

## Assessment of genetic diversity of rice varieties and lines (*Oryza sativa* L.) using quantitative characters

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### Abstract

In order to determine the genetic diversity of rice germplasms, 56 genotypes were planted in the experimental field of center of rice institute in Amol, Iran. In this experiment, 15 characters were evaluated. Statistical measurements including: variance analysis of each character, variety classification through cluster analysis and standard deviation were carried out. Binary correlation coefficients of characters and yield estimation for all characters were also carried out through step by step regression. Among evaluated characters, yield per surface unit (m<sup>2</sup>) had significant correlation with characters such as weight of one hundred seeds, length of seeds and property of length to width of seeds. Correlation of seed width with yield was also significant but negative. Regression equivalent of yield estimating regarding to role of other characters distinguished the value and importance of weight of one hundred seeds as appropriate norm for selection high yield varieties and lines. Variance analysis for characters showed that the difference between genotypes is significant. Cluster analysis using Ward method classified varieties into four groups and showed that there was desirable diversity among varieties.

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**Keywords:** Rice, *Oryza sativa*, Genetic Diversity, Cluster Analysis, Regression.

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## Effect of Gibberellic acid, Sulfuric acid and temperature on germination of *Cycas revolute* L.

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### Abstract

*Cycas revolute* is one of the most primitive living seed plants of subtropical landscapes. There is substantial demand for ornamental leaf trade due to their attractive shape and long shelf life. Seeds of most commonly cultivated *Cycas* species is now available. Fast and uniform seed germination is essential because of relatively rapid loss of seed viability of *Cycas* duo to delayed seed germination. Some dormancy mechanisms contribute to delayed seed germination including: inhibitors, thick and very hard sclerotesta, and immature embryo at the time of seed abscission. An experiment was conducted as a factorial in completely randomized design in order to study the effect of growth regulators and temperature storage on embryo development and germination of *Cycas* seeds. Seeds were stored at 5 and 22°C for 24 weeks and subsequently were treated with H<sub>2</sub>SO<sub>4</sub> (15M) for 0, 15, 30 and 45 minutes followed by 100 and 200 ppm of GA<sub>3</sub> for 0, 24,48 and 72 hours. Seeds then were planted in trays filled with coarse and were placed in greenhouse with 28 /20°C (day/night) under mist system. The results indicated that 92 % of seeds survived at 5°C, but only 42% of stored seeds at 22°C were alive after 24 weeks. Gibberellic acid and Sulfuric acid treatments had showed considerable effect on seed germination and their higher concentrations and longer exposure time increased germination rate and speed. Seed treatment with 200 mg/lit. Gibberellic acid for 48 hours and Sulfuric acid (15 M) for 30 minutes resulted in optimal germination rate of stored seeds at 5°C for 24 weeks.

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**Keywords:** *Cycas revolute*, Gibberellic Acid, Seed Germination, Temperature, Sulfuric Acid

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## Identification of Heteroptera fauna of alfalfa fields in Azarshahr region of Azarbayejan-e-sharqi province, Iran

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### Abstract

Collection and identification of insect fauna in agricultural areas is regarded as a fundamental research in plant protection and agricultural entomology. In this study, Heteroptera fauna of alfalfa fields in Azarshahr region of Azarbayejan e sharqi province of Iran was studied by means of sweep net and aspirator during 2003–2005. A total of 13 species belonging to 6 families (Alydidae, Lygaeidae, Nabidae, Miridae, Rhopalidae, Pentatomidae) of Heteroptera were collected and identified. The species *Nabis pseudoferus*, and *Nabis capsiformis* were identified as predators and other species were phytophagous. Miridae had the most frequency among families and *Lygus pratensis*, *Lygus regulipennis*, *Adelphocoris Lineolatus*, and *stenodema turanicam* had the most frequent species. *Nabis capsiformis* was reported for first time from Azarbayejan e sharqi province. New species for Azarshahr region and Azarbayejan e sharqi province marked by one (\*) and tow (\*\*) asterisks respectively. Collected families and species were as follow:

#### Alydidae:

\**Comptopus lateralis*

#### Lygaeidae:

\**Emblethis spp*

#### Miridae:

\**Exolygus pratensis*

\**Exolygus regulipennis*

\**Adelphocoris lineolatus*

\**Stenodema turanicum*

\**Deraeocoris pallens*

#### Nabidae:

\**Nabis pseudoferus*

\*,\*\**Nabis capsiformis*

#### Pentatomidae:

\**Carpocoris coreanus*

\**Carpocoris fuscispinus*

\**Dolycoris baccarum*

#### Rhopalidae:

\**Corizus hyoscyami*

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**Keyword:** Fauna, Heteroptera, Bug, Predator, Phytophagous, Azarshahr.

## Studies on sheep tick fauna and their seasonal population variations in Azarbajejan-e-qarbi province

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### Abstract

An investigation was conducted in order to determine the tick species of sheep body surface and their seasonal population variations in Azarbajejan-e-qarbi province from March 2006 to April 2007. Sampling was done from overally 1800 sheep of both sexes, from 21 cities and their suburbs of the province. Collected data were analyzed using SPSS computer software. The results revealed that 243 (13.44%) sheep was infested by hard ticks. The highest percentage of the sheep tick infestation was observed in Miandoab area during June 2006, while lowest percentage was in shahindegh area during February 2006. There was a significant difference ( $p < 0.005$ ) in the tick population of sheep during the seasons and months of the year. Out of 1200 ticks were collected on sheep and were identified as: *Hyalomma anatolicum anatolium* (36.7%), *Rhipicephalus bursa* (34.83%), *Dermacentor marginatus* (12.75%), *H. a. excavatum* (8.41%), *Boophilus annulatus* (3.33%), *Haemaphysalis punctata* (2.8%), *Hae. sulkata* (1%) and *Rhipicephalus sanguinus* (0.83%). The difference of tick site preference was significantly noticeable. Distribution of ticks over different parts of sheep body surface according to their frequency were as follow respectively: under the tail (fat) (46%), groin (22%), head and meck (15%), on the breasts (12%).

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**Keywords:** Fauna, Sheep, Population Variations, Tick, Azarbajejan-e-qarbi.

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## Population fluctuation of broom corn aphid parasitoids in Miyaneh region, Iran

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### Abstract

Aphids are the most injurious pests of broom corn in Miyaneh region, Iran. Chemicals are used in different times for plant protection by farmers, regardless to natural enemy activity. Identification of native natural enemies is essential in integrated pest management programs. In this research, broom corn aphid parasitoids were collected and identified and their population fluctuations were also studied in comparison to their aphid hosts. For this purpose, aphid colonies were sampled and mummies were collected. Live aphids were also reared on broom corn seedlings for 10 days to select parasitized aphids from unparasitized ones. Results revealed that, there were two aphid species in broom corn fields of Miyaneh region, including *Schizaphis graminum* and *Rhopalosiphum maidis*. Parasitoids were collected on both mentioned aphids and were belong to genus *Aphelinus*, family Aphelinidae. High parasitoid population was seen when aphid population was high, and vice versa. Significant positive correlation of aphid and parasitoid populations was duo to host specificity and might be a criterion of effective natural enemies.

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**Keywords:** Aphid, Parasitoid, Population fluctuation, Broom corn, Miyaneh

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## Investigation on the effect of different wheat based crop rotations on weed seed bank of wheat fields in Miyaneh region

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### Abstract

Effect of wheat based crop rotations including wheat and corn, wheat and sunshade, wheat and onion and wheat and sorghum rotations on weed seed bank of wheat farms was investigated in around of research field of Islamic Azad university, Miyaneh branch. Soil samples were collected at 0-10 and 10-20 centimeter soil depth using Uger in September 2005. Experiment was carried out with five treatments as factorial in a completely randomized design with 25 replications and continuous cultivation of wheat was considered as control. Leaching with cloth bags method was used to study of seed weed bank in different treatments. In this research, 14314 weed seeds belonging to 35 species were collected and identified. The results of variance analysis revealed that *Cyperus fuscus* L. seeds in control and wheat and corn treatments, and *Amaranthus retroflexus* in wheat and sunshade, wheat and onion and wheat and sorghum rotations were more frequent. Seeds of *A. blitoides*, *A. retroflexus*, *Avena fatua* L., *Fumaria* spp. and *Cuscuta* spp. were also seen in all treatments. However *A. retroflexus*, *C. fuscus*, *A. blitoides* and *Fumaria* spp. were the most frequent of 21 common weeds of wheat farms, respectively. Seed production of *Fumaria* spp., *Setaria verticillata*, *Schoenoplectus mucronatus* L., *C. fuscus*, *Hibiscus trionum* L. and *Portulaca oleracea* L., in all rotation treatments was much less than control. However the mentioned treatments had not significant effect on seed numbers of some weeds such as *A. blitoides*, *C. fuscus*, *Sorghum halopens* and *P. oleracea*. In continuous cultivation of wheat (control), seeds of two mentioned *Amaranthus* species, *S. halopens*, *Polygonum hyracanicum*, *P. paulum*, *S. verticillata*, *Hyosyamus* spp. and *Marrubium vulgare* L. were significantly less than those of wheat and sunshade treatment. Also seeds of *Euphorbia* spp., *Cuscuta* spp. and *P. paulum*, in comparison to wheat and onion, *Sisymbrium loesselii* L., in comparison to wheat and corn and *Aleopecurus myosuroides* Hudson, in comparison to wheat and sorghum treatments were significantly more than control. In the other word, some weeds were better controlled by continuous cultivation of wheat. Rotations of wheat and sorghum, wheat and onion and wheat and corn caused significant reduction in seed bank of 35 collected weed species. However, total numbers of collected weed seeds at two studied soil depths had no significant differences.

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**Keywords:** Rotation, Seed Bank, Weed Control, Miyaneh

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## Phosphorus adsorption evaluation for fertilizer recommendation on three calcareous soils of Karaj region, Iran

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### Abstract

The variability of phosphorus concentration in soil solution as adsorption point of view by different minerals could be use for phosphorus recommendation. Identity of phosphorus adsorption on mineral surfaces could be studied by different equations, which their suitability depends on the soil characteristics and the aim of research. But the main concept is based on to equilibrate the soils with electrolyte solution containing different phosphorus concentration in a distinct time and temperature. In this study, three calcareous soil samples (with 7, 14 and 21 percentages  $\text{CaCO}_3$ ), fine grinded ( $<1_{\text{mm}}$  diameter) were equilibrated with five concentrations (0, 12.5, 25, 50 and 75  $\mu\text{gP/ml}$ ) which prepared from  $\text{K}_2\text{H}_2\text{PO}_4$  in 0.01 molar  $\text{CaCl}_2$ . The linear types of Freundlich and Langmuir equations were fitted with high probability ( $p < 0.01$ ) and were used for interpretation phenomena by three soils. The Freundlich equation had higher correlation coefficient. The maximum adsorption values (b) of Langmuir equation for Karaj, Kordamir and Aderan soil series were 65.74, 74.2 and 75. 2, and the energy constant (k) were 2.95, 3.49 and 0.43, respectively. The samples were linear to concentration value (C) as high as 0.75, 0.73 and 0.29  $\text{mg/l}$  for Karaj, Kordami, and Aderan soil series, respectively.

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**Keywords:** Phosphorus, Adsorption, Soil Minerals, Isotherm, Fertilizer Recommendation.

## The effect of Gibberellic Acid (GA3) on some morphological qualities of hybrid rice parental line.

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### Abstract

A factorial experiment based on completely randomized design was carried out to study the effect of Gibberellic acid on morphological qualities of hybrid rice parental lines in spring 2006. The study was done in a three hectares field in Amol. In this investigation, the male sterile line, IR58025A, accompanied by the male sterile line restoring, IR58025B, were planted in the proportion of 6:2 and 8:2. At blossom, flag leaf cut and GA3 hormone spraying with different viscosities were used as treatments. The results of variance analysis showed significant differences among different plots, and the two A and B parents. Comparison of means showed that flag leaf cut had a significant effect on the height of bushes and an important role in seed filling. Also with regards to seed filling, 150gm hormone per hectare was significantly more influential than 60 gm. This result proved the role of higher doses of hormone in seed filling. No differences were observed between planting proportions of 6:2 and 8:2.

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**Keywords:** Hybrid Rice, Gibberellic Acid, Parental Lines, Sterile Male Lines.

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## **The effects of dietary electrolyte balance on performance and eggshell quality of laying hens exposed to heat stress and thermo neutral condition in early laying period.**

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### **Abstract**

This study was conducted to evaluate the effects of different dietary electrolyte balance on performance and egg quality in early period of egg production under heat stress and thermo neutral condition. This experiment was done on hens that were in early of egg production period. Number of 256 Hy- line W-36 laying hens from 24 to 34 weeks of age were placed in two separated experimental room under heat stress and thermo neutral condition. Each experiment was carried out in a completely randomized design. Diets were formulated with inclusions of NaCl, NaHCO<sub>3</sub>, KHCO<sub>3</sub> and NH<sub>4</sub>Cl to give different dietary electrolyte balances (DEB) as 0, 120, 240 and 360 mEq/kg and were fed to laying hens for 10 weeks. Results of these experiments showed that performance of laying hens were not significantly affected by diets of various DEB in both heat stress and thermo neutral conditions. Eggshell quality were significantly affected by DEB ( $p < 0.05$ ). Under heat stress, eggshell weight and egg weight/surfaces and under thermo neutral condition, egg specific gravity, eggshell weight, eggshell thickness, eggshell ash and egg weight/surfaces were significantly affected by DEB and improved by increasing dietary electrolyte balance from 120 to 360 mEq/kg in many cases. In conclusion, increasing DEB to 360 mEq/kg in early period of egg production in heat stress and thermo neutral condition can improve eggshell quality.

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**Keywords:** Electrolyte Balance, Heat Stress, Laying Hens, Eggshell Quality, Thermo Neutral.

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