Study of corn-sunflower intercropping ratios in different dates of planting affecting on quantitative and qualitative forage kernel yields in Ahvaz region

A. Hashemi-Dezfouli¹, A. Ebdali², A. Siadat³

ABSTRACT

Intercropping of two or more crops establish a plant community which may use the resources more efficiently for growth as dry matter production and therefore may improve the quality and quantity of yield. With the objective increasing yield, an intercrop of corn - sunflower was planted in 1995 at Ramin Agricultural Research and Educational Collage, Ramin, Khuzistan, Iran. The design of the experiment was a split plot which was replicated 4 times. Main plots were consisted of 3 sowing dates of 22.7.95., 31.7.95 and 10.8.95. Sub-plots were allocated to intercropping ratios of 100:0, 25:75 , 50:50 , 75:25 and 0:100 sunflower and corn, respectively. Yield evaluation using land equivalent ratio (LER) index showed that a mixture of 75% sunflower and 25% corn had the highest LER which was 1.17 and 1/18 for fresh and dry matter yield, respectively. This indicates a land-use advantage of up to %18 for forage production in intercrop system. The highest protein yield was also obtained from the mixture of 75% sunflower and 25% corn. (2471 kg/ha). Evaluations using both LER and RCC methods revealed that there were no grain yield advantages for intercropping compared to pure stands. The highest grain yield for corn obtained from corn monoculture with 9603 kg/ha. The highest dry matter and grain yield obtained at the sowing dates of 31.7.95 and 10.8.95 respectively.

Key words: Corn-sunflower intercropping, yield, protein, forage, grain, LER.

The study of Mycorrhiza and Streptomyces’ efficiency and different levels of phosphorus on grain yield and some characters of wheat

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ABSTRACT

Using microorganisms, which can co-exist in symbiotic relationship with their host plant is becoming a common practice and their importance of plant nutrition have been shown. Today, Mycorrhiza fungi (for increasing nutrients uptake specially phosphorous) and Streptomyces sp. from actinomycetes (for plant protection by producing antibiotic substances and thier PGPR roles) are being used very commonly. This study was carried out with the objective of studying the symbiotic relationship between these organisms and wheat using different levels of phosphorous application. The interaction between the above organisms and applied phosphorous was also studied aimed at identifying the best combination in which the lowest phosphorous is used. A Factorial experiment in Completely Randomized Block Design with 3 replications was used in which 4 levels of P(0, 30, 60 and 90 kg/ha) were applied, and for each microorganisms 2 levels (one with and one without using) in the form of seed inoculation was utilized. The results showed that, using Mycorrhiza, has a positive and significant effects in most characters studied, however, when the phosphorous levels increased, Mycorrhizal activity was reduced, but at the rate of 60 kg P/ha, we obtained a good activity specially on grain yield. The effect of phosphorous levels on Streptomyces was not significant in most characters but there was a negative or antagonistic interactions between two microorganisms for most of the characters. By applying these two microorganisms together, the Mycorrhizal activity was decreased.

Key words: Mycorrhiza, Streptomyces, Phosphorous, wheat, Grain yield.

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Application of the Random Amplified Polymorphic DNA (RAPD) technique, as a DNA marker for detection of polymorphism among Italian durum wheat cultivars *(Triticum turgidum* *L.* *spp.* *durum)*.

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**ABSTRACT**

Development of a linkage map of cultivated wheats using conventional molecular markers has lagged behind, because of the large genome size and limited levels of genetic polymorphisms. Recently RAPD (PCR) marker have been suggested to provide an alternative to visualize more polymorphism. In this research the data obtained by using RAPD analysis of 10 arbitrary primers (10 mers) in 8 durum wheat and 9 advanced line derived from a diallel cross between two cultivars. A total 297 and 665 RAPD fragments were generated in polyacrylamide and agarose gels respectively. Amplification reactions resulted in fragments ranging in length between 300 and 3000 bps. Bands were scored in binary matrix and this matrix was used for construction the distance matrix based on Nei’s similarity coefficient. The amplified products were treated as independent characters to generate a phenogram using cluster analysis and cultivars classified in 5 groups for agarose gels and 4 groups for polyacrylamide gels. In both agarose and polyacrylamide gels, \( \chi^2 \) analysis showed that, there are differences between varieties and primers regarding band generation. We also detected specific bands that existed in advanced lines. The results showed that RAPD markers are suitable for studying DNA polymorphism.

**Key words:** Polymorphism, RAPD-PCR, Nei’s similarity coefficient, Durum wheat.

**Comparision of infestation levels and damage caused by cereal sawfly,**

*Cephus pygmaeus* (*L.*) (*Hym.* *Cephidae*) on five cultivars of barley in Karaj region.

V. Ghadiri⁶

**ABSTRACT**

Two experiments were carried out in Karaj in 1993 and 1995. Experiments were arranged in Randomized Complete Block design with five treatments and 4 replications. Treatments were included 5 varieties of barley, U.N.K, Reyhan, Faez, Karoon and Desnad. Percentages of infestation and also grain weight reduction (in infested and uninfested plants) were determined for each replication. The data obtained at the end of two years experiment, were classified with Duncan procedure. Statistical analysis showed that Faez variety of barley having 0.75% contamination was less contaminated in comparison with other varieties. The Desnad variety with a mean of 5.26% grain weight loss was less susceptible in with other varieties.

**Key words:** Barley, Cereal sawfly, % contamination, Grain weight loss.

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Effect of plant densities on mortality of main stem and each one of tillers in different growth stages of four wheat ([*T. aestivum* L.]) cultivars.

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**ABSTRACT**

In order to study the effect of plant densities on main stem and each one of tillers mortality in different growth stages of wheat, a field experiment was conducted at College of Agriculture, Shahid Chamran University during 1997-98 cropping season. Experiment was carried out as factorial and based on RCB design with four replications. Factors were cultivars (Falat, Atrak, Vee/Nac and Maroon) and plant densities (200, 300, 400, 500 and 600 plants/m²). Results indicated that, a few main stems were lost in different cultivars and plant densities, and did not produce spikes. In cultivars with high tillering potential, main stem mortality was higher. Main stem mortality in Falat, Atrak, Vee/Nac and Maroon cultivars were 15.41, 14.91, 7.91 and 5.74% respectively. Comparing various growth stages of tillering termination, booting, anthesis, milk development and ripening, main stem mortality was 0.0, 1.51, 3.96, 7.53 and 10.99% respectively. By increasing the plant density, main stem mortality was also occurred earlier. Respecting to tillers, from 1st to the last tillers, the mortality was higher. For example, in 1st to 6th tiller, the mortality were 54.77, 70.93, 86.77, 96.33, 98.70 and 100% respectively. Also, mortality of each tiller occurred earlier.

**Key words:** Wheat, Cultivar, Plant density, Main stem mortality, Tillers mortality, Growth stages.

Genetic variation for dry matter and nitrogen accumulation in grain of spring wheat genotypes under optimum and post-anthesis drought stress conditions.

I. Grain yield and its related components. *

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**ABSTRACT**

In order to evaluate genetic variation and response of spring wheat genotypes to different environmental conditions, sixteen wheat genotypes (including 4 durum wheat and 12 bread wheat genotypes) were examined in optimum and post-anthesis drought stress conditions in two separate experiments using Randomized Compte Block design with four replications. Results showed that environmental effect was significant for grain harvest index (GHI) and thousand grain weight (TGW) at 5 and 1% probability levels, respectively. Genotypic difference for grain yield (GY), TGW, GHI and biological yield (BY) were found significant. There were significant correlation between GY and GHI at the 1% probability level in both optimum and drought stress conditions. The highest similarity value in traits changes obtained from GY and BY based on variable cluster analysis. Coefficients differences of genetic variation of traits were not significant in drought stress condition, while there were significant genetic variation for GY, BY and GHI in optimum condition. Generally, it seems that interaction effects of internal processes of plant, specially relationship between sink - source may lead movement and accumulation of dry matter in to grain.

**Key words:** Genetic variation, Grain yield, Wheat, Drought stress.

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