

The effect of nitrogen fertilizer and bush density on seed yield and yield components of Azargol sunflower cultivar in Takestan region, Iran

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Abstract

In order to evaluate the effect of different levels of N and plant densities on seed yield and yield components of Azargol sunflower cultivar an experiment was conducted in the factorial based on randomized complete block design with four replications and 12 treatments in the research farm of agricultural department of Islamic Azad university Takestan branch during 2005-2006. The factors of the experiment were four N fertilizer levels including 50, 100, 150, and 200 kg/ha urea manure, and three levels of bush densities (5.5, 6.6 and 8.3 plant/m²). Results showed significant effect of different levels of N on most studied traits. Bush height, grain yield, capitulum and stem diameters, thousand seed weight, and number of grain per capitulum were increased at 200 kg/ha nitrogen treatment, but the oil percentage was decreased. Oil yield was also increased in higher levels of bush density and 200 kg/ha fertilizer amount due to increased seed yield. The highest oil percent was obtained at 100 kg/ha N fertilizer level. The effect of bush density was not significant on oil percentage, but on height of plant, grain yield, oil yield, stem and capitulum diameters, thousand seed weight and the number of grains per capitulum. Stem and capitulum diameters, thousand seed weight and the number of grains per capitulum were increased in lower bush densities, but oil yield, oil percentage and grain yield were decreased. According to the results, it seems that 8.3 bush/m² and applying 100 kg/ha N amount is suitable for cultivation of Azargol variety in Takestan and similar regions.

Keywords: Nitrogen, Plant density, Yield, Yield components, Sunflower

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The effect of planting date and nitrogen on yield and yield components of Linseed, *Linum usitatissimum* L.

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Abstract

In order to investigate the effect of sowing date and different nitrogen levels on yield, yield components and active substances of linseed, an experiment was conducted as split plot based on randomized complete block design (RCBD) with four replications during 2005-2007 in Yasouj agricultural research station. Five sowing dates were considered as main plots and four fertilizer levels including 0 (control), 50, 100 and 150 kg/ha pure N from urea source were placed in subplots. The results of complex two-year analysis of data indicated that plant height, number of branches, number of fruits, grain yield, thousand seed weight, leaf area index, dry mater, crop growth rate and oil percentage were significantly reduced in delayed sowing dates. The most yield (1801.12 kg/ha) was obtained at first sowing date (10 March), and significantly decreased to the least rate in the latest sowing date (1 May). Application of 100 kg/ha pure N significantly increased plant height, number of branches, number of fruits, leaf area index, dry mater, and crop growth. The most grain yield was also achieved in use of 100 kg/ha pure N treatment. The most oil (34.6%) and acid linolenic (52.38%) rates was obtained in the first sowing date and the least rates was belong to the last sowing date. Sowing date had no significant effect on acid oleic and acid linoleic rates. The most acid linolenic (52.64%) and acid linoleic (15.36%) were obtained by the use of 150kg/ha pure N and the most acid oleic (20.59%) were obtained in control.

Keywords: Linseed, *Linum usitatissimum*, Planting date, Nitrogen, Yield, Yield components, oil

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Evaluation of different strains of *Rhizobium leguminosarum* bv. *phaseoli* inoculation on ecophysiological nitrogen fixation ability of common bean, *Phaseolus vulgaris* L., cultivars

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Abstract

In order to evaluation of ecophysiological nitrogen fixation ability of common bean (*Phaseolus vulgaris* L.) cultivars with some types of inoculants which contain different strains of *Rhizobium leguminosarum* bv. *Phaseoli*, a factorial experiment in randomized complete block design (RCBD) was conducted in Khoramdareh region of Iran during 2006-2007. Treatments consisted of three types of biological fertilizers including Rb117, Rb123, Rb13, a comercial inoculant (Rhizobean super plus) with two N100 (use of 100 Kg nitrogen/ha) and control (without seeds inoculation and fertilizer application) treatments and three bean cultivars of COS16 (spotted bean), Derakhshan and Akhtar (red beans). Results showed that inoculation of different bean varieties with *Rhizobium* strains incresead their qualititative and quantititative traits. Inoculation and nitrogen application increased yield up to 43 percent in comparison to control. Rb117 was more effective on common bean yield than other strains and caused up to 59 percent seed yield increase in comparison to non inoculant treatment. Whereas Rb123 had the least effect on yield (32%) among studied inoculants. COS16 was also the best cultivar in most traits and seed yield of this variety was 7.5 and 19 percent higher than Derakhshan and Akhtar varieties, respectively. The most protein percent were obtained from 100 kg/ha nitrogen, and Rb117 treatment. The highest and lowest protein yields were gained from Rb117 and control treatments, respectively. It was concluded that industrial biofertilizers such as Rhizobean super plus must be used as complementary materials with mineral fertilizers to achieve satisfying yield and sustainable agriculture.

Keywords: Common bean, Nitrogen fixation, Yield, Inoculant, *Rhizobium leguminosarum* bv. *Phaseoli*

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Evaluation of advanced dryland durum and bread wheat lines yield in Kandowan region of Miyaneh, Iran

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Abstract

Yield of six dryland durum and eleven dryland bread wheat lines was evaluated in a randomized complete block design with three replications in Tark and Alengareg vilages of Kandowan region of Miyaneh in 2007. In harvest stage, some traits such as yield, plant height, ripening time, tolerance to dry and cold conditions, thousand seed weight, and tiller numbers were recorded. There was significant difference between durum genotypes in plant height and thousand seed weight at both studied regions. Also, genotypes were significantly different in dry tolerance and fertile tiller numbers, but not regions. Interaction of region in genotype was significant in yield, tiller numbers and dry tolerance but in plant height and thousand seed weight. Among durum lines, Gardish was the highest one. The highest yield belonged to PI40100 with significant difference with the rest of the lines. Dry tolerance in Haurani and tiller number in Haurani, G-1252, Dipper and PI40100 was in the highest level, significantly. Plant height was also significantly different among beard wheat genotypes in both regions. Regions and genotypes were significantly different in yield and thousand seed weight. Among bread wheat lines, plant hight in Sardari was significantly higher than others. As a whole, thousand seed weight and yield in Unknown-11 was significantly higher than other bread wheat genotypes.

Keywords: Durum wheat, Bread wheat, Dryland, Advanced lines, Yield

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Evaluation of yield and yield components of hopeful hybrids of spring canola, *Brassica napus* in Iranshahr climatic condition

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Abstract

In order to evaluate the adaptability, yield and yield components of 12 hopeful hybrids of spring canola in Iranshahr climate, an experiment was conducted in a randomized complete block design with four replications in agricultural and natural resources research center of System and Balouchestan province during 2005-2006. Results showed significant differences of genotypes in plant height, thousand seed weight, number of pods per plant, number of seeds per pod, number of days to flowering, the length of flowering period, the length of ripening period and numbers of days to harvest. Hyola 401 had the most grain yield, thousand kernel weight, oil percent and yield than other hybrids. Hyola308/3 indicated the least grain and oil yield. However, the higher percent of seed oil, plant height and numbers of pods per plant were observed in this hybrid. Hyola308 and syn-2 had more numbers of seed per pod than others. Syn-3 indicated longer flowering period. Hyola308 and Hyola 420 had the higher length of ripening period and hyola43 indicated longer growing period. Thousand kernel weight and the length of ripening period after flowering showed positive correlation with grain yield and oil yield. Length of growing and flowering periods had also negative significant correlation with oil and grain yields in this experiment. Based on the results, the most grain yield was obtained from Hyola 401 and Hyola308. Whereas, Hyola308/3 and Hyola330 produced the least grain yield.

Keyword: Canola hybrids, *Brassica napus*, Yield, Yield components, Oil percent, Thousand seed weight

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Investigation on the effective indices on yield in delayed sowing of different soybean cultivars in Zanzan region, Iran

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Abstract

Soybean, *Glycine max* L. is one of the valuable oil and proteinous grain plants and it's sowing area is expanding annually because of need to both oil and protein sources in our country. Because of some difficulties in on-time cultivation of soybean, an experiment was carried out to investigate the adaptation possibility of the plant in delayed sowing. A randomized complete block design (RCBD) was conducted at research field of Zanzan university with three replicates. In this study, five soybean cultivars including Zan, Clark, Certificated Sahar, Habit and SRF were examined. Indices of chlorophyll content, canopy temperature and bush height were evaluated at flowering stage (R_1). Grain and biological yield, oil and protein yield, oil and protein percent of grains, and index of harvest were also studied at physiological maturation stage (R_8). Results showed significant differences of cultivars in most characteristics. The highest grain, oil and protein yields, harvest index and leaf chlorophyll were related to Habit cultivar. There were no significant differences among cultivars in canopy temperature, and oil and protein percentage of grain. hundred seed weight was the most important trait to distinct cultivars. The results of correlation studies between traits revealed that the chlorophyll content index, harvest index, and hundred seed weight were the most effective factors on grain oil and protein yield and might be regarded in cultivar selection. Based on the results, Habit cultivar showed more suitable growth period length and better adaptation to photoperiod and temperature of the studied region and so could be a suitable option to supplemental researches in delayed sowing and double planting studies.

Keywords: Soybean, Grain oil, Protein, Yield, Delayed sowing

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Effects of drought stress and cycocel application on yield of maize varieties in second crop

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Abstract

In order to study the effects of drought stress and cycocel application on the some vegetative traits and grain yield of maize varieties as second crop, an experiment was conducted at agricultural research station of Jihad-Keshavarzi in Khoy region of Iran during 2005 growing season. Experimental design was a split-split plot based on randomized complete block design (RCBD) with four replications. The factors consisted of irrigation as the main factor in three levels (irrigation after 70 ± 5 , 100 ± 5 , and 130 ± 5 mm evaporation from class A pan), 260 and 301 corn varieties as subfactor and cycocel in two levels of 1.5kg/ha effector material and without application as sub-subfactor. Results showed that drought stress caused reduced culm diameter, ear length and diameter, hundred grain weight, and biological and grain yield. Variety 301 had more ear diameter than variety 260, significantly. This can be attributed to the longer growth duration of the variety 301. Application of cycocel increased stem diameter, length and diameter of the ear, hundred grain weight, biological yield, grain yield and the harvest index. Generally, It was concluded that the irrigation after 70 mm evaporation and the application of cycocel can play major role in increasing of maize grain yield.

Keywords: Cycocel, Drought stress, Second crop, Maize, Yield

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Corn leaf area variation under different durational interference of natural weed populations

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Abstract

In order to study the effect of periodical weed interference on corn leaf area, a field experiment was conducted at Mazandaran university, Iran in 2006. Eight experimental treatments were arranged in randomized complete block design with three replications. The treatments were represented as weed interference up to 4, 6, 8 and 10-leaf, tasseling, and two weeks after tasseling stages. The weed interference up to harvest and weed-free up to harvest stage treatments were also considered as control. The corn leaf area influenced significantly by periodical weed interference but leaf number per plant was not affected by durational weed interference. Greatest corn leaf area was observed in weed free up to harvest (control) and weed interference up to 4 leaf stage treatments. Increasing weed interference period more than corn 6 leaf stage significantly reduced corn leaf area to lesser than 1 m² per plant. Long term weed competition changed the corn canopy structure so that the greatest leaf area percentage was attributed to upper levels of canopy. However, leaf area percentage remained constant in lower canopy levels. Results showed that increasing of weed interference period reduced corn leaf area but did not affect leaf numbers per plant and corn compensated this deficiency by changing canopy structure and attributing more leaf area to higher levels of canopy.

Keywords: Weed interference, Durational interference, Corn, Canopy structure, Leaf area

Effect of comb wax age on brood performance or population of honey bee, *Apis mellifera*

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Abstract

Using long lasting combs have deleterious effects on honey bee larval development due to pathogenic contamination and toxins. In this research, old combs with unknown age and dark colour and new maked ones were obtained and bee reproduction and population were compared in old and new bee waxes. Old combs were placed in strong bee colonies to clean them of debris. Brood performance and population of honey bee were then measured for each colony on days 14 and 21 at reproduction season. Results revealed that queen reproduction and body weight of young adults were significantly higher in new combs ($p < 0.01$). Accumulated debris and numerous contaminants caused smaller mean cell diameters in older combs and resulted in decreased weight of young adults. Also, thoset had deleterious effects on bee health. Bees reared in new combs weighted about 8.3% more those reared in old ones. Results showed the effectiveness of new combs on brood performance and honey production. Thus, elimination of very old brood combs by bee keepers were recommended.

Keywords: Honeybee, *Apis mellifera*, Comb wax, Honey production, Brood performance, population

Environmental evaluation with land ecology and landscape ecological approaches: case study of Kaleibar Chay, basin, Arasbaran, Iran

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Abstract

This research attempted to find the best sites for development with ecosystemic and landscape ecological approaches. For this purpose, the case study was evaluated by each approach. After data collecting, quantity and quality criteria of the case study zone were quantified and became dimensionless and thereafter limitation layers based on Boolean logic were applied to the map and each approach. Regarding consistency matrices and acceptable errors and using analytical hierarchy process (AHP) principles and aggregative support system, criteria weights in every approach were figured out. Finally, using simple additive weighting (SAW) method, criteria were weighted in each approach. For development, the worked out results were sorted in four groups from high preference to low and then consequences were represented in one complex map and matrix. The complex map outcomes were confirmed by matrix diameter selection which was recommended in every approach. The results showed 4985.12 hectare appropriate areas out of 54872.3 hectares for basin development. In each approach, the most overlap was observed in the lowest preference.

Keywords: Environmental evaluation, Development, Ecosystem, Ecological method, Land ecology, Landscape, Arasbaran, Chaleibar Chay basin

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