

## ABSTRACTS

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### **Correlation and path analysis of cotton-A review**

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**ABSTRACT :** Association and direct contribution of different characters towards the seed cotton yield in cotton reviewed critically. From the earlier literature it appeared that boll number, boll weight, plant height, sympodia number, seed index, lint index and total dry matter exhibited significant positive association with seed cotton yield. These traits also found to be directly positive contributors towards the seed cotton yield. Selection made through these traits will automatically brought an improvement in seed cotton yield.

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### **Callus induction and regeneration studies in *Gossypium hirsutum* L. cottons**

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**ABSTRACT :** Six *G. hirsutum* lines of diverse agroclimatic origin with two explants viz., hypocotyls and cotyledons have been tried for induction of de differentiation. Six different media (MS+combination of different growth regulators) have been used for induction of callus. Data analyzed under CRD for callus induction response. On an average over genotypic, explants and media response, highest number of explants showed callus in medium, MS+0.1 mg/l 2, 4-D+0.5 mg/l kinetic. However none of the genotypes showed differentiation from de differentiated cells.

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### **Effect of auxins, cytokinin, gibberellin and kind of sugar on callus induction in ovules of *Gossypium hirsutum* x *Gossypium arboreum* crosses**

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**ABSTRACT :** For the ovule-callus culture studies in crosses between *G. hirsutum* and *G. arboreum* cotton, the immature hybrid embryos of four crosses viz., H 777 x HD 107, H 777 x HD 123, HS 6 x HD 107 and HS 6 x HD 123 excised 3 days after pollination (DAP) were used. They were cultured on MS media supplemented with various concentrations and combinations of auxins, cytokinins, gibberelins and kind of sugars. Normally in many crosses, especially between tetraploids and diploids, the hybrid embryos abort at a very early stage. The early abortion of the embryo was prevented by treatment of the flowers immediately after pollination with a solution of gibberellic acid and naphthalene acetic acid and when grown to a stage where the embryo is few celled, the ovules excised and cultured on media to form calli. The maximum response was observed when MS media was supplemented with IAA (1.0 mg/l). Kin (0.2 mg/l). Ch (250 ml) and sucrose (3%).

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### **Determination of isolation distance for quality seed production using cytoplasmic male sterility in cotton**

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**ABSTRACT :** A field experiment was conducted during 1992-93 to 1994-95 to assess the distance of cross pollination and to decide the safe distance for cotton hybrid seed production using male sterility. Results obtained indicated 50 meters isolation distance for certified and foundation seed production programme from any hisutum cotton variety/hybrid.

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### **Combining ability studies of yield and yield contributing traits using diversified plant types in cotton**

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**ABSTRACT :** The present investigation has been carried out to study the combining ability for yield and yield related traits using diversified plant types. Nine genetically and morphologically diversified parents were crossed in all possible combinations in diallel fashion and the resultant 36F<sub>1</sub>'s alongwith their parents were studied for their combining ability based on 12 important yield and quality attributes. Studies on analysis of variance revealed that almost all the traits except number of seeds per per boll have shown significant differences among the genotypes. Among the parents high GCA effects for seed cotton yield per plant and number of bolls per plant were recorded by SRT 1 Abaditha LRA 5166 followed by L 86046. Besides having high SCA effects, the cross combination between these two parents has also showed high SCA effects and heterosis for these traits and hence, these combination may be exploited for getting transgressive segregants.

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### **Effect of row and intra-row spacing on yield and quality of hybrid cotton (*Gossypium hirsutum* L.) under rainfed conditions**

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**ABSTRACT :** A field experiment was conducted during two consecutive rainy (kharif) seasons of 1993 and 1994 under AICCIP and Indore to evaluate the productivity of two different plant types of upland cotton (*G. hirsutum* L.) under various row and Intra-row spacings. JKHy-1 had registered higher seed cotton yield, lint yield and ginning out turn, however yield attributes and lint index were remained unaffected. The plant height and seed index yield attributes and lint index were significantly low. Closer row spacing (60 cm) recorded higher kapas yield, lint yield and ginning out turn, whereas reverse was observed in respect of yield attribute values except the boll size. No remarkable variation in plant height, boll size lint and seed index were noticed. Maximum yield of seed cotton and yield attributing characters except the boll size were noted due to 60 cm intra-row plant spacing. Similar trend was observed in lint yield. Plant height, boll size, lint index and seed index did not different due to intra row spacing.

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## **Productivity of hybrid cotton (DCH-32) as influenced by zinc fertilization**

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**ABSTRACT :** Soil application of 20 kg ZnSo<sub>4</sub> ha<sup>-1</sup> significantly increased kapas yield (1719 kg ha<sup>-1</sup>) of hybrid cotton (DCH-32) in Vanivilas command area. Individual boll weight and bolls per plant were also significantly superior. The net profit was 24.6 per cent higher over no zinc application.

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## **Yield, economics and sustainability of cotton (*Gossypium* sp.) based cropping system in irrigated North-Western Rajasthan**

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**ABSTRACT :** A field experiment was conducted at Agriculture Research Station, Sri Ganganager with the objective to findout the yield of different cropping systems, sustainability indices and economics of cotton based cropping system in irrigated sandy loam soils of North-Western Rajasthan for consecutively 3 years from 1995-96 to 1998-99. Results revealed that *arboreum* cotton (RG-8) has given higher seed cotton yield than *hirsutum* cotton (RST-9), but *hirsutum* cotton equivalent yields calculated in *kharif* season, showed that *hirsutum* cotton gave significantly higher yields (1504.3 kg/ha) than that of *arboreum* cotton (1429.4, 1435.0 kg/ha) in different cropping systems. Similarly, in *rabi* season wheat (RAJ 3077) equivalent yields of mustard (T-59) grown after cotton gave significantly higher yield (3798.1, 3751.5 kg/ha) than the of wheat. Highest net return was recorded with *hirsutum* cotton-wheat cropping system, followed by *hirsutum* cotton-mustard, but sustainability indices calculated on the basis of net return was the highest (96.30%) in *arboreum* cotton-wheat cropping system. *Arboreum* cotton-mustard gave the highest B-C ratio (2.63) followed by *hirsutum* cotton-mustard cropping system (1.75). Fertility status of the soils and soil reaction did not show any significant change due to different cropping systems. *Hirsutum* cotton-wheat cropping systems. The highest field water use efficiency calculated on the basis of *hirsutum* cotton equivalent yield was recorded with *arboreum* cotton (7.94, 7.97 kg/ha/mm). Similarly, in *rabi* season mustard grown after different cotton species recorded the highest water use efficiency (31.65, 31.26 kg/ha/mm) interms of wheat equivalent yield.

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## **Response of promising varieties of *desi* cotton to different sowing dates and spacings**

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**ABSTRACT :** The performance of two varieties (LD 327 and LD 694) of *desi* cotton (*Gossypium arboreum* L.) under five sowing dates (1st week of April, 3rd week of April, 1st weed of May, 3rd weed of May and 1st week of June) and six spacings (67.5 x 30, 67.5 x 45, 67.5 x 60, 100 x 30, 100 x 45 and 100 x 60 cm) was evaluated in two different field experiment at two locations i. e. Ludhaina and Abohar during the *kharif* seasons of 1998 and 1999. The data revealed that seed cotton yield decreased from 1566 kg/ha to 440 kg/ha at Ludhiana and from 2504 kg/ha to 721 kg/ha at Abohar as the sowing was delayed from the 1st week of April to 1st week of June. The recommended spacing of 67.5 x 30 was the best spacing at Abohar with average yield of 2337 kg/ha. New variety LD 694 out yielded LD 327 by a significant margin of 14.0 to 46.2 per cent. None of the interactions were significant.

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## **Effect of various causes of malformation and remedial measures on dry matter accumulation, nitrogen and oil contents in cotton**

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**ABSTRACT :** Total dry matter accumulation plant<sup>-1</sup>, nitrogen content in different plant parts, total uptake of nitrogen by the plant and oil content in seeds differed significantly under 2, 4-D ethyl ester (Nomor) 34 EC @ 5 g ha<sup>-1</sup>, expiry-date dimethoate @ 4 ml l<sup>-1</sup> and expiry-date monocrotophos @ 5 ml l<sup>-1</sup> of water, selected for inducing malformation in *hirsutum* cotton. Among the remedial measure treatments, clipping+ZnSO<sub>4</sub> (0.5%+0.25% CaO) gave maximum dry matter accumulation plant<sup>-1</sup> in 2, 4-D and expiry-date dimethoate treatments. Clipping treatments did not exhibit any significant increase in dry matter accumulation plant<sup>-1</sup> under expiry-date monocrotophos treatment. None of the remedial measure treatments brought about significant change in oil and nitrogen contents and nitrogen uptake in various plant parts. Clipping+ZnSO<sub>4</sub> (0.5%+25% CaO) treatment significant affected the nitrogen uptake by the seeds and by the whole plant over no clipping (control). Clipping+CAN (2%) and clipping+DAP (2%) improved the nitrogen uptake by the whole plant over no clipping treatments.

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## **Efficacy of different seed treatment chemicals against cotton leaf curl virus**

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**ABSTRACT :** Among many factor responsible for decrease in area, production and productivity of cotton in the Punjab is the spread of cotton leaf curl virus (CLCuV). Field experiments were conducted during *kharif* 1999 and 2000 at PAU, Regional Research Station, Faridkot, with the objective to test the efficacy of various seed treatment chemicals like Imidacloprid 600 FS, Thiomethoxam 70WS, Carbosulfan 25 DS and Imidacloprid 70WS against CLCuV. The results revealed that CLCuV incidence and whitefly population upto 75 days after sowing in both the years was significantly lower in seven seed treated plots than untreated control. Seed treatments recorded higher seed cotton yield than untreated control in both the years respectively.

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## **Management of bacterial blight of cotton caused by *Xanthomonas axonopodis* pv. *malvacearum* using plant products and antagonists**

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**ABSTRACT :** Field experiment was conducted to study the management of bacterial blight of cotton caused by *Xanthomonas axonopodis* pv. *malvacearum* using plant products and biocontrol agents. Though the chemicals recorded minimum bacterial blight disease intensity (23.8%) and maximum seed cotton yield (1486 kg/ha), *Pseudomonas fluorescens* was also equally effective in reducing the disease intensity (28.6%) with higher seed cotton yield (1420 kg/ha) and statistically on par in both the cases when compared to control which recorded maximum disease intensity (60.1) and minimum seed cotton yield (1133 kg/ha). The cost benefit ratio was maximum (1 : 57 : 40) for *P. fluorescens* while it was only 1 : 8 : 66 for chemicals. Hence foliar application of talc-based powder formulation of *P. fluorescens* @ while it was only 1 : 8 : 66 for chemicals. Hence foliar application of talc-based powder formulation of *P.*

*fluorescens* @ 500 g ha<sup>-1</sup> on noticing the initial disease symptoms may be advantageously used for the effective management of bacterial blight of cotton economically and ameliorating the ill effects emanating from the use of conventional chemicals.

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## **Field evaluation of neemcyper for bollworm control in cotton**

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**ABSTRACT :** Four different formulations of Neemcyper containing 3-6 g of azadirachtin (AZA) in combination with 30-40 g of cypermethrin/litre were tested against bollworm complex on LH 900 and LH 1134 varieties of *Gossypium hirsutum* in two separate experiments. The four combination containing 4.5 g of Aza (azadirachtin) with 45 and 60 g of cypermethrin and 9.0 g of Aza in combination with 45 and 60 g a.i./ha of cypermethrin were tested along with neem-based formulation (0.03 and 1.0 per cent of azadirachtin) @ 4.5 and 9.0 g of Aza/ha and cypermethrin @ 45 and 60 g a.i./ha. Ready to use formulation containing 9.0 g of azadirachtin in combination with 45 and 60 g of cypermethrin/ha gave effective control of bollworm and higher seed cotton yield. These combinations also gave effective control of *Helicoverpa armigera* (Huber). The population of sucking pests also remained low in these treatments. Use of neem-based insecticides alone was significantly more effective and gave higher yields than control but was inferior to cypermethrin. Among these the neem based insecticides @ 9.0 g of azadirachtin/ha gave effective control of bollworm complex.

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## **Efficacy of biopesticides alone and in combination with conventional insecticides against cotton bollworms**

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**ABSTRACT :** Field experiments conducted during *kharif* 1998 and 1999 to evaluate the efficacy of commercial formulation of *Bacillus thuringiensis* (Dipel) and nuclear polyhedrosis virus of *Helicoverpa armigera* (HNPV) alone or in combination with endosulfan at normal and half doses against cotton bollworms have revealed that four spray schedule of HNPV (500 LE) alternated with endosulfan (0.05%) was most effective by recording lowest bollworm infestation and highest seed cotton yield with maximum profit. The sole application of Dipel and HNPV were ineffective in managing bollworms.

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## **Effect of morphological variants developed as isolines of cotton on oviposition preference of spotted bollworm**

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**ABSTRACT :** The studies were carried out to see the effect of morphological characters viz., frego bract, okra leaf, red pigmented, nectariless and glandless developed in the common genetic background of cotton (*Gossypium hirsutum* L.) variety H 777 on ovipositional preference of spotted bollworm *Earias vittella* FAB under ambient laboratory temperature 32±1°C and relative humidity 80±5 per cent. Fego bract and glandless isolines were less preferred for egg laying as compared to standard H 777 whereas okra leaf, red pigmented and nectariless supported more number of eggs under choice test. There was positive correlation between number of eggs laid and trichome density and length.

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## **Effect of plant morphological traits and foliar application of insecticides on the fibre quality of cotton**

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**ABSTRACT :** Effect of morphological traits viz, okra leaf, frego bract, nectariless, red pigmented, and glandless developed in the common genetic background of cotton (*Gossypium hirsutum* L.) variety H 777 as isogenic lines in relation to insecticidal control schedule were studied on the fibre quality at Research Farm, CCS Haryana Agricultural University, Hisar Various fibre quality parameters viz. span length, uniformity ratio, fineness, maturity coefficient and bundle strength were affected significantly by different morphological traits. However, different traits did not improve the fibre properties when compared to standard cheek H 777. Insecticide applications also did not affect the fibre quality of cotton.

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## **Square drying in cotton-A nuisance**

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**ABSTRACT :** Seed production of SB (YF) 425 and SB 289 E, the male parents of two popular hybrids viz., DCH-32 and Varalaxmi, respectively is facing a severe problem of square drying. The effect of physical factors, micronutrients and growth regulators were attributed as the possible reasons for square drying. Mutation induction and hybridization between square drying and non-square drying types were undertaken with a view to isolate non-square drying type plants and to study the genetics of square drying trait. Plants with high yield due to less square drying, and more number of squares per plant were isolated from the mutated populations. Crosses between zero branching genotypes of *G. barbadense* like SB (YF) 425 and SB 289 E with square drying and normal branching BCS-23 (non-square drying) indicated the presence of linkage between zero branching and square drying. Though factors like insect damage, pollination failure, micronutrients etc. contribute to the per cent square drying to some extent, oligogenes Predominantly control natural square drying.

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## **Electrophoretic analysis of protein and isozyme in cotton-A review**

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**ABSTRACT :** For the better understanding of genetic basis of trait inheritance in *Gossypium*, the protein and isozyme analysis are being employed since 1980's. Further Electrophoretic analysis of protein and isozyme permit the systemic study of polymorphism, phylogenetic relationship among with in species, in formation of linkage group, better understanding of disease and pests relationship accurate analysis of seed storage protein. These paper Presents the status quo of market aided techniquis hitherto employed in the cotton for understanding the marker aided selection, improvement of many traits.