rbcL*, *trnH-psbA*

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## Breif report

### The first Record of *Gonia ornata* Meigen 1826 (Diptera: Tachinidae) on *Agrotis* sp. (Lepidoptera: Noctuidae) larvae in Iran

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#### Abstract

During 2005, in a faunistic survey of Tachinidae associated with pests of field crops which carried out in Shirvan region (North Khorasan province), 3 adult tachinids emerged from *Agrotis* sp. (Lepidoptera: Noctuidae) larvae collected in sugar beet field of Agricultural college of Shirvan. The specimens were identified as *Gonia ornata* Meigen 1826. This is the first record of the occurrence of this species in Iran.

**Keywords:** Fauna, Tachinidae, Cutworm

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## Breif report

### Investigation on *Tomato yellow leaf curl virus* (TYLCV) in Khorasan Razavi province

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#### Abstract

*Tomato yellow leaf curl virus* (TYLCV) is a member of the genus *Begomovirus* and family *Geminiviridae*. In regard to the presence of suspicious symptoms of yellow leaf curl virus disease in tomato fields of Khorasan Razavi province, surveys were conducted in summers of 2008 and 2009, 526 samples of tomato plant in 2008 and 253 samples in 2009 were collected and tested by TAS-ELISA for presence of *Tomato yellow leaf curl virus* (TYLCV). In ELISA tests number of infected samples in 2008 and 2009 were 11 and 25 respectively. After extraction of total DNA, PCR was performed with specific primers. PCR assay amplified 570 bp DNA fragment.

**Keywords:** *Tomato yellow leaf curl virus* (TYLCV), Khorasan Razavi, TAS-ELISA and PCR

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