ABSTRACTS
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Measurement of heterosis for yield and its component characters in American cotton

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ABSTRACT : A field experiment was conducted to measure heterosis for yield and its component characters in ten American cotton hybrids grown in randomized blocks (with their parents and check variety HS 45) in four artificially created environments (two nitrogen fertilizer doses and two specings). Hybrid H 777 x 081 was best for yield followed by LH 511 x GC 182 and H 999 x 081.

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Heterosis, inbreeding depression and genetic divergence analysis in intra and interspecific crosses of cotton

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ABSTRACT : Heterosis and inbreeding depression studies in some *hirsutum x hirsutum* and *hirsutum x barbadence* hybrids of cotton were carriedout. Heterosis for seed cotton yield, number of bolls/plant, boll weight and ginning percentage was detected. For *hirsutum x hirsutum* hybrids, the highest heterobeltiosis recorded was as high as 135.33 per cent, while for *hirsutum x barbadence* hybrids, the maximum heterobeltiosis was only 58.19 per cent. Increase in boll number was largely responsible for high yield but only with an increased boll weight. High potenital of intra hirsutum hybrids for seed cotton yield was identified over the interspecific hybrids. Studies showed that manifestation of high amount of desirable heterosis is not necessarily associated with high genetic divergence.

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Heterotic response of ten American cotton hybrids for some quality traits

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ABSTRACT : A field experiment was conducted in *kharif* 1989 to study heterosis response of ten American cotton hybrids. Twenty-one genotype (10 hybrids, their parents and standard check variety HS 45) were grown in randomized block design with three replications in four artificially created environments. The hybrids LH 511 x GC 182, GC 182 x EC 51-7203-14 and GC 182 x 081 were found promising. The hybrid GC 182 x EC 51-7203-14 was best among all the hybrids.

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Altered activity profile of peroxidase and its isoenzymes during host-parasite interaction in cotton cultivars resistant and susceptible to *X. compestris* pv. *Malvacearum*

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ABSTRACT : Peroxidase activity and its multiple molecular forms were studied in two cotton CVS, Suman and H 937, resistant and susceptible respectively to bacterial blight disease. In general, peroxidase activity was found to be lower in leaves of healthy (uninoculated, control) plants of resistant cv. as compared to the susceptible cv. in both growth phase I (30 d) and growth phase II (60 d). Inoculation of the plants with the pathogen showed an increase in the enzyme activity in both cvs. but this increase was much higher in the resistant cv. Differential isoenzymic pattern of peroxidase was observed in both the cvs. at various stages. 2 to 5 and 3 to 5 isozymic bands were seen in the susceptible and resistant cv. respectively. Inoculation resulted in an increase in the number and/or intensity of isozymes agd these changes seemed to be concomitant with changes in the enzyme activity.

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Effect of N carriers on growth, yield and nutrient uptake of rainfed cotton (*G. hirsutum*) in vertisol

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ABSTRACT : Effect of different slow release N carriers viz. Neem cake blended, Lac coated and FYM blended urea was investigated in a field experiment in cotton during *kharif* for three consecutive years from 1985-86 to 1987-88. All the N carriers increased significantly dry matter and seed cotton yields over control. Among the N carriers, Neem cake blended urea (NCBU) and Urea+FYM @ 5 t/ha were found superior than other N carriers with respect to seed cotton yields. Significantly higher N, P and K uptake were also recorded with NCBU over urea alone. The maximum recovery of applied fertilizer nitrogen was obtained by NCBU (47.3%) followed by U+FYM (47.0%) and AS+FYM (42.0%). A significant rise in per cent recovery applied fertilizer nitrogen is due to slow release of N through blending of urea with Neem cake and FYM.

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Effect of sowing dates and spacings on seed cotton yield of early maturing genotypes of *hirsutum* cotton

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ABSTRACT : Field experiment conducted during *kharif* seasons of 1991 and 1993 at Agricultural Research Station, Sriganganagar revealed that plant height, bolls/plant and seed cotton yield were significantly higher in Ist week of May sowing as compared to Ist week of June sowing. Both the newly developed early maturing genotypes are at par in production efficiency. The closer spacing 60 x 20 cm resulted in significant higher mean seed cotton yield (2925 kg/ha) than the spacing of 60 x 30 cm (2601 kg/ha) and 67.5 x 20 cm (2765 kg/ha).

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Response of water parameters on dry matter production

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ABSTRACT : An experiment was conducted for developing response functions between dry matter production and some selected weather parameters viz., accumulated heat units, cumulative heliothermal units, cumulative photothermal units and cumulative evaporation in cotton cultivar (H-854, H-777 and H-842) at research farm of Haryana Agricultural University, Hisar during *kharif* season of 1981 and 1982. Simple linear logarthimic, exponential, root and power response functions were observed which are presented in the text. Exponentail function of the form Y=a. e. (Y dry matter production (g/plant), X are the weather paramters) was the most satisfactory. Among the weather paramters, the cumulative heliothermal units explained dry matter production variability with maximum accuracy.

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Evaluation of asymethrin for bollworm control on *Gossypium hirsutum*

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ABSTRACT : Asymethrin (Chinmix 5 EC) @ 10.0, 12.5 and 15.0 g ai/ha was evaluated against bollworm complex (pink and spotted bollworms) and sucking pests (jassid and whitefly) in four experiments during 1989 and 1990 on *Gossypium hirsutum.* Asymethrin at 10 g ai/ha was as effective as standard fenvalerate @ 50 g ai/ha against bollworm complex and sucking pests. It was found to be very useful in increasing the seed cotton yield. It was further observed that repeated application of asymethrin did not cause the resurgence of any sucking pest.

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Effect of malformation on morphological and chemical changes and yield of seed cotton

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ABSTRACT : Experiments on morphological and chemical changes occuring in cotton leaves during malformation, were conducted at HAU Research Farm during the period 1987-89. Different doses viz., 1, 2, 3, 4, 5 and 6 ml dimethoate (specific sample) per litre of water were sprayed with knap sack sprayer on cotton during the crop growth period and the effects on plant phenology and chemical changes in different treatments were recorded. The studies revealed that the extent of injury increased with the increase of doses of dimethoate. The plant height was observed to increase whereas the total number of bolls per plant decreased with the increase of doses of dimethoate per litre of water. However, the number of opened bolls and seed cotton yield decreased with the increase of doses of insecticides. The chemical analysis of the malformed leaves indicated that the nitrogen and sulphur contents decreased whereas phosphorus and patassium increased with increasing levels of dimethoate per litre of water. However, micronutrients (Zn, Fe and Mn) levels were observed to decrease with increasing level of insecticides. Total sugars, reducing sugars, tannin, total phenol and gossypol contents were observed to decrease with the increasing levels of insecticide

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Role of seed treatment on boll rot of cotton under screen house

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ABSTRACT : Among six fungicides namely carbendazim, captafol, MEMC, captan, streptomycin sulphate, Thiophanate-M, MECM+Streptomycin sulphate when used as seed treatment to see the carry over effect of these fungitoxicants on boll rot control, it was observed that the effectiveness of carbendazim, captafol and thiophanate-M was at par in reducing the boll rot while captan was least effective. Recommended seed treatment (MEMC+Streptomycin sulphate) was found the best on all parameters in reducing the boll rot incidence as compared to the test fungitoxicants. During 1988, in general, less boll rot, on both boll as well as locule basis, was recorded as compared to 1989. Delinted seeds and G 27 had less boll rot as compared to undelinted seeds and H 777 cultivar.

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Effect of boll rot on fibre properties of American and *desi* cotton varieties at different intervals

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ABSTRACT : The analysis of fibre length data showed that lengthening phase of cotton fibre of *G. hirsutum* and *G. arborcum* ceased after 21 or 28 days. Fibre length of diseased bolls was lower than healthy bolls. The maturity coefficient in diseased boll was lower than healthy bolls when compared at corresponding stages. Micronaire value of different varieties was affected due to growth process of cotton fibres and fibre bundle length at different stages revealed that tenacity increased with the development of cotton fibres.

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Studies on components of genetic variation in upland cotton

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ABSTRACT : Magnitude of additive and dominance components, degree of dominance, heritability and genetic advance were studied in an intervarietal cross of upland cotton (*Gossypium hirsutum* L.). The magnitude of additive and dominance components varied from trait to trait. For yield and its main components additive component was more important and were controlled by over dominance. High heritability combined with high genetic advance for seed cotton yield, boll number, boll weight and lint index indicated ample scope for their improvement through simple selection procedure.