ABSTRACTS
***Journal of Cotton Research and Development* 15(1) January, 2001**

J. Cotton Res. Dev. **15**(1) 15-18 (January, 2001)

Variability studies for yield, its components and physiological attributes under stress condition in *Gossypium hirsutum* cotton

S. L. AHUJA AND O. P. TUTEJA
Central Institute for Cotton Research, Regional Station, Sirsa-125 055

ABSTRACT : Eighteen genotypes were evaluated under irrigated and water stress conditions. In both the conditions significant genotypic differences were obtained for seed cotton yield, its components and physiological attributes, dry leaf and reproductive parts weight. However, the genotypic differences were non-significant for dry stem weight and boll weight. Higher values of components for physiological attributes, stem weight, boll weight, seed index, ginning out turn, plant height and seed cotton yield suggested that selection of genotypes for tolerance to stress was more effective in stress condition. The genotypes CNH 36 and TOM 36 x BN gave higher yield in stress condition due to higher dry boll weight.

J. Cotton Res. Dev. **15**(1) 19-22 (January, 2001)

Relative stability analysis of quantitative characters in asiatic cotton (*Gossypium arboreum* L.)

O. P. YADAV, B. P. S. LATHER, B. N. DAHIYA AND M. S. CHAUHAN
Department of Plant Breeding, CCS Haryana Agricultural University, Hisar-125 004

ABSTRACT : The material studied consisted of twenty-seven genotypes. All these genotypes grown at two different locations viz., Hisar and Sirsa, consecutively for two years thereby creating four environments (E_1 to E_4). The observation were recorded on seven characters related to plant morphology and yield of seed cotton and its component characters. Variance due to genotypes, environments and G x E interaction were significant for all the characters studied. Both linear and non linear component were found significant. Linear was higher in magnitude than non linear for all the characters studied. Simultaneous consideration of all the parameters of stability revealed that only three genotypes HD-305, HD-302 and LD-327 were found stable for seed cotton yield and its components.

J. Cotton Res. Dev. **15**(1) 23-24 (January, 2001)

Effect of genotype and auxins on callus induction in cotton (*Gossypium hirsutum* L.)

PRAGYA VERMA, SURENDER KUMAR, V. K. CHOWDHURY AND R. K. JAIN
Department of Biotechnology and Molecular Biology, CCS Haryana Agricultural University, Hisar-125 004.

ABSTRACT : Effect of different auxins (NAA, 2-4, D and IAA) were studied on callus induction from cotyledonary and hypocotyledonary explants of three different genotypes of cotton (H 777, DS 5 and LRA 5166). The hypocotyl explants responded better as compared to cotyledonary explants in all the three varieties. Of the three different media containing different auxins best callus induction was obtained in the medium containing IAA 2:0 mg/l alongwith kinetin 1.0 mg/l. The hypocotyledonary explants when cultured on callus induction media showed swelling at cut ends later initiation of white callus and the explants gave a dumpbell look after 3-4 weeks of culturing fast growing calli were obtained. Calli were

variable in colour and texture. In genotype H 777, friable green calli were obtained while in DS 5 greyish white hard and in LRA 5166 hard yellowish calli respectively.

J. Cotton Res. Dev. **15**(1) 25-29 (January, 2001)

Response of American cotton to 2, 4-D at different growth stages

O. P. NEHRA AND S. S. PAHUJA
Department of Plant Breeding, CCS Haryana Agricultural University, Hisar-125 004

ABSTRACT : Pot studies to investigate the injurious effects of direct spray of 1, 5 and 10 ppm of 2, 4-D ethyl ester at 45, 75 and 105 and compared with untreated control were conducted in the screen house conditions at CCS Haryana Agricultural University, Hisar. Adverse effect of 2, 4-D on cotton plants was more in the earlier crop growth stage. Higher concentration of 2, 4-D damaged the cotton plants more. The production of abnormal leaves affected both growth and yield. With the advancement of age of the plant, a decrease in the production of abnormal leaves was noted only under 1 ppm of 2, 4-D sprayed at 45 DAS.

J. Cotton Res. Dev. **15**(1) 30-33 (January, 2001)

Performance of cotton hybrids as influenced by time of sowing and dry seeding in Tungabhadra Project (TBP) area

M. A. BASAVANNEPPA, D. P. BIRADAR AND S. G. YELAMALI
University of Agricultural Sciences, Agricultural Research Station, Siruguppa-583 121, Bellary

ABSTRACT : A field experiment was conducted for two seasons at Agricultural Research Station, Siruguppa, on deep black soils during 1998-99 and 1999-2000 to study the performance of three hybrids cotton (DHH-11, NHH-44 and DHB-105) and time of sowing viz. D_1 : dibbling after receipt of rains (June or July), D_2 : dibbling after receipt of canal water (July 2nd fortnight), D_3 : dry seeding (June 2nd fortnight) and D_4 : dibbling by using borewell water as supplementary irrigation at the time of sowing (June 2nd fortnight). The results revealed that among the hybrids, NHH-14 has recorded significantly superior seed cotton yield (1726 kg/ha) to an extent of 84 per cent over DHB-105 (945 kg/ha) and it was at par with DHH-11. Among the soing times, sowing of cotton during June 2nd fortnight i.e., dibbling by using bore well water as supplementary irrigation at the time of sowing (D_4) produced significantly highest seed cotton yield (1554 kg/ha) over July 2nd fortnight sowing (D_2). This higher seed cotton yield was mainly attributed more number of bolls harvested per plant (34.50), boll weight (3.56 g) and plant height (142.50 cm).

J. Cotton Res. Dev. **15**(1) 34-45 (January, 2001)

Seed transmitted diseases of cotton and their control : A review

P. M. MUKEWAR AND M. S. KAIRON
Division of Crop Protection, Central Institute for Cotton Research, Nagpur-440 010

ABSTRACT : Studies on seed transmission of cotton diseases at the CICR, Nagpur for 16 consecutive crop seasons (1983-1998) have shown that the leaf and boll spot pathogen *Alternaria macrospora* and the anthracnose pathogen *Colletotrichum capsici* (*Colletotrichum indicum*) could become deep-seated (embryo-borne) and seed transmitted in diploid cotton (*Gossypium arboreum, G. herbaceum*) varieties and hybrids. The bacterial blight disease, caused by the bacterium *Xanthomonas axonopodis* pv. *malvacearum,* was found seed transmitted mainly in tetraploid cotton (*G. hirsutum, G. barbadense*) varieties and hybrids. The black boll rot fungus *Botryodiplodia theobromae* (*Diplodia gossypina*) and the stem break/root rot pathogen *Macrophomina phaseolina* (*Rhizoctonia bataticola*) were recorded seed transmitted both in

diploid and tetraploid varieties and hybrids, not withstanding to any host preference. In these two diseases, the nature of disease transmission depended on the type of seed infection viz., seed-coat, endosperm, embryo. It is concluded that the seed transmission of cotton diseases have direct linkage with the disease-free seed production, seed certification, fungicidal seed treatment and in International exchange of cotton germplasm in relation to plant quarantine. The sulphuric acid delinting of cotton seed followed by the fungicidal treatment containing a mixture of carbendazim based fungicide (Bavistin 50 WP) and thiram based fungicide (Thiride 75 SD) proved superior in the elimination of seed-borne infections as well as in providing protection from soil inhabiting pathogens like *Fusarium, Verticillium* and *Rhizoctonia.* The proposed seed treatment of delinting and fungicidal treatement was found as an excellent measure in the overall improvement of seed germination and for obtaining enhanced seedling vigour.

J. Cotton Res. Dev. **15**(1) 46-50 (January, 2001)

Biochemical alterations in cotton leaves induced by *Xanthomonas axonopodis* pv. *malvacearum* and antagonists

SANJAY ARYA AND R. D. PARASHAR
Department of Plant Pathology, CCS Haryana Agricultural University, Hisar-125 004

ABSTRACT : Foliar spray of antagonists *Bacillus* sp., *B. subtilis,* 12 D and *Pseudomonas fluorescens* for the control of bacterial blight of cotton raised the level of total phenols, orthodihydroxy phenols, total sugars, reducing and non-reducing sugars in the leaves of susceptible cotton cultivar HS-6. Foliar spray of antagonist 12D recorded the highest concentration of total phenols, orthodihydroxy phenols and reducing sugar while *B. subtilis* raised the level of total sugars and non-reducing sugar to the maximum. Challenge inoculation of all antagonists treated leaves with the bacterial blight pathogen, lowered the level of phenols and sugars. Antagonists' spray caused a reduction in nitrogen content of leaves but it improved slightly on challenge inoculation. The antagonists lowerd zinc content which increased on challenge inoculation with bacterial blight pathogen. The iron content was increased by antagonists but challenge inoculation showed no particular trend.

J. Cotton Res. Dev. **15**(1) 51-54 (January, 2001)

Chemotherapatic effect of fungicides against collar rot of cotton

S. N. CHATTANNAVAR, PRAKASH HEGDE, S. V. HIREMATH AND B. M. KHADI
University of Agricultural Sciences, Agricultural Research Station, Dharwad Farm, Dharwad-580 007

ABSTRACT : Systemic and protectant fungicides were screened against collar rot of cotton caused by *Sclerotium rolfsii.* Hexaconazole, propiconazole and tridemorph were found highly effective among systemics and thiram and mancozeb showed maximum per cent inhibition of mycelial growth of fungus among protectants. Further, when these fungicides were used for soil drenching, hexaconazole and propiconazole were found to be very effective at all concentrations tried at 2.5 cms depth. Among protectants, thiram proved to be effective. However, the effectivenss slowly decreased with the increase in the depth of soil.

J. Cotton Res. Dev. **15**(1) 55-57 (January, 2001)

Studies of the integration of natural enemies, biopesticides and insecticides in the management of cotton bollworm, *Helicoverpa armigera* (Hubner)

A. G. SREENIVAS AND B. V. PATIL
University of Agricultural Sciences, Deptt. of Agril. Entomology, College of Agriculture, Raichur-584 101

ABSTRACT : Field experiments conducted on the integration of natural enemies (egg parasitoid *Trichogramma* spp. and predator, *Chrysoperla carnea* Stephans II instar grub), botanical (5% NSKE) and synthetic insecticides at Raichur. Karnataka during 1994-95 and 1995-96 seasons. Egg parasitoid @ 2.5 lakh/ha and predator @ 50,000/ha in different sequences were released during the reproductive phase of the crop. Observations were made on per cent bollworm incidence, opened bolls (good and bad) and seed cotton yield. Bollworm incidence was minimum (4.95%) in alternate release of parasitoid and predator with monocrotophos 36 SL spray (T4) and it was on par with other bioagent release sequence treatments except successive release of predator with monocrotophos use at the end. All biocontrol release treatments were superior to untreated control which recorded highest bollworm damage. Recommended schedule recorded maximum good opened bolls (25.68 per plant) minimum bad opened bolls (9.73 per plant) with highest seed cotton yield (17.29 q/ha). Among bioagents release treatments alternate release of parasitoid and predator with predator release at the end stood the best treatment in recording higher seed cotton yield.

J. Cotton Res. Dev. **15**(1) 58-62 (January, 2001)

Role of commerical neem products in cotton insect pest management

A. G. SREENIVAS AND B. V. PATIL
University of Agricultural Sciences, Deptt. of Agril. Entomology, College of Agriculture, Raichur-584 101

ABSTRACT : Commercial *neem* products were screened for two seasons against cotton insect pests. Pooled data of two seasons indicated that two *neem* products namely Rakshak and Limnol @ 5.01 per ha were as effective as endosulfan 35 EC @ 1050 g a.i./ha in reducing the cotton bollworms damage, but were not effective against cotton leafhoppers. Further, *neem* products were fairly safe to *Trichogramma* egg parasitoids. The role of *neem* products integration with egg parasitoids and insecticides was studied and found to be fitting well in insect pest management in cotton.

J. Cotton Res. Dev. **15**(1) 63-66 (January, 2001)

Screening of exotic cotton germplasm lines against *Helicoverpa armigera*

S. KRANTHI, K. R. KRANTHI AND R. R. WANJARI
Biotechnology Section, Central Institute for Cotton Research, Nagpur-440 010

ABSTRACT : Exotic *Hirsutum* lines reported tolerant to *Heliothis virescens* were screened for tolerance against *Helicoverpa armigera.* MHR-12, MHR-16 and PeeDee-0781 were highly tolerant while MDH-118 and 128 were moderately tolerant. Stoneville 213 was the most susceptible line and the remaining nine lines were classified as tolerant. The quantity of phenols, tannin, protein and terpenoid aldehyde at the squaring stage could not be related to *H. armigera* tolerance. Tolerance in these lines may be mediated through other attributes like quantitative differences in allelochemicals, a complex effect of mixtures of allelochemicals, or the presence of inducible factors.

J. Cotton Res. Dev. **15**(1) 67-71 (January, 2001)

Field evaluation of alphacypermethrin in combination with chlorpyriphos for the control of bollworm complex on upland cotton

ASHOK K. DHAWAN AND G. S. SIMWAT
Department of Entomology, Punjab Agricultural University, Ludhiana-141 004

ABSTRACT : Duet 17 per cent- a ready mix containing 16 per cent chlorpyriphos and 1 per cent alphacypermethrin was evaluated @ 1.875, 2.500, 3.125, 3.750 and 5.00 L/ha along with chlorpyriphos, alphacypermethrin and quinalphos for the control of bollworm complex, spotted bollworm [*Earias vittella* Fab. and *E. insulana* (Boisd.)] and American bollworm [*Helicoverpa armigera* (Hubner)] on *G. hirsutum.* Duet @ 3.125 L/ha containing 31.25 g of alphacypermethrin and 500 g of chlorphyriphos was significantly more effective than chlorpyriphos, alphacypermethrin and quinalphos alone for the control of bollworms complex and in increasing the seed cotton yield. However, for control of grown up larvae *Helicoverpa* higher dosages of 3.75 L/ha proved more effective.

J. Cotton Res. Dev. **15**(1) 72-78 (January, 2001)

Integrated pest management in dryland cotton : A case study of ashta (MS)

R. C. LAVEKAR, O. P. SHARMA, K. S. MURTHY AND S. N. PURI
Marathwara Agricultural University, Cotton Research Station, Nanded-431 604

ABSTRACT : In order to meet the projected demand of cotton for the new millennium it is essential to reduce the losses incurring due to insect pests which account for 50-60 per cent reduction in yield. In view of economic importance of the crop, based on previous years experience, the IPM technology was tried on large scale on the village level. The technology which is based on need based use of ecofriendly options not only helped in getting higher yield (963 kg/ha) than the state average (480 kg/ha) but has also helped in conservation of natural biotic funa. To tackle the issues such as sanitation, procurement of seeds, synchronized sowing was given more emphasis with the help of Farmer Field School (FFS). Monitoring helped in timing the management options. The use of locally available *neem* seeds as bio-pesticides were encouraged. the success of technology could be visualized with the reduction in pesticide use at village level.