ABSTRACTS
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Detection of additive, dominance and epistatic variation in *deshi* cotton (*Gossypium arboreum* L.) using triple test cross method

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ABSTRACT : Sixty progeny families of two sets of TTC were produced by crossing of 10 *deshi* cotton varieties with male testers (G-1, Lohit and their F_1 G-1 x Lohit and K-359, RG-8 and their F_1 K-359 x RG-8) in a triple test cross fashion to detect epistasis and adequacy test and estimate additive and dominance components of genetic variation for all the traits studied. Both additive and non-additive genetic variance were important for most of the traits. Partial degree of dominance was detected for all the characters except seed index in cross G-1 x Lohit and for seed cotton yield, boll number per plant, boll weight, lint yield and plant height in cross RG-8 x 359 indicated the preponderance of additive genetic variance for these characters. The remaining characters, seed index in G-1 x Lohit and ginning percentage, 2.5 per cent span length, seed index and lint index in cross RG-8 x K-359 indicated the preponderance of dominance genetic variance. The directional element of dominance 'F' was negative and significant for all characters under study except ginning percentage and 2.5 per cent span length for which ambidirectional dominance was observed.

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Additive and non-additive gene effect for yield and yield components in two crosses of asiatic cotton (*Gossypium arboreum* L.)

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ABSTRACT : An investigation was under taken to asses the action under lying the inheritance of seed cotton yield and its components to suggest breeding methodologies for improvement of traits under study. Mean data of six generations of two crosses were partitioned into their components. In general, all the traits were governed by additive (d), dominance (h) and digene inter action effects. However, non-additive gene action predominated the additive gene action expert number of bolls per plant and seed cotton yield per plant in cross RG-8 x K-359, where additive genetic variance formed the major part of total genetic variance. Among epistatic effects namely additive x additive (i), additive x dominance (i) and dominance x dominance (i), either all or any two were found to be important in most of characters indicating the importance of epistasis in genetic control of characters under studied. In the seed cotton yield, additive (d), dominance (h) and dominance x dominance (i) were found to the significant in both the crosses, while additive x dominance (i) were found to be significant in both the crosses, while additive x dominance (i) component was significant in cross G-1 x Lohit. This indicate that a complex inheritance groverns the seed cotton yield. Complementary type of epistasis was observed for lint yield per plant, seed index and seed cotton yield in cross G-1 x Lohit, while duplicate type of epistasis was prominent for remaining all the characters in both the crosses.

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Bollworm resistance in relation to gossypol content in various plant parts in cotton

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ABSTRACT : Generation means of a cross of an American cotton (*G. hirsutum* L.) were investigated for gossypol glands, gossypol per cent, bollworm infestation and seed cotton yield. The estimates of gene effects showed that all the three types of gene effects were present in varying proportion for green boll infestation, number of gossypol glands in leaves, sepals and petals, size of glands in sepals, flower buds shed (%) and seed cotton yield/plant. Where as for flower buds shed (%), opened bolls infested (%), top bored plants (%), size of glands in leaves, size of glands in petals. Leaves, gossypol (%) and per cent top bored plants had only additive (d) and dominance (h) type of gene effects. Population improvement coupled with recurrent selection may be utilised for exploitation of the gene effects.

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Components of genetic variation in bollworm tolerant lines of upland cotton (*Gossypium hirsutum* L.)

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ABSTRACT : A 10 x 10 diallel set of F1 progenies of upland cotton (*G. hirsutum* L.) was studied for characterzing the nature and magnitude of genetic variance and combining ability for plant height, boll number, jassid, aphid, thrips, boll and locule damage and seed cotton yield per plant under completely unprotected condition right from sowing to harvest. Both additive genetic variances were significant for all the traits except aphid and jassid per leaf for sca variance, though the magnitude of sca variance was higher than sca variance for all the traits studied. The parents B 1007 and JK 276-4 were detected as good general combining for all the traits studied. The cross combination JK 276-4 x B 10007 had exhibited highest sca effects for boll number and seed cotton yield per plant. This needs to be tested over larger number of environments under minimum plant protection before arriving at a final conclusion. Epistasis was detected for boll number, aphid, thrips, locule damage and seed cotton yield per plant. Presence of overdominance was observed for jassid, thrips, aphids, boll and locule damage while partial dominance was operative on rest of the characters. Due to unfavourable or favourable associations of genes in the parents various estimates have been found to be inflated.

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Optimization of seed hardening treatment for cotton cv. LRA 5166 (*Gossypium hirsutum* L.)

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ABSTRACT : The optimization of concentration of seed hardening solutions showed the superiority of potassium chloride (1.0%) with respect to germination and speed of germination. On the other hand the aqueous leaf extracts of pungam (*Pungamea pinnata*) and prosopis (*Prosopis juliflora*) 1.0 and 0.5% solutions were superior to potassium chloride in all seed characteristics such as germination, speed of germination, seedling growth, drymatter production and computed vigour index. Considering the practical feasibility and effectiveness of hardening cotton seeds with above leaf extracts would be economical and feasible.

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Nectar glands in *Gossypium*-A review

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ABSTRACT : The present review on nectar glands in *Gossypium* deals with distribution pattern and morphoanatomy of neactar glands, mechanism of nectar secretion, origin of nectar, effect of different factors on the activity, genetics of nectariless characters and insect resistance and behaviour of insects for oviposition vis-a-vis nectar glands.

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Studies on the seed-borne mycoflora of MCU cotton cultivars, their effect and biological control

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ABSTRACT : Nine fungal pathogens viz., *Alternaria alternata, Aspergillus niger, A. flavus, Fusarium moniliforme, F. solani, F. semitectum, Rhizopus stolonifer, Rhizoctonia solani* and *Trichothecium reseum* were isolated from MCU cotton cultivars by blotter method. Among them *R. solani. F. semitectum, F. moniliforme* and *F. solani* were found to record maximum inhibition of per cent seed germination, root length, shoot length and vigour of the seedlings. Application of *Trichoderma viride* to the soil increased per cent seed germination and reduced the seed-borne infection with *Fusarium* spp. and *R. solani.* The bacterial antagonist *Pseudomonas fluorescens* was also found effective and superior over the fungicide carbendazim which was used for comparison.

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Relationship between bacterial blight severity and economic traits in cotton (*Gossypium hirsutum* L.)

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ABSTRACT : A comprehensive and comparative study of correlation between bacterial blight severity and different economic traits in cotton in six generations P_1, P_2, F_1, F_2, B_1 and B_2 of four crosses. The bacterial blight severity (per cent disease index) after artificially inoculation showed significant negative correlation with different vegetative, reproduction and yield parameters studied. On the other hand, bacterial blight severity had positive and significant correlation with total number of infected bolls, infected bolls picked/plant and damaged seed cotton yield, whereas non-significant correlation of per cent disease index was observed with plant height, number of monopods, sympods, healthy bolls, healthy bolls picked/plant, average number of seeds in healthy and infected/boll.

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Effect of insecticidal applications at different thresholds on bollworm infestation and yield of *arboreum* cotton, var. HD 107

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ABSTRACT : For the control of bollworm pests on *arboreum* cotton var. HD 107, application of insecticides of different groups in different sequences at different infestation thresholds have revealed that the schedules of all synthetic pyrethroids (SPs) and alternate use of conventional insecticides (CIs) and synthetic pyrethroids during the crop season recorded very low infestation as compared to all CIs and neem : SP alternate application, irrespective of the insecticides used. The bollworm infestation in different threshold treatments increased with the increase in the infestation threshold. The seed cotton yield and avoidable loss both were higher in all SPs and CI : SP alternate treatments whereas the infestation thresholds had negative correlation with yield of seed cotton. The cost benefit ratio (CBR) was higher in all SPs and CI : SP alternate treatments while the same was found to decrease with the increase in the infestation thresholds.

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Field evaluation of some new insecticides against cotton pests of *Gossypium hirsutum*

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ABSTRACT : For the control of bollworm complex on cotton, *Gossypium hirsutum* Linn. pyraclophos (Voltage 50 EC) @ 0.50, 0.625 and 0.75 kg ai/ha and ethofenprox (Trebon 10 EC) @ 0.10, 0.15 and 0.20 kg ai/ha was evaluated and compared with standard quinalphos @ 0.50 kg ai/ha. Studies have revealed that pyraclophos @ 0.625 and ethofenprox @ 0.15 kg ai/ha were as effective as standard quinalphos against pink and spotted bollworms. However, against H. armigera pyraclophos @ 0.75 kg ai/ha was as effective as quinalphos. None of the insecticides induced the build up sucking pests. Pyraclophos @ 0.75 kg ai/ha and quinalphos were comparatively more toxic to predators.

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Use of safer chemicals in cotton IPM system-A review

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ABSTRACT : The production of quality cotton is a complex and expensive enterprise that requires strategic management for success. Adoption of pest management strategy in cotton system makes it more complex and easier than done. Certainly, if a suitable management strategy is formulated with safer chemicals like imidacloprid as seed treatment and Bt and neem as major supplements, in a big way, if not substituted then it will definitely decrease the lopsided load of synthetic insecticides on the environment. Cost effecting pest management with minimum acceptable harm to the ecosystem is a laduable objective, which involves with rightful (safer) use of chemicals and other approaches (biopesticides, neem) and related biological control measures. There is also need to determine the magnitude of integration in the incidence and severity of pests and other stresses in relation to crop growth and development for sustainable pest management.

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Effect of melamine formaldehyde finish on tensile strength and per cent elongation of cotton and its blends

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ABSTRACT : The influence of melamine formaldehyde finish in dry condition was maximum with polynosic containing fabric and was more or less the same with cotton and polynosic-viscose containing fabrics. The per cent elongation at breaking point increased with polynosic containing fabric, whereas, in wet condition, there was some variation in changes in elongation and strength at intermediate portion. The influence of polynosic viscose fibre content was seen at the breaking point indicated that water removed the rigidity introduced by the MF finish, especially in polynosic and polynosic-viscose containing fabrics.

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Correlates of farmers' adoption gap and behaviour pattern of agricultural engineering technology in Haryana

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ABSTRACT : Increased use of farm implements and machinery is said to be a sign of farm mechanisation. This paper examines the adoption gap and behaviour of agricultural engineering technologies and factors associated with it. The study indicates the higher adoption of tractor-drawn and manual-drawn farm implements as compared to bullock-drawn farm implements. There exists a highly significant and negative correlation of land holding, extension contact, income, frequency of use and availability with adoption gap. Tractor, seed-cum-fertilizer drill, cultivator, bund former, thresher and manual-drawn sprayers, improved sickles and hand hoes have higher number of optimal users.