ABSTRACTS
***Journal of Cotton Research and Development* 13(2) July, 1999**

J. Cotton Res. Dev. **13**(2) 91-96 (July, 1999)

Genetic divergence in egyption cotton (*Gossypium barbadense* L.)

K. N. GURURAJAN
Central Institute for Cotton Research, Regional Station, Coimbatore-641 003

ABSTRACT : Eighty five genotypes of Egyptian cotton (*G. barbadense*) collected from different geographic sources were subjected to D^2 analysis. Using Tocher's method all the 85 genotypes were grouped into thirteen clusters. Cluster I had the highest number of genotypes followed by Cluster II. The inter cluster distances ranged from 2.323 between cluster III and VIII to 12.04 between cluster II and XI. The first three cononical vectors accounted for only 77 per cent of the genetic divergence. Ginning percentage recorded the maximum contribution (52.6%) for genetic divergence. Hybridisation between genotypes with high mean values in cluster II and IX are suggested for varietal improvement in Egyptian cotton.

J. Cotton Res. Dev. **13**(2) 97-100 (July, 1999)

Quick and reliable prediction of seed viability in cotton (*G. hirsutum* L.)

B. S. DAHIYA, O. S. DAHIYA AND R. C. PUNIA
Seed Technology, Centre, CCS Haryana Agricultural University, Hisar-125 004.

ABSTRACT : Seed programme is a complex and an integrated activity. For both internal and external seed trade time factor has become very important. The standard germination test requires longer period for completion of germination test. In search of quick and reliable tests, 47 seed lots of Cotton (*G. hirsutum*) were evaluated by quick viability tests viz., tetrazolium test (T_z), dehydrogenase test (DHA) and electrical conductivity test (EC). These seed lots were also tested for standard germination in the laboratory and under normal field conditions for comparison of reliability of the quick tests. The results indicated that standard germination had significant positive correlation with Tz test (r=0.81**), DHA test (r=0.84**) and the correlation with EC was negative and significant (r=-0.69**). Therefore, the DHA, Tz and EC tests were found reliable in the prediction of standard germination. The combination of these three tests could predict standard germination to a reliable level (R^2 = 0.81). The importance and implications of these tests have been discussed in relation to seed testing and marketing.

J. Cotton Res. Dev. **13**(2) 101-103 (July, 1999)

Genetic parameters and characters association in Asiatic Cotton Hybrids based on GMS system

O. P. TUTEJA AND D. P. SINGH
Central Institute for Cotton Research, Regional Station, Sirsa-125 055

ABSTRACT : A set of 31 genotypes comprising 30 *desi* cotton hybrids based on GMS system and standard check DS-5 were evaluated at two locations with three level of spacings (67.5 x 45 cm, 67.5 x 60 cm and 67.5 x 75 cm). The randomized block design with 3 replications was followed in each of the 6 experiments. The studies indicated that the estimates of heritability were highest for 2.5% span length (51.22%) followed by micronaire value (49.20%) and plant height (46.50%). Genetic gain ranged from 0.12 for boll weight to 26.37 for seed cotton yield. Most of characters except plant height and seed cotton yield showed high heritability but low expression of genetic gain. For all the characters PCV values were higher as compare to GCV. In general genotypic correlations were higher than phenotypic correlations for most

of the characters indicating the strong association among various traits. Seed cotton yield showed significant positive association with number of bolls and maturity coefficient indicating their importance in breeding for high yield of seed cotton. Number of monopods and sympods had positive correlation with seed cotton yield. All the quality traits except maturity coefficient showed negative association with seed cotton yield as well as among themselves indicating the need for indirect selection criteria for improving the yields as well as quality traits.

J. Cotton Res. Dev. **13**(2) 104-107 (July, 1999)

A diallel analysis of glanded nature in bollworm tolerant lines of American cotton (*G. hirsutum* L.)

J. S. V. SAMBA MURTHY AND N. RANAGANATHACHARYULU
Regional Agricultural Research Station, Lam, Guntur-522 034.

ABSTRACT : A diallel analysis of combining ability for glanded nature in leaves, bracts and calyx of upland cotton was made utilising ten bollworm tolerant donor lines for obtaining information on gene action and for identifying the best parents for hybridization. Predominance of additive gene action was observed for number of glands/cm^2 and glandular area/cm^2 in bracts although the *sca* variance was also significant for these traits. Operation of both additive and non-additive gene action was observed in rest of the traits studied. There was a close relationship between *per se* performance of parents and their *gca* effects in majority of the cases. For improving glanded nature in leaves, the parent Okra, in bracts the parents H G and B 1007; and B 1007 in calyx are identified as best combiners. In cross combinations, crosses showing high *sca* estimates involved different combinations between parents for *gca* effects viz., high x low, low x low, or low x high. Specific combinations such as AET 5 x HG for glanded nature in leaves; HG x glabrous in bracts : AET 5 ANL in calyx had exhibited high *sca* effects. The material studied may proved useful for undertaking both heterosis breeding as well as in varietal improvement programmes for developing high yielding lines with abuilt bollworm resistance.

J. Cotton Res. Dev. **13**(2) 108-110 (July, 1999)

Response of dwarf cotton genotypes to spacings and fertilizers under summer irrigated conditions

V. S. MANE, S. S. MEHETRE, S. R. ZANJARE, V. R. PATIL AND N. D. JADHAV
All India Co-ordinated Cotton Improvement Project, Mahatma Phule Krishi Vidyapeeth, Rahuri-413 722

ABSTRACT : A field experiment with three varieties viz., PKV-081, CNHPT-254 and LRA-5166 were tested with three plant spacing (90 x 60, 60 x 60 and 60 x 30 cm) and four fertilizer levels (40 : 20 : 20, 60 : 30 : 30, 80 : 40 : 40 and 100 : 50 : 50 kg of N, P & K/ha) at Cotton Project, MPKV, Rahuri (Maharashtra) during summer, 1994-95, 1995-96 and 1996-97. Significantly higher yield of seed cotton was recorded due to closer plant spacing. Fertilizer dose of 100 : 50 : 50 kg N, P and K recorded highest seed cotton yield per hectare while dwarf genotypes (PKV-081 and CNHPT-254) recorded similar seed cotton yield to that of medium tall variety (LRA-5166).

J. Cotton Res. Dev. **13**(2) 111-116 (July, 1999)

Effect of liquid fertilizer through drip irrigation on growth and yield of summer cotton (NHH-44)

MANE V. S., B. N. SHINDE, S. S. MEHETRE AND N. D. JADHAV
All India Co-ordinated Cotton Improvement Project, Mahatma Phule Krishi Vidyapeeth, Rahuri-413 722

ABSTRACT : A field experiment was conducted in medium deep black soil at the Cotton Project, M.P.K.V., Rahuri (Maharashtra) to study the effect of liquid fertilizer through drip irrigation on the growth and yield of Cotton (NHH-44) during 1995 and 1996. Nine treatments comprising of 100 per cent recommended dose of straight fertilizers through band placement with surface irrigation and drip irrigation with 50, 75, 100 and 125 per cent solid fertilizers (N through drip and P and K as a basal application) compared with same levels of liquid fertilizers through drip irrigation. Pooled data revealed that performance of liquid fertilizer over solid fertilizer was superior in terms of growth and yield. Application of 75 per cent dose of liquid fertilizer through drip irrigation gave significantly more yield (23.36 q/ha) than surface irrigation with conventional method of fertilizer. Use of drip irrigation for cotton reduced the seasonal water requirement by 47 per cent with maximum water use efficiency (29.44 to 50 kg/ha cm).

J. Cotton Res. Dev. **13**(2) 117-119 (July, 1999)

Influence of method and time of nitrogen application and spacing on yield of cotton and soil properties

A. P. SHARMA, A. D. TANEJA, L. K. BISHNOI, S. S. SIWACH AND S. S. NEHRA
Department of Plant Breeding, CCS Haryana Agricultural University, Hisar-125 004

ABSTRACT : Finding of two year field trials conducted at HAU, Hisar. Significantly higher seed cotton yield recorded from recommended level of nitrogen 75 kg N ha^{-1} normal and spacing (67.5 x 30 cm). Organic carbon and available nitrogen content increased where cow-pea raised in paired row has been incorporated in the soil.

J. Cotton Res. Dev. **13**(2) 120-122 (July, 1999)

Comparative efficiency of different nitrogenous and phosphatic fertilizers for cotton (*Gossypium hirsutum*)

SURINDER SINGH, K. D. TANEJA, S. K. AGARWAL AND D. S. NEHRA
Department of Agronomy, CCS Haryana Agricultural University, Hisar-125 004

ABSTRACT : A field experiment was conducted during the *kharif* seasons of 1996 and 1997 to study the efficiency of different nitrogenous and phosphatic fertilizers on cotton (*Gossypium hirsutum* L.). At same level of nitrogen (90 kg N ha^{-1}), cotton has no specific preference for any nitrogenous fertilizer (ammonium chloride, ammonium sulphate, CAN and urea) however, among phosphatic fertilizers @ 30 kg P_2O_5 ha^{-1}) nitrophosphate (20 N : 20 P_2O_5, with 60 per cent water solubility) has been found more efficient than SSP and ammonium phosphate sulphate.

J. Cotton Res. Dev. **13**(2) 123-125 (July, 1999)

Studies on growth and development of *Helicoverpa armigera* (Hubner) on different foods

AJANTA CHANDRA, N. C. KAUSHIK AND G. P. GUPTA
Division of Entomology, Indian Agricultural Research Institute, New Delhi-110 012.

ABSTRACT : The suitability of four natural foods viz, peapods, okra fruits, cotton leaves and castor leaves and one artifical diet was studied in respect of growth and development of *Helicoverpa armigera* Hubner under laboratory conditions. Larval and pupal periods, percentage pupation, pupal weight, adult emergence, percentage survival, fecundity and growth index values among the biological attributes and relative consumption rate, relative growth rate and efficiency of conversion of ingested material by the insect among the nutritional attributes were determined. Among various diets, artifical diet and peapod diet were found higher host suitability (growth index 3.92 and 3.15 respectively) to the test insect on the basis of biological and nutritional studies.

J. Cotton Res. Dev. **13**(2) 126-128 (July, 1999)

Effect of breeding system on leafhopper and bollworm resistance in cotton (*Gossypium hirsutum*) hybrids

S. VENNILA AND R. K. DESHMUKH
Division of Plant Protection, Central Institute for Cotton Research, Post Box No. 2, Shankar Nagar, Nagpur-440 010

ABSTRACT : Hybrids developed from reciprocal crosses, and through conventional and cytoplasmic male sterility (reconstituted) breeding systems were field evaluated for jassid and bollworm resistance, respectively. Leafhopper resistance as influenced by reciprocal crossing indicated cytoplasmic involvement from the cultivar Bikaneri Narma, when used as a female parent. For bollworm resistance, hybrids evolved through conventional method of breeding proved to be better than utilising cytoplasmic sterile system. However, for resistance to both type of insects, factors conferring resistance were influenced by cytoplasm.

J. Cotton Res. Dev. **13**(2) 129-138 (July, 1999)

Cotton leaf curl virus disease in India - The challenge ahead

A. M. NARULA, D. MONGA, M. S. CHAUHAN AND SHEO RAJ
Indian Council of Agricultural Research, Krishi Bhawan, New Delhi-110 001

ABSTRACT : Cotton leaf curl virus has become the most important disease problem in northern cotton zone. The report of various surveys and recommendations of committees alongwith occurance, incidence and status are presented. The symptoms, identification & characterisation, epidemiology and losses caused by the disease are discussed in detail. Approaches for the management of disease are highlighted.

J. Cotton Res. Dev. **13**(2) 139-146 (July, 1999)

Investigations on the new wilt of cotton

P. P. SHASTRY AND K. C. MANDLOI
JNKVV, B. M. College of Agricultural, Khandwa-450 001

ABSTRACT : There was wide scale prevalence of New Wilt of cotton in Khandwa district. It was found to occur in *Gossypium hirsutum, G. arboreum, G. herbaceum, intra hirsutum* and inter *hirsutum* hybrids. A large number of genotypes were also found to be affected. Nearly 30 per cent of the wilt affected plants revived after a pause of 3-4 weeks. Ordinary run analysis reveal that the wilt affected plants are randomly distributed in the field. The disease was found to be influenced both by the ecoclimate and the genotype. The New Wilt seems to be genetically controlled physiological disorder expressed under the strong influence of the environment.

J. Cotton Res. Dev. **13**(2) 147-151 (July, 1999)

Role of phenols in bacterial blight (*Xanthomonas axonopodis* pv. *malvacearum*) resistance in cotton (*Gossypium hirsutum* L.)

JAGDISH BENIWAL AND M. S. CHAUHAN
Department of Plant Pathology, CCS Haryana Agricultural University, Hisar-125 004, India

ABSTRACT : Bacterial blight caused by *Xanthomonas axonompodis* pv. *malvacearum* (Smith) Vauterin *et al.* of cotton is one of the most potential and destructive disease in many cotton growing countries of the world. The biochemical parameters which are responsible for imparting resistance to batrial blight are of utmost importance, therefore, keeping in view the genetics of total phenols and ortho-dihydroxy phenol (O.D. phenol) was studied on single plant basis in resistant (Reba B-50 and Suman), susceptible cultivars (HS-6 and H-1098) and their crosses comprised of six generation P_1, P_2, F_1, F_2 B_1 and B_2. Analysis of phenolic compounds revealed that resistant plants have relatively higher phenol content than susceptible plants. In the F_1 generations of susceptible x resistant, the total phenol and O. D. phenol content was significantly higher than susceptible plants both in healthy and diseased leaves, moreover inbreeding depression in F_2 over F_1 was observed in the crosses of susceptible x resistant parents. In general, the reaction of backcross progenies was more or less tended towards their respective recurrent parents.