

**MINISTRY OF JAHAD-E-AGRICULTURE
AGRICULTURAL RESEARCH, EDUCATION AND
EXTENSION ORGANIZATION
COTTON RESEARCH INSTITUTE OF IRAN (CRII)**

**PROJECT ABSTRACTS OF RESEARCHERS OF COTTON
RESEARCH INSTITUTE OF IRAN (CRII) IN 2010**

Study of salinity tolerance in cotton by tissue culture

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Abstract

Using of the somaclonal variation or selection of tolerant lines to abiotic stresses is one of the main applications of tissue culture. The first step in this way is reach of good callogenesis with high yield. Then, we can spread the methods for producing of healthy plants. In present research that was carried out in 2007 to 2009 years in the laboratories of Cotton Research Institute of Iran, primary were investigated the callogenesis potential of immature embryo, hypocotyl and root explants of Sahel, Sepid, No.200, Barbadense and Khordad cultivars on MS basal medium with various hormonal combinations of 2,4-D and BAP hormones. Experiments were designed completely randomized design (CRD) with three replications. Analysis of variance showed significant differences between cultivars, explant type and explant \times hormonal combinations of medium interaction in 1% level. The highest callus formation was related to immature embryo explants of No.200 cultivar on the MS medium containing 0.5 mg/l 2,4-D without BAP, whereas, the root explants of Sepid cultivar showed the lowest callogenesis percent. In the second experiment, the produced calli were transfer ed on MS medium with different concentrations of NaCl, and then, the relative growth rate of calli was measured. The tolerance of explants to different NaCl concentrations for cultivar, explant type, NaCl density and the interactions of cultivar \times explant type, cultivar \times NaCl densities, explant type \times NaCl densities and cultivar \times explant type \times NaCl densities was significant in 1% level. On the basis of mean comparisons with Duncan's test, the most relative growth rate of calli was happened for immature embryo explants of Khordad cultivar, whereas the root explants of No.200 cultivar had the lowest tolerance to different NaCl densities. The relative growth rate of calli showed significant reduction with increasing of NaCl densities in all of the explants and different cultivars, as, the control treatment (without NaCl) has been the highest relative growth rate with 56.6%, and the lowest relative growth rate with 20.6% was observed on MS medium containing 3 mg/l NaCl. In the third experiment, the survival percent of seeds and apical bud explants of cultivars on MS medium containing different concentrations of NaCl was studied, which seed explants of Khordad cultivar showed the highest tolerance between all treatments. Finally, different remained explants had most of tolerance to the various NaCl densities, were transferred to the higher salinity densities with 3.5 and 4 mg/l NaCl, but none of explants could not tolerate the higher NaCl densities.

Keywords: Explant, Salinity, Tolerance, Callogenesis, Tissue culture, Cotton, Phytohormones, Medium.

Investigation on new cotton hybrids derived from segregated generation selection and compare with Sahel commercial cultivar

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Abstract

In order to study the yield and some agronomic traits in new cotton genotypes, 23 new hybrids and 4 superior or commercial genotypes evaluated in a RCB design with four replication at HashemAbad cotton research station (Gorgan) in 2008-2009. There were significant differences ($p \leq 0.01$) between genotypes for most traits (boll weight, earliness, lint and seed weight, lint percentage, fiber length, micronair, fiber strength and fiber elongation) studied in each years. Combined analysis of variance has shown significant genotype effect on plant height, lint and seed weight and lint percentage at 1 %. Yield, earliness and boll number were non-significant. Among genotypes, SKN A , SKTBA, G-259, N2SA and NSKA were grouped in A classes for yield and SKG-C , NN2-B and TBS-A were located in the next. All high yielding genotypes (except SKN2A) were earlier than commercial sahel variety with at least 40 percent lint percentage. The N2SA and TBS-A genotypes have shown suitable qualitative fiber characters and fiber strength, respectively.

Keywords: Cotton, New hybrids, Yield, Yield components, Commercial variety

selection of superior cotton varieties for quantitative and qualitative traits improvement

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Abstract:

Selection is an effective method for cotton varieties improvement. Pedigree selection method was used for nucleus seed production in six superior cotton varieties. The study conducted in 2006 until 2009 in Hashem Abad, Karkandeh and Varamin cotton research stations. Selection carried out on the base of yield, boll size, boll number, maturity, plant type and fiber qualitative traits. Idiotype single plants selected annually and planted in individual rows in the next year. In final year, the best pure lines identified for nucleus seed combination. The superior cotton varieties can use for commercial cultivation and hybridization program.

Keywords: cotton, selection, earliness, nucleus

The effect of management of nitrogen application on sustainable cotton production in Varamin and Gorgan

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Abstract

In order to find out the effects of management of nitrogen application on sustainable cotton production, an experiment was conducted in 2004 in a silty clay loam soil at Varamin research center for two years and at Hashem Abad Cotton Research Station for one year. The experimental design was factorial in Varamin and Split, Split Plot with Randomized Complete Block in Hashem Abad with four and three replications. The treatments included: three times of fertilizer application, at squaring, flowering and boll formation stage and four level of fertilizer application (0, 50% less than recommended rate, 100% and 150% of recommended rate) and two applying methods' broad casting and banding application methods. soil samples were collected and analyzed.

The results in Varamin showed that the treatments had not effected the boll weight, but the check had the lease boll weight. The level of fertilizer application had a significant effect on number of boll per plant at 1% level. The highest number of boll was achieved when the 100% recommended rate was used at flowering stage. Also banding method with 100% recommended rate of fertilizer showed the highest yield. As the rate of fertilizer and times of application increased the rate of vegetative growth increased and earliness delayed.

According to the results of Gorgan, the effects of using time on number of monopodial branches and earliness were significant at 5% and 1% levels, respectively. The rest treatments in this study had no significant effects on different properties.

Key words: cotton, nitrogen fertilizer, application methods, application time.

Evaluation of early vigor in cotton cultivars

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Abstract:

In order to evaluate the early vigor in cotton diploid and tetraploid cultivars, two field experiments were conducted during 2007 and 2008 in Hashem Abad cotton research station. This survey was carried out in randomized complete block design with 16 treatments and 4 replications. Treatments included 12 tetraploid (Sahel, Siokra, NO-200, 43259, B557, 312-818, 43347, Tabladilla, Nazili, Chekorawa, Opel, Avangurd,) and 4 diploid (Hashem Abad landrace, Kashmar landrace, Sabzevar landrace and Aria landrace). Evaluation of early vigor was considered as seedling dry matter accumulation 39 days after planting date. In harvest time some plant agronomic and morphological traits were measured. Correlation analysis of traits was shown that plant height, node number per plant, sympodial branch per plant, total branch number, monopodial branch number, boll number per plant, 20 boll weight, total yield, first picking yield, earliness percent and seedling dry matter were affected by cultivar treatment. The highest and lowest amounts of seedling dry matter were belonged to Opel and B-557 cultivars, respectively. Sufficient correlation among combined analyzed traits means was indicated that increasing seedling dry matter was caused stimulatingly 20 boll weight enhancing in tetraploid cotton cultivars but total yield and earliness percent were increased in diploid or landrace cultivars. Therefore, results of this experiment were shown that more seedling dry matter was increased 20 boll weight in tetraploid cultivars and total yield and earliness percent in diploid cotton cultivars.

Keywords: Early vigor, Cotton, Tetraploid, Diploid, Sufficient of Correlation

Effects of plant growth regulators on cotton water logging tolerance in in-vitro condition under different temperatures

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Abstract:

In order to evaluation of effects of water logging in cotton plant, one experiment was conducted in Cotton Research Institute in Gorgan, Golestan province, Iran in 2008. This survey was arranged in a factorial experiment using randomized completely design with 3 replications. Factors were included: temperature (10 and 20 centigrade), cultivar (Sahel, Tabladilla, Siokra, No-200, (*G.hirsutum*); Hashem Abad and Kashmar (*G.barbadense*)) and plant growth regulator (D-Manitol, Mepiquate chloride, Glycin betaine and dionized water (control)). Plants were imposed under water logging condition after 6 leaves stage of cotton seedling for 48 hours and were putted in different temperatures. After this stages some parameters was evaluated in plants in 5th day.

Anova was indicated that whole seedling traits were affected under studied factors. Seedling total dry weight (TDM) means comparison was shown that 10^oc has decreased in contrast to 20^oc TDM. Plant growth regulators had no significant effect on TDM. In this study, No-200 cultivar indicated better tolerance under water logging stress in contrast to traditional cultivars (Sahel and Siokra).

Key words: Cotton, water logging stress, cultivar, PGR (Plant Growth Regulators), seedling characteristics.

Effect of different planting dates on yield and yield components in hopeful cultivars of cotton

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Abstract:

In order to evaluate of optimum planting date on hopeful cotton cultivars, lint yield and yield components, an experiment was carried out in Hashem Abad Agricultural Research Station during 2005 and 2006. Fifteen treatment combinations were tested in a split-plot design with four replicates, where planting date was the main-plot factor and cultivars was the sub-plot factor. Cotton cultivars: No-200 and Tabladilla (as a hopeful cultivars) and Sahel (commercial cultivar) were planted on five dates to represent an early planting (12 April) and a late planting (23 May), with a targeted minimum of 15 days between plantings. In first year, results showed that Tabladilla and Sahel had the highest and lowest first picking but in second picking, there was no significant among all studied cultivars, meanwhile earliness percent of hopeful cultivars was more than commercial cultivar (Sahel). First Picking was also higher in first and second early planting dates in contrast other planting dates. Furthermore, Results of variance analysis of second year showed that planting date factor affected only on plant height and sympodial branch numbers and had no significant influenced on other traits. Mean comparisons in second year indicated that differences among cultivars were not significant for all characters studied and planting date either had significant effects on total lint yield and boll number in plant. Combined analysis determined that cultivar factor had no influence on measured traits. Study of planting date \times cultivar data represented that it is significantly affected only sympodial branch numbers. Conclude it that optimum cotton cultivars production in first picking and earliness percent, Cotton have to plant in May 14 maximum.

Key Words: Hopeful cultivars, Cotton, Planting date, Yield & Yield components.

Effect of different planting dates on yield and yield components in hopeful cultivars of cotton

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Abstract:

In order to evaluate of optimum planting date on hopeful cotton cultivars, lint yield and yield components, three experiments were carried out in Golestan (Hashem Abad Agricultural Research Station), Esfahan (Kabotar Abad Agricultural Research Station) and Fars provinces (Bakhtajard Agricultural Research Station) during 2005 and 2006. Fifteen treatment combinations were tested in a split-plot design where planting date was the main-plot factor and cultivars was the sub-plot factor. Cotton cultivars: No-200 and Tabladilla (as a hopeful cultivars in Golestan and Esfahan provinces), Sahel and Varamin (as commercial cultivars for Golestan and Esfahan provinces, respectively) and No-200 and Chekorawa (as a hopeful cultivars in Fars province) and Bakhtegan (as commercial cultivars for Fars province) were planted on five dates to represent an early planting (12 April) and a late planting (12 July), with a targeted minimum of 15 days between plantings in Golestan and Esfahan provinces and five dates to represent an early planting (19 April) and a late planting (31 May), with a targeted minimum of 10 days between plantings in Fars province. Combined analysis of Golestan experiment data determined that cultivar factor had no influence on measured traits as well as total yield. Study of planting date \times cultivar data represented that it is significantly affected only sympodial branch numbers. Conclude it that optimum cotton cultivars production in first picking and earliness percent, Cotton have to plant in May 14 maximum in Golestan province. Combined analysis of Esfahan experiment data dogged that cultivar factor had no influence on measured traits as well as total yield. Based on Esfahan experiment results, bring to a close it that optimum planting date of cotton cultivars production is May 8 maximum. Combined analysis of Fars experiment data was shown that No-200 was better in compare to other cultivars in total yield trait. In order to maximum yield production of cotton cultivars in Fars province is better that No-200 and Chekowara will be planted between April 21 by 30 and April 21 for Bakhtegan cultivar.

Key Words: Hopeful cultivars, Cotton, Planting date, Yield & Yield components.

**Determination of the best plant population in hybrid cotton
(*Gossypium hirsutum*).**

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ABSTRACT:

One of the important knowledge for developing hybrid cotton is finding the best density or planting arrangement. To investigate this subject, an experiment was done in Hashem Abad cotton research station in Golestan for two years (2008 – 2009). Experiment was a factorial in randomized complete block design. Factors were hybrids (SAHEL × SINDOSE, SAHEL × B557, SAHEL as Control) and planting arrangement (80×20, 80×80, 90×90, 100×60, 100×80, 100×100) . Results showed that in hybrids or sahel cotton, even for a drought year (2008) or a year with huge insects in the early season (2009), 80×20 planting arrangement was the best for highest yield and earliness or stability. Increasing of boll numbers from the bolls on the plants was the causing of increasing of yield for two years. So that, instead of increase the density for suitable cultivars that capable to increase the bolls in (m²), the role of retaining bolls in high density in investigating cultivars or recommending cultivars is very important.

Key words: Hybrid cultivars, density

Effect of different plant densities on yield and yield components in hopeful cultivars of cotton

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Abstract:

Establishment of an acceptable population of cotton plants is paramount to obtaining high yields. Thus, in order to evaluate of plant density effect on cotton lint yield and yield components, an experiment was conducted in Hashem Abad Agricultural Research Station in 2005 and 2006. This research was carried out in split plot– factorial on randomized complete block design (RCBD) with four replications. Treatments included distance between rows in three levels: 60, 70 and 80 cm (main factor), space within rows (1st sub plat factor) in 2 levels: 10 and 20 cm, and 3 cotton (2nd sub plat factor) cultivars (Sahel as a Golestan province commercial cultivar and hopeful cultivars: No-200 and Tabladilla) were considered. The main objective of this investigation was to determine how lint yield in cotton is altered through plant density management. Results showed that total lint yield has affected only by distance between rows in first year but was differed by three studied factors in second year. Combined analysis of two years data indicate that year have significant effect on first picking lint yield, earliness percent, sympodial branches numbers and boll weight. Distance between rows has influenced on first picking lint yield, second picking lint yield, total lint yield and and boll weight but space within rows only had significant effect on boll number per each plant and boll weight traits. Cultivar factor has affected plant height, sympodial branches numbers and boll weight. Data indicated that No-200 cultivar has highest yield than in comparing to commercial cultivar (Sahel) and 80 cm distance between rows is more desirable for further lint yield production for studied cultivars without space within rows differences existence.

Key Words: Hopeful Cultivars, Cotton, Plant density, Yield and Yield Components.

Effect of different plant densities on yield and yield components in hopeful cultivars of cotton

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Abstract:

Establishment of an acceptable population of cotton plants is paramount to obtaining high yields. Thus, in order to evaluate of plant density effect on cotton lint yield and yield components, three experiments were carried out in three locations: Golestan (Hashem Abad Agricultural Research Station), Esfahan (Kabotar Abad Agricultural Research Station) and Fars provinces (Bakhtajard Agricultural Research Station) during 2005 - 2007. Eighteen treatment combinations were tested in a split-plot factorial design where distance between rows was the main-plot factor and space within rows and cotton cultivars were 1st sub 2nd sub plot factor, respectively. Cotton cultivars was included: No-200 and Tabladilla (as a hopeful cultivars in Golestan and Esfahan provinces), Sahel and Varamin (as commercial cultivars for Gooleston and Esfahan provinces, respectively) and No-200 and Chekorawa (as a hopeful cultivars in Fars province) and Bakhtegan (as commercial cultivars for Fars province), were planted on three distances between rows (60, 70 and 80 cm in Golestan and Fars studies and 65,75 and 85 cm in Fars investigation) with two spaces within row (10 and 20 cm). The main objective of this investigation was to determine how lint yield in cotton is altered through plant density management. Results in Golestan location showed that No-200 cultivar has higher yield than commercial cultivar (Sahel) and 80 cm distance between rows is more desirable for further lint yield production for studied cultivars without space within rows differences existence. Fars data shown No-200 has produced the highest yield in compare to other

cultivars too. The best optimum plant density for Bakhtegan, No-200 and Chekorawa were 75×20 , 75×20 and 65×20 , respectively meanwhile Chekorawa had better yield stability under plant densities variation. In Fars study was determined that earliness and boll number increased with plant population reducing. No-200 had the most earliness in contrast to other cultivars. Esfehan results were indicated that N0-200 cultivars had the better yield in comparing to Varamin and Tabladilla. The optimum distance between rows was 80 cm and there was no significant differences among cultivars lint yield under two spaces within rows. As a final point, Total data of three locations was shown that the No-200 had the most desirable yield potential in three provinces in compare to other studied cultivars and therefore it was advised for introducing.

Key Words: Hopeful Cultivars, Cotton, Plant density, Yield and Yield Components.

**Effect of Ultra Narrow Row(UNR) and Narrow Row(NR) spacing
on yield, earliness and fiber qualities of cotton (*Gossypium hirsutum*).**

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ABSTRACT

One of the important method to increase yield and earliness in cotton(*Gossypium hirsutum*) is planting it in ultra narrow row (UNR) and narrow row (NR) crop production system. In this method cotton is planted in lower than 40 (cm) instead of 80 or 100 (cm). To study the effect of UNR and NR on 2 commercial cotton, a factorial experiment in randomized compleat block design was selected. Factors were row spacing (20, 30, 40, 50, 60, 70, 80, 90, 100) and cultivars (SAHEL, SIOKRA). The experiment was done in Gorgan in 3 years, 2007-9. Rezults for three years showed that Sahel cotton was better in yield in 20(cm) than control 80 (cm). Siokra as the other commercial cultivar was better in 30 (cm) than the other for 2 years of 3.

Key words: UNR, yield, earliness, cotton

Determination of the best Suitable planting date hybrid cotton varieties

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Abstract

This project to determine the best time for planting date cotton successful hybrid in factorial using randomized complete block design with three replications in the years 1387 and 1388 the station was Kordkoy Karkndh Research station. 3 planting date were first factors, three treatment including two Hybrid varieties S8 , S5 and sahel control cultivar second factor and the third factor includes planting pattern 20×80 and 50×80 cm.they were selected two planting patterns to create the possibility for maximum yield hybrid varieties in comparison with the control varieties.Composed results in two years showed that the cotton boll number per plant, boll weight, first harvesting yield, earliness and total yield decreased, but plant height and sympodia length increased with delaying of planting time. Hybrid varieties significantly had more the first harvesting and total yields in than the Sahel cultivar. S8 variety with planting pattern of 50×80 cm showed the higher yield in comparison with planting pattern of 20×80 cm, but these treatments didn't have significant differences. S5 hybrid variety reactions during the first and second planting date in planting patterns of 20×80 and 50×80 cm didn't show significant differences, but in the third planting date, the S5 variety with planting pattern of 20×80 cm significantly had 621 kg/ha more yield than planting pattern of 50×80 cm. Final results showed that S8 hybrid variety was better than S5 hybrid variety, but with delaying in planting date, the first harvesting and total yields intensively decreased in mentioned two hybrids. Therefore, it seems these hybrid varieties suitable for early planting date.

Keywords: Cotton, Planting Date. Hybrid Varieties

Evaluation of planting date and row spaces on yield and other agronomic traits of advanced breeding Cotton lines in Mazandran

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Abstract:

In order to estimate of planting date and distance between rows effects on yield and other agronomic traits in cotton cultivars a split-split plot experiment with three replications was conducted during 2 years (2008-2009) at Agriculture Reaserch Station of Gharakheil . In this study , different planting dates (D1: 10, may D2: 25 may), plant row distances (A1:80 cm , A2: 60cm) and cultivars (C1:sahel , C2:opale, C3: chokorova, C4:Avangard , C5:N-200 and C6: B-557) were considered as main plots , sub plots and sub-sub plots respectively. Treatment effects evaluated, plant height, number boll per plant , yield and etc....

The results of combined analyses of variance related to split-split plot experiment revealed significant mean squares for main effects including years, row distances, cultivars and their interactions effects such as planting date \times cultivars and row distances \times cultivars. The two years mean of yield related to Chokorova, Avangard, and Sahel were 3090, 3012 and 3252 kg/ha respectively and the difference between Chokorova, Avangard and Sahel showed were not significant. The mean square of planting date \times rows \times cultivars interaction was not significant .In all of planting dates and row spaces Chokorova, Avangard and Sahel more yield than other genotypes.

Key word: combined analysis, split plot, planting date...

Study of Irrigation management effect on qualitative and quantitative characteristic in two cotton varieties in Esfahan

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Abstract :

This study was conducted in order to find out the most suitable irrigation management, the effects of water stress on growth stages and water requirements of Tablilla and B-557 cotton cultivars in Kaboutarabad research station in 2004 and 2005. The experimental design was a RCBD in a split plot arrangement with four replications. Main factors were 6 irrigation treatments based on accumulative evaporation from evaporation pan (Class A) in three growth periods and subfactors were Tablilla and B-557 cotton cultivars. The results showed that: In the first and second years of the study irrigation regimes had significant effects on lint yield of the first and second harvests, total lint yield and average weight of 10 bolls, but had no significant effects on Number of bolls per plant and number of emergent plants. Results of two years ANOVA combination showed that: year had significant effects on lint yield, average weight of 10 bolls and number of emergent plants. Irrigation regimes and cultivars had significant effect on lint yield of the first harvest but had no significant effects on total lint yield, average weight of 10 bolls, number of emergent plants and number of bolls per plant. According to the results (130-70-150) millimeter evaporation of evaporation pan, and B-557 cultivar in water stress conditions and (150-70-110) millimeter evaporation of evaporation pan and both of the cultivars in sufficient water availability conditions are recommendable.

Key words : cotton – irrigation – yield

Determination the best planting density of hopeful cotton

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Abstract:

A field experiment was conducted during 2004 – 2005 to determine the most suitable plant population density for introducing Tabladila and B – 557 cotton cultivars in a complete random block design in four replications factorial arrangement of in – row spacing and cultivars in – row spacing of 10.15 and 25 cm was the first factor and Tabladila B – 557 and varamin cultivar were the Second factor Each plot area was 16.8 square meters of four rows of 6 meter in length and between row spacing of 70 cm. The first year results shows that the effect of in – row spacing were not significant on first – and second and total seed – cotton yield weight of ten bolls , number of bolls per plant – and number of established plants, but were significant on plant height. The effect of cultivars on first harvest, and plant height were significant but were not significant on second and total weight of ten boll number of bolls per plant , and number of establish plants The B – 557 cultivar using 15 cm in – row spacing was the most early maturing cultivar The Second year results also show that the B-557 cultivar in 15 cm in – row planting was the most early maturing cultivar . The combined two years analysis shows that the effect of year were significant on first harvest and, plant height Also the effect of in – row spacing was significant on plant height and number of established plant The interaction effect of in – row spacing × year, cultivar × year and in – row spacing × cultivar × year were not significant, but the effect of in – row spacing × cultivar were significant.

Key word: cotton, plant density, yield

Genetic male-sterility transfer to the commercial and promising cotton cultivars

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Abstract:

Decreases of cotton production area in country have been made an urgent task to increase productivities of existing commercial varieties. One way to meet this, is F1 hybrid seed production. Due to high expensive hybrid seed which have been produced manually, male-sterile system have to be done for commerciality hybrid seed production. In order to obtain male sterile line of Sahel and Saphid for hybrid seed production, This research have been carried out during 2007-2010. Produced F1 hybrid of Sahel and Saphid with male sterile A line, after three back –Cross showed male-sterility. Male- sterile Sahel and Saphid seeds now are available for hybrid seed production.

Key Words: Cotton, Male- sterile line, Sahel and Saphid

Responsible of cotton cultivars to heat and drought stress in phytotron condition

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Abstract:

Heat and drought stress are the most important of environmental factors that affect cotton growth and development. The goal of this study is introduce cotton cultivars that have high heat and drought tolerance. Experimental design was factorial contains 3 factors: 1. Heat tension, a. optimal temperature growth b. Heat tension in flowering time 2. Drought stress, a. Irrigation according on water consumption b. Irrigation according on 50% water requirement 3. Cotton cultivars, a. Sepid, b. No.200, c. Golestan, d. Tabladila. This study carried out as randomized complete design with 3 replication in phytotron. Cotton cultivars had significant difference in boll weight. Golestan (c.v) has high photosynthetic power and assimilate partitioning to boll, produced bigger boll (5.1 gr). Interaction effect of cotton cultivars and water consumption on boll weight was very significant. Golestan (cv) not only in irrigated on 100% water consumption but also in irrigated on 50% water consumption produced bigger boll respectively 5.2 and 5.1 gr. Sepid (cv) as like as Sepid produced big boll (4.1 and 3.7 gr respectively in 100% and 50% water consumption). Very likely these cultivars have high ability to change non-structural carbohydrate to soluble form and increase the osmotic pressure of cell sap and these cultivars root able to absorb more water and soluble nutrients. The results showed that Golestan and Sepid had high heat and drought tolerance specially in flowering time.

Keywords : Drought stress, heat tension, cotton cultivars, factorial, phytotron, yield and yield component.

Investigation of cotton transplanting probability as double crop

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Abstract

This study with the aim of using cotton transplanting possibility as double crop (with Canola and Wheat) in Gorgan was carried out. The experimental design was a randomized complete blocks in the form of factorial with three replications. First factor was sowing date (May 1 and May 17) and second factor was planting systems include: (S1: Direct seeding, S2: Giffy pot transplanting after Canola harvesting, S3: Giffy pot transplanting after Wheat harvesting, S4: Plastic pot transplanting after Canola harvesting and S5: Plastic pot transplanting after wheat harvesting). The results showed that the Giffy pot was better as, speed germination, plant establishing and earliness. The second sowing date (May 17) phenologic phenomenon happened in the shorter time. Sowing date had not significant effect on the boll number per plant, although first sowing date (May 1) produced higher boll per plant. Seed cotton yield was affected by sowing date at first harvest and first sowing date (May 1) produced higher yield (3613 kg/hec). Giffy and Plastic pot transplanting after Canola harvesting had significant effect on yield of first harvest. But any one of planting systems hadn't significant effect on total yield.

Key words : Transplanting, plastic pot, Giffy pot, Double crop, Seed cotton, Seed direct planting.

Winter cropping effect on cotton agronomical traits

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Abstract

This study was carried out for 3 years in Gorgan, Sari and Kordkuy as randomized complete block design with 4 replications in 2007 with the purpose of evaluation effects winter crop (wheat, pea, canola, bean and fallow) on cotton traits. In Gorgan, the highest seed cotton yield in first pick per hectare belonged to cotton after pea and fallow 3400 and 3436 kilograms. The highest seed cotton yield in second pick per hectare belonged to cotton after bean, pea and fallow, 455, 401 and 350 kilograms. The highest total seed cotton yield per hectare belonged to cotton after pea, fallow and bean 3802, 3786 and 3362 kilograms respectively. In Sari, the highest seed cotton yield in first and second pick per hectare belonged to cotton after pea 3221 and 999.4 kilograms respectively. In Sari, the highest total seed cotton yield per hectare belonged to cotton after pea 4221 kilograms. In Kordkuy, the highest seed cotton yield in first pick per hectare belonged to cotton after bean 1860 kilograms. The highest seed cotton yield in second pick per hectare belonged to cotton after pea 1402 kilograms. The highest total seed cotton yield per hectare belonged to cotton after bean 2785 kilograms.

Keywords: cotton, winter crop, allelopathy, yield, pea, bean, wheat, canola, fallow .

Investigation of cotton transplanting probability as double crop

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Abstract

This study with the aim of using cotton transplanting possibility as double crop (with Canola and Wheat) in Gorgan was carried out. The experimental design was a randomized complete blocks in the form of factorial with three replications. First factor was sowing date (May 1 and May 17) and second factor was planting systems include: (S1: Direct seeding, S2: Giffy pot transplanting after Canola harvesting, S3: Giffy pot transplanting after Wheat harvesting, S4: Plastic pot transplanting after Canola harvesting and S5: Plastic pot transplanting after wheat harvesting). The results showed that the Giffy pot was better as, speed germination, plant establishing and earliness. The second sowing date (May 17) phenologic phenomenon happened in the shorter time. Sowing date had not significant effect on the boll number per plant, although first sowing date (May 1) produced higher boll per plant. Seed cotton yield was affected by sowing date at first harvest and first sowing date (May 1) produced higher yield (3613 kg/hec). Giffy and Plastic pot transplanting after Canola harvesting had significant effect on yield of first harvest. But any one of planting systems hadn't significant effect on total yield.

Key words : Transplanting, plastic pot, Giffy pot, Double crop, Seed cotton, Seed direct planting.

Study of starter fertilizer effect on cotton weed management

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Abstract:

Cotton developing is depend on weed control methods extention. Starter fertilizer consumption and increase its efficiency by weed be cause faster its growth. This subject causes simplicity of post emergence herbicides. The experiment was carried out base on randomized complete block design arranged by split-split plots in four replications in 2007 in Gorgan-Hashemabad cotton research station. The treatments were including: 1. weed management levels (early using of herbicide, delay using of herbicide, early weeding , delay weeding) 2. Starter fertilizer (0, 50, 75, 100) percentage of Nitrogen recommended by soil testing. Weed management and starter fertilizer and their interaction affected seed cotton yield in first picking. The highest yield obtained from early weeding and herbicide application 2544 and 2334 kg/hac respectively. Total seed cotton yield was affected by weed management. Early weeding and early using of herbicide produced the highest seed cotton yield, 4254 and 3924 kg/hac, respectively. Interaction of weed management and starter fertilizer affected seed cotton yield too. early weeding and early using of herbicide companion consumption of 50% Nitrogen recommended as starter fertilizer produced the highest total seed cotton , 4541 and 4452 kg/hac respectively.

Keywords: weed management, Starter fertilizer, weeding , herbicide, seed cotton

Investigation on the effect of surface and subsurface drip irrigation methods and irrigation interval on the quality and quantity cotton

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Abstract:

This study was conducted to determine the impacts of irrigation interval and drip irrigation method and their interactions on yield, water use efficiency and quality characteristic of cotton in Kashmar Agricultural Research Station in Razavi Khorasan. The study was done during 2006-2008. Experimental design was two factor completely randomized design with four replications. Design treatments were include irrigation interval (2, 4 & 6 day) and drip irrigation method (surface and subsurface drip irrigation). The combined analyze showed that irrigation method had significant effect on Yield and Water Use efficiency ($P \leq 0.01$). There was significant difference between yield in surface drip and subsurface drip irrigation that was 3074 and 3988 kg/ha respectively. Water use efficiency in subsurface drip irrigation was 0.349 kg/m^3 that was greater than surface drip irrigation. Yields in irrigation intervals 2, 4 and 6 days were 3491, 3725 and 3364 kg/ha, respectively with no significance difference. The highest water use efficiency and yield were obtained in subsurface irrigation method with 4 days interval as 4315 kg/ha and 0.375 kg/m^3 respectively where as the least water use efficiency and yield was obtained in surface irrigation method with 2 days interval as 3107 kg/ha and 0.265 kg/m^3 respectively. Over ally subsurface drip irrigation whit 4 days irrigation interval was selected as the best treatment.

Keywords: Cotton- Irrigation interval- Drip irrigation - Water use efficiency

Selection and Evaluation of cotton germplasm in order to genetic purity maintenance and establish desired populations

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ABSTRACT

In this design , 90 genotypes of Iran cotton germplasm were produced to evaluation selection effects. Different morphological traits and genetic purity were maintained and fixed. Also , seed populations were produced purity and uniformity this research was done in Hashem Abad Station in 2003 for 4 years. In 1st year of research , every genotype consisted of 500 m² . 20cm between seedling in row and 80 cm apart. Seed cotton was produced with standard cultural practices (planted , cultural practice and harvest) for Golestan province in Iran. Negative selection (deleted unfavorable plant) was done in flowering and desired plants have self for 2 weeks. 150 to 200 plants selected every genotype. Until 25 to 50 plants screened for bases fiber quality characters. Self population of every genotypes harvested individual. In 2nd year of research; self population , selected plant and check treatment were planted in individual row. Selection practice was done in 2nd year alike to 1st year of research. In 2nd year , favorable plant selected. 3rd year of research was replicated like to 2nd year. In 4th year , 3 to 7of best line were determined. The results showed that selected and self lines in comparison to check (early seed population without Negative selection) were better for fiber quality. Self population and line have phenotypic and genotypic purity. We hope to this lines were used in research programs , cultivar seed production and hybrid (F1) production.

Keywords: Selection , Cotton genotype and selfed , genetic t

Effect of different cotton cultivation methods on water requirement (direct and seedling)

Mohsen Dehqani¹

Abstract:

Considering the growth of population and increasing demand for food, the irrigation water continuously increases. On the other hand, the deficiency of water resources make the use of efficient new techniques an-avoidable especially in arid and semiarid regions. Cotton transplanting using paper pots, recently is noticed as a new method in those regions. The aim of this project was the best cotton cultivation method. This study carried out in 2002-2003 at roodasht agricultural and transplanting date. In this experiment four age of transplants (direct seeding, 20, 30, 40 days research station. old) plus two irrigation methods (basin and furrow) in a factorial design with three replications were used. The results showed that water use in furrow irrigation was less than basin irrigation. The maximum water use was related to direct seeded in basin irrigation (10204 m³/ha) and minimum water use belong to transplanted plant in age of 40 days in furrow irrigation (6823.8 m³/ha). Transplanted plant in age of 20 days in furrow irrigation method had maximum yield (bulb) 5277.8 kg/ha and transplanted plant in age of 40 days in basin irrigation method had minimum yield (2821.47 kg/ha). Transplanted plants compared to direct seeded plants had less water use and furrow irrigation in every treatments compared to basin Irrigation had too. In critical water condition that date of seeded cotton plant is about last irrigation periods of cereals, transplanted plants in age of 20 days compared to other ages is the best.

Keywords: Cotton, Basin irrigation, Furrow irrigation, Seedling.

Study the Effect of Irrigation Water Salinity on quantitative and qualitative properties of Cotton

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Abstract:

According to five thousand hectares cultivation of cotton in Isfahan province and the extent of saline soil in this province, this study was conducted to estimate the reaction and tolerance of B557 and Tabladila varieties which had high yield potential in non-stress condition to different irrigation water quality is important. This experiment was carried out in Roudasht salinity research station during two years in a split plots with four replications. The main factor was different water quality (4,7,10 and 13 dS/m) and subfactors were B557 and Tabladila varieties whereas the Deltapain 16 was the control treatment. The results in both years indicated that the Tabladila variety compared with B557 variety gave higher yield and water use efficiency. However the Deltapain 16 variety as the control treatment had higher yield and W.U.E in comparison with the other varieties. The 4 dS/m irrigation water quality gave higher yield however increasing of salinity decreased the yield and WUE. And also the weight of 10 bulb, the number of bulb in each plant and the number of live plant decreased due to increasing of salinity. The highest yield (4663.3 kg/ha) was obtained by Deltapain 16 with 4 dS/m irrigation water quality and the lowest yield (1770.1 kg/ha) was obtained by B557 with 13 dS/m irrigation water quality.

Key words: EC_e, EC_w, Cotton, Irrigation water quality, B557, Tabladila varieties, Isfahan, Yield

Study on infestation rate of new cotton lines to important pests - province sucking in Golestan

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Abstract :

Cotton plant is invaded by several sucking insect such as thrips, aphid, whitefly, bugs and leaf hopper in northern part of Iran, Golestan province. As introduction of improved cotton cultivar with higher yield is the main object of cotton research institute, so it is important to screen the supreme lines with suitable tolerance to sucking insect. This study was carried out in cotton research station of Hashemabad (Gorgan) in 2007- 2008 as complete randomized block design (CRBD) with 17 treatments and 4 replication. Total plot consist of 110 * 30 meters. Samplings done weekly in each sampling 10 plants were selected randomly and in each plant 3 leaves from top, middle and bottom were inspected and the number of important sucking insects (thrips, aphid, whitefly and leaf hopper) was counted and rerecorded. The data was analysis by Excel. Mean comparison revealed the 3- Tabladila × Sahel-60 2- N200 × Gukorova-80 in overall lines; 1- Ttabladila × Sahel-180 were 4 - Siokra × Tabladila-133 5- Tabladila × Sahel- 174 6- Siokroa × Tabladila - 134 more tolerant to sucking insect and so were selected for future breeding program.

Key words: Cotton line, cotton, Cotton pests - sucking , Golestan province

Identification of leaf hoppers species and study on biology of dominant species in the cotton fields of Golestan province.

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Abstract:

Leaf hoppers are important pests of crops including cotton. This research was carried out during 2006- 2007 to identify the main leaf hopper species collected in the cotton of fields Golestan province and to study the biology of dominant ones. Observations are done from different cultivated and weed hosts. The specimen were collected and brought to the laboratory. The results revealed that the main species of leafhopper were:

- 1- *Asymmetrasca decedens* (Paoli,1932)
- 2- *Psammotettix alienus* (Dahlbom,1851)
- 3- *Emposca decipiens* Paoli,1930
- 4- *Jacobiasca lybica* (Bergevin & Zanon, 1922)

A. decedens was determined as dominant species. The peak of activity was late in June to late in August in the cotton fields. The natural enemies of this pest were bugs including; *Nabis capsiformis*(Ger.) , *Orius niger*(Wolf.) and *O. minutus*(L.). The life of this species in the laboratory condition (24 ± 1 °C. and 75 ± 5 % R.H) 25 – 35 days with egg incubation period of 7 – 9 days and nymph duration of 10 – 15 days. The adult lived 8- 11 days. This pest had 5-6 generation per year and over wintered as adult under some weeds. The main important hosts of this pest were cotton, potato fabae bean , rapeseed, soybean and cucurbit from cultivated crops and black night shade, pigweed, mallow and goose weed from weeds.

Key words: Identification, Leaf hopper, biology, cotton and Golestan province.

Complementary investigation on host range of cotton bacterial blight

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Abstract:

Cotton bacterial blight is one of the most important diseases of cotton in many cotton growing areas of the world. The symptoms of this disease may appear during the whole growth stage of the plant. Weeds, especially, Malvaceae plants are primary inoculum of this disease. To study the complementary investigation on host range of cotton bacterial blight a experiment was carried out in 2008-09 in cotton fields of Golestan province. Symptoms on weeds investigated and isolated casual agent of bacterial isolate on culture media. Isolates similar to casual agent of cotton bacterial blight inoculated to cotton leaf for pathogenicity test. The results showed that the casual agent of cotton bacterial blight was not isolated and identified from weeds especially Malvaceae.

Key words: Cotton bacterial blight, *Xanthomonas axonopodis* pv. *malvacearum*, Weed and Glestan province

Complementary investigation on host range of cotton bacterial blight

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Abstract:

Damping-off and seedling diseases are important cotton diseases in Iran. These cause yield losses due to seed rotting and plant death. Disease may become epidemic in soil if seed treatment isn't done. Nano-Silver is as one of substances that producer company proposed it for controlling of seedling diseases. In this research assessed efficiency of this material for controlling of damping-off. Based on results, Nano_Silver didn't control damping-off and seedling disease with proposal doses in two regions (Karkandeh research station and Varamin) in 2 years

Key words: Nano-silver, Damping-off, cotton and Fungicide

Investigation on quantitative and qualitative properties of introduced four cotton cultivars

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Abstract:

This research is accomplished in order to study of diversity in 4 cotton imported genotypes, whit two commercial cultivars i.e. Mehr and Varamin based on quantitative and qualitative traits during 2008-2009. In this research, cultivars were evaluated in R.B. design with 6 treatments and 4 replications in the Moghan agricultural research center. Traits that measured included yield , earliness , 20-boll weight , number of boll, height and vegetative and generative branches on 5 random plant then lint samples were sent to lint laboratory .Finally data are analyzed with MSTATC , EXCLE , SAS. statistic programs. Results of 2 year combined analysis showed that 73- S- 485 genotype high- earliness than other and high-product with 3375 kg/ha seed cotton.

Keywords: cotton , diversity , genotype , earliness , yield

Selection and production of primary nucleus of aras and moghan of cotton cultivars in ardebil prov.

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Abstract:

In this research, in order to purity maintenance of Aras and Moghan cultivars massal pedigree method used. This research is carried out in two years. seeds of this cultivars are produced only in Moghan exclusively. line selection or plant are carried out based on plant structure , leaf area , earliness , boll size and yield , however pest and disease tolerance in farm condition. After selection , ginning and lint length , lint strength and other lint quality traits are detected. finally , 140 single plant from each cultivar selected and these plants were the main basis of next year population (Aras and Moghan nucleus). Exceed seed deposit used for next year super-elite population seed production project.

Keywords: cotton, Aras, Moghan.

**Determination of Yield function of Sahel, 43259 and 43347
(*Gossypium hirsutum L.*) at Double Cropping Cotton and Canola in
Gorgan**

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Abstract:

Late planting causes cotton (*Gossypium hirsutum L.*) to flower later in the season so boll development occurs at lower temperatures. Canola can be profitably grown as a winter crop in a double-crop system in the north of Iran. However, stand reductions of double-cropped cotton following canola have been observed. Field experiments were conducted over 2 year to Determination of Yield function of three cultivar Cottons in Double Cropping with Canola in Gorgan, north of Iran. Yield function of late planting varieties is different to usual planting of cotton.

In This experiments, Maximum Yield of Sahel, 43259 and 43347 were obtained with consumptions of 1739, 1832 and 1593 m³/ha respectively

Keyword: Double Cropping Canola -Cotton, Yield function

Salt resistant lines improvement in upland cotton through back crossing

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Abstract

In this project in order to increase salt-tolerant of commercial cultivars, those lines were used that selected from saline lands of sadoddin cotton farms in Kashmar. These lines possessed high growth ability under saline stress with small boll growth size. In order to improve salt-tolerant lines with upstanding vegetative growth under salt stress conditions, crossing were done between commercial cultivars namely, Varamin, Sahel, Bakhtegan and Mehr and selected lines. This followed by several back crossing at Varamin station and screening of offspring under saline condition at Sadoddin station at the next of each year. This operation repeated during 4 years and in the last year several elite plants were selected from both stress (kashmar) and non-stress (varamin) of salinity. The results reveal that average value of measured traits of selected lines were superior than their commercial parents under both conditions of stress and non-stress of salinity. For example, average seed cotton plant yield of improved lines which derived from Mehr cultivar crosses was 109.9 gr, while under salt stress conditions the same in Mehr cultivar was 55.3 gr. Also under non-salt stress condition, average seed cotton of these lines was 145.9 gr but in their maternal The main conclusions describe that resulted parent (cv. Mehr) it was 108 gr. populations from crosses possess some economically significant traits, especially under salt stress conditions which made them superior than their parents and such a large generated diversity could be used for elite genotypes in further breeding researches.

Key Words: Cotton, Salinity tolerance, Back cross

Study of toppingg and pix effect with different plant densities

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Abstract:

In order to evaluation of growth regulator effects on cotton agronomical traits, this experiment was carried out at cotton research department of Varamin city during 2008-2009 in form of split plot with two factors in RCBD design by four replications. The soil was with PH= 7/2 and without limitation of salinity. The main factor (A) includes three levels (topping, pix and control) and sub main plot (B) includes plant's density in three levels (10×80, 20×80 and 30×80). Topping was done when the plant heights were 85 cm and spraying of pix (1.5 liter per hectare) was done at flowering stage of growing season (60 days after planting). The evaluated cotton traits comprises plant height, dry weight of plant, number of boll, 20-boll weight, seed index, seed germination, cool test, earliness and yield. Composite variance analysis over two years showed that using of pix cause only significant effects on height and had non-significant effects on other traits such as seed cotton yield, Earliness, 20 weight of boll, seed index, seed germination, cooling test, number of boll per plant. Density pattern had only significant effects on traits of number of boll per plant, and earliness and non-significant effects on other traits. It is resulted from this study that planting of cotton with 80×20 pattern (62500 plants per hectare) and using of pix (1.5 liter per hectare) didn't have any harm effect on seed qulity in term of seed germination.

Key words: Cotton, Pix, Topping, Plant density, growth regulator

Complementary study of screened cotton cultivars to important sucking pests

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Abstract:

Cotton cultivars have a few pests such as whitefly, aphid, bollworm and etc that have not done research on cotton cultivars tolerance to pest. Sucking pest such as whitefly is the most important pest in field cotton in Iran. Theirs reduced quality and quantity of yield cotton and economical and by generic loss.

In this research, eight cotton cultivars were planted in two individual randomized complete blocks in 2003-2004. One was spraying treatment and other was without spraying. After pest expression, sampling were done randomize. Fifteen leave of five plants were considered for counting the number of aphid. The eggs and nymphs whitefly number were counted of five plants. Adult whiteflies were determined from five leaves of 5th sympodial branch. Results were showed that Smooth leaf genotype had the highest value for aphid (2.057) and was the most sensitive cultivars and A statically group. Okra red leaf genotype had the lowest value whitefly (1.401) and was tolerance to whitefly.

Keyword: cotton genotype, tolerance, pest, aphid, whitefly