ABSTRACTS
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Cytoplasmic effects on anther numbers in *Gossypium harknessii* Brand. and *Gossypium aridum* (Rose and Standley) Skove. based Male Sterile

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ABSTRACT : The wild species are the sources of male sterility. Ctytoplasmic male sterility with *G. harknessii* cytoplasm has been earlier reported. In the present study the cytoplasms from two different diploid species of cotton. *G. aridum* (D-4 genome) and *G. harknessii* (D_2-2 genome) having *G. hirsutum* genome were compared for the anther numbers per flower. There were significant differences between the anther numbers for these two cytoplasms. In general *G. aridum* cytoplasm had more number of anthers per flower than *G. harkenssii* cytoplasm. Male sterile lines have more anther number per flower than their respective isogenic maintainers.

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Heterosis for yield and yield components and bollworm incidence in upland cotton under varied environments

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ABSTRACT : To assess the mangnitude of heterosis for yield, yield components, bollworm incidence (*H. armigera*) in different environments viz., caged (E1), unprotected (E2), completely unprotected (E3) and protected (E4) environments, a study was conducted with the ten bollworm tolerant donor lines and their 45 F_1's which were crossed in diallel fashion (without reciprocals) in a randomized block design during *Kharif* 1993-94. The study indicated that hybrids responded varyingly to different environments and suggested to test the hybrids in larger number of environments rather than to rely upon single environment data while developing bollworm tolerant hybrids. In high heterotic combinations for seed cotton yield in general lower heterosis for bollworm incidence was observed. So while developing high yielding bollworm tolerant hybrids due importance may be given to their overall performance in varying environments for identifying a suitable hybrid to fit into IPM system.

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Prospects of cotton cultivation under Coastal Saline Zone of West Bengal

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ABSTRACT : The vast areas of coastal saline land (0.82 million hectares) of West Bengal are mainly monocropped with aman paddy due to lack of sweet water for irrigation which is necessary for raising the second crop after harvesting of paddy. Using the soil mulch, LRA 5166, a *hirsutum* cotton variety, can be grown in this areas as second crop just after harvesting of aman paddy. Long duration hybrid like Sanju (*intrahirsutum*) and Gowri (*Hirsutum x Barbadense*) are unsitable for cultivation as summer/second crop under rainfed condition of this coastal belt of West Bengal.

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Influence of sources and levels of sulphur on yield, seed composition and fibre properties of *G. hirsutum*

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ABSTRACT : A field experiment was conducted during (1990-93) crop season at HAU research farm. The studies revealed that increase in average seed cotton yield was 18.47% more as compared to control. Amongst the sources of sulphur the wettable sulphur proved superior than other two sources. Seed index and oil percentage increased numerically hence total oil production would be increased. Application of sulphur did not have much effect on fibre properties.

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Effect of harvest dates on bio-chemical composition of cotton seeds and fibre quality of different *hirsutum* cotton cultivars

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ABSTRACT : Biochemical composition of cotton seed and physical properties of fibre was analysed from opened bolls of three *hirsutum* entries at weekly interval (upto 6 weeks) during the years 1987-88 and 1988-89. The varieties included in the studies were H 777, H 999 and H 974. Seeds were analysed for various biochemical constituents and fibre for micronaire value and fibre length at maturity. There was decrease in seed oil, Kernel oil, seed weight, seed oil index, gossypol, total sugars reducing sugars, P and K, while micronaire value, kernel protein and total phenol increased with harvest date in all three genotypes in both the cropping years. Oil content was in the range 23.0-22.0% for both the years. H 777 had the highest oil. The oil contents were negatively correlated with harvest dates and the correlation was -0.857 and 0.906 in 1988 and 1989, respectively. Concentration of protein in seeds were significantly different for harvest dates in both the years and was in the range 16.50-22.00%. Correlation of protein versus harvest dates were +0.928 and +0.976 and significant at % levels in both the years respectively. Differences were detected for gossypol percentages among entries and among harvest dates in 1989. Correlation of gossypol versus harvest dates was negative and significant and it was 0.848 and 0.880 in the year 1988 & 1989 respectively. Gossypol contents were in the range of 16.50-6.50 mg/g. In both years the values for seed index were significantly different for entries and harvest dates in 1989 appeared to show a more consistent separation of entries over harvest dates in 1988. Seed index decreased from

first to last harvest dates and was in the range 5.40-6.80 g/100 seeds. Index in negatively correlated to harvest date. The correlation of seed index with harvest dates were -0.826 and -0.920 in 1988 and 1989 respectively. Percentage oil and protein in cotton seeds are negatively correlated. Significantly positive correlations were observed between seed indexes and percentage of oil in seed and non-significantly negative correlations were observed between seed indexes and protein. The correlation between seed oil index and seed protein index were positively significant. The indexes of oil and protein decreased from the first to last harvest dates. The correlation of maturity coefficient and total phenol versus harvest date was positive and significant whereas flavonol, total sugars, total phosphorus, and potassium was negatively correlated with harvest date.

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Performance of cotton based intercropping systems under irrigation

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ABSTRACT : A field experiment was conducted for three years (1994-95 to 1996-97) at the Regional Research Station, Raichur to find out the profitable cotton based intercropping systems under irrigation. Four intercrops (Onion, Chilli, Garlic and Soybean) and sole cotton performance was assessed under normal and paired row planted cotton. The pooled results indicate that the yield of seed cotton was 10.4% higher under normal method of planting as compared to paired row planting. The performance of intercrops was slightly better with paired row planted cotton. Intercropping of cotton with chilli increased the seed cotton yield significantly over sole of cotton. Onion as an intercrop with cotton did not reduce the seed cotton yields. The two intercropping systems i. e. cotton+onion (1 : 2) and cotton + chilli (1 : 1) with normal spacing of cotton planting fetched on additional net returns of Rs.13122/ha and Rs.13114/ha respectively over sole crop of cotton and found to be profitable cotton based intercropping systems under irrigation.

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Effect of spacing and fertilizer levels on seed cotton yield

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ABSTRACT : Experimental findings of 3 years field trials, conducted at JNKVV Research Center, Badnawar, suggested that closer spacing of 60 x 30 cm produced significantly higher seed cotton yield q/ha over 60 x 45 and 60 x 60 cm spacing although wider spacing produced significantly higher No. of bolls/plant. Fertilizer levels also affacted seed cotton yield significantly. 120 : 60 : 30 kg NPK/ha produced significantly higher seed cotton yield than 80 : 40 : 20 kg NPK/ha.

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Cotton scenario of Rajasthan in 20th and 21st Century-An Economic Analysis

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ABSTRACT : In Rajasthan, there are lot of inter-regional variations in area, production and productivity of cotton. The present study aims at making decade wise comparisons amongst different cotton producing regions and projecting cotton scenario of Rajasthan in 21st Century. Forty five years data (1950-95) of area, production and productivity of cotton were collected and analysed. The analysis revealed that area under cotton and production of cotton in Sri Ganganagar region is constantly rising; where as in other cotton producing regions, area and production are on the decline. The only exception is Jodhpur region which has, more or less, performed consistently. Higher productivity levels could not be sustained during 1975-85 period and productivity in the State registerednegative CGR. However, stagnation in productivity has been overcome during 1985-95 period by introduction of high yielding varieties of cotton viz. RG-8, RST-9, RS-875 and RAJHH-16 (intra-hirsutum hybrids). Projections in area and production of cotton reveal that area under cotton in Rajasthan in expected to increase by 1.95 per cent and production of cotton is expected to go up by 11.02 per cent. The area and production is Sri Ganganagar region is expected to increase by 10.57 per cent and 13.97 per cent respectively in 2000-2001.

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Assessment of avoidable losses due to major insect pests in yield of cotton hybrids

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ABSTRACT : Mean avoidable losses in seed cotton yield of of hybrids (H4, H6, JKH1, DCH32 and AHH468) were estimated to be 34.3 (22.3-52.5%) and 24.9% (12.5-36.4%) due to sucking pests, 28.9 (18.6-47%) and 27.4% (16.3-40.9%) due to bollworms and 42.2 (27.6-58.9%) and 36.2% (29.1-45.3%) due to both type of pests during 1989-90 and 1990-91 crop seasons respectively. This loss could be avoided by giving three foliar sprays of systemic insecticides (methyl demeton 0.04%, phosphamidon 0.04% and methyl demeton 0.04%) for the control of sucking pests and four folier sprays of contact insecticides (monocrotophos 0.07%, endosulfan 0.08%, triazophos 0.08% and endosulfan 0.08%) for the control of bollworms. Mean net profits of Rs.3455.04 and Rs. 1633.06 per ha by controlling sucking pests; Rs. 2051.74 and 1304.70 per ha by controlling bollworms and Rs. 4113.94 and 2145.68 per ha by controlling both type of pests were obtained during 1989-90 and 1990-91 crop seasons respectively. Mean cost : benefit ratios (1989-91 and 1990-91) were computed highest when only sucking pests were controlled (18.22 and 9.14), minimum (3.61 and 2.66) when only bollworms were controlled and moderate (5.17 and 3.18) when both type of pests were controlled.

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Field evaluation of Cyphos for management of cotton pests during flowering phase

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ABSTRACT : Cyphos 202, a mixture containing 20 g of cypermethrin + 200 g of cypermethrin/litre was evaluated against insect pest of cotton during flowering phase. Cyhos @ 2.5 litres/ha was more effective

against bollworm complex i. e. pink bollworm [*Pectinophora gossypiella* (Saund.)]. spotted bollworms [*Earias insulana* (Biosd.) and *E. vittela* Fab.] and American bollworm [*Helicoverpa armigera* (Hubner)] than cypermethrin and chlorpyriphos. It was comparatively more effective than chlorpyriphos for management of cotton jassid [*Amrasca biguttula* (Ishida)]. Seed cotton was also higher in Cyphos @ 202, 2.5 l/ha than in other treatments.

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Studies on optimum number of sprays, interval and spray initiation for the control of bollworms on hybrid cotton

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ABSTRACT : Studieson time of spray initiation, intervals and number of sprays for the control of bollworms on hybrid cotton during *Kharif*, 1993 conducted at Cotton Research Station, Sirsa revealed that early spray initiation (flower initiation) and normal spray initiation (25% flowering plants) at par with recommended spray schedule proved better than late spray initiation. Among the different spray intervals in both opened as well as in left-over green bolls minimum bolls infestation was observed in 9-day interval (16.8%) followed by 12-day interval (20.1%) proved better than 15-day (29.1%) and 18-day (35.9%) intervals. Minimum boll infestation (13.0%) and higher seed cotton yield (20.7 q/ha) was observed in six sprays followed by 5, RSS/4 and 3 sprays in that order. On the basis of these studies, 6 sprays at 9-days interval at the appearance of flowers proved most effective.

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Impact of different plant protection practices on carry-over population of pink bollworm, *Pectinophora gossypiella* (Lepidoptera : Gelechidae)

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ABSTRACT : To find out the impact of different spray initiation levels (SIL) on carry-over of diapusing pink bollworm larve in open bolls, leaf-over green bolls and the emergence pattern of moths from those larvae in cotton, experiments were carried out at IARI, New Delhi during the years 1990 and 1991. Results show that early initation of spraying cotton with contact insecticides, targetted towards bollworms, reduced the diapausing population significantly as compared to initiating spray late in the season (at higher threshold). Spray schedules S, (deltaphos, troizophos, cyhalothrin, quinalphos, phosaloneand fenvalerate) and S_1 (monocrotophos, cypermethrin, phosalone, deltamethrin, quinalphos and fenvalerate) were most effective in checking the hibernating larvae. Population of diapausing larvae was more in the treatment where only jassid was controlled and it was even higher than unprotected control. Green bolls set up to first week of September and the bolls opened till first week of November harboured minimum diapausing larvae as compared to those green bolls formed later. A total of 59% of diapausing larvae emerged as adults between March 26 and September 23 with peak emergence (54%) during May 28 to August 5. It indicates that most emergence coincided with the onset of the monsoon and increase in minimum temperature.

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Role of zinc sulphate and gypsum as soil amendments on root rot of cotton (*Gossypium species*) caused by *Rhizoctonia* species

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ABSTRACT : Sterilized soil amended with zinc sulphate ($ZnSO_4$) and gypsum ($CaSO_4$) @ 15, 25, 35 kg/ha and 250, 500, 750 kg/ha decrease the cotton root rot (*Rhizoctonia solani* and *Rhizoctonia bataticola*). With the increase in dose, disease proportionately decreased. The germination was also observed better as compared to unamended soils, the maximum in hybrid HHH-81 followed by other two varieties HS-6 and HD-107.

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

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ABSTRACT : The influence of acrylic finish (T x 50) on dry tensile strength was higher with polynosic containing fabric and was lower with polynosic viscose containing fabric. There was much difference in per cent elongation at initial portion while there was no difference at the breaking point. The change in per cent elongation especially in initial portion indicated that presence of acrylic finish caused a lubricating action. In wet condition this lubricating action lost its influence at the breaking point and hence wet strength and per cent elongation of polynosic and viscose containing fabrics were lower than their corresponding dry strength and per cent elongation.