

## ABSTRACTS

*Journal of Cotton Research and Development* 1(2) July, 1987

---

*J. Cotton Res. Dev.* 1 (2) 107-115 (July 1987)

### **Inheritance of some qualitative characters in asiatic (*Gossypium arboreum* L.) cotton**

L. L. MANE<sup>1</sup>, M. D. YADAV<sup>2</sup>, S. S. MEHETRE<sup>3</sup> AND M. U. KARALE<sup>4</sup>

*Mahatma Phule Agricultural University, Rahuri-413 722 (M. S.), India*

**ABSTRACT** : The inheritance of qualitative characters viz., anthocyanin pigmentation, foliar nectary, bract shape, petal spot and petal colour was studied in F<sub>2</sub> and BC<sub>1</sub> generations of intervarietal crosses e.g. G-27 x nectariless, G-27 x frego, 9833-1 x frego and nectariless x 9833-2. From the segregation of individual characters, it is confirmed that anthocyanin pigmentation governed by R<sub>1</sub>, R<sub>2</sub>, and R<sub>3</sub> (54:10) and R<sub>1</sub> and R<sub>2</sub> (15:1) genes; petal spot R<sub>1</sub>S (15:1) genes; petal colour (1:2:1) Ya gene, leaf nectary by monogenic (Ne) gene and bract shape by (15:1) R<sub>1</sub> Fg genes. From the joint segregation of characters, it was confirmed that the gene R<sub>1</sub> is common for both bract shape and petal spot and a linkage value of 16% was detected between R<sub>2</sub> and S genes, while other genes found to be independent from each other.

*J. Cotton Res. Dev.* 1 (2) 116-123 (July 1987)

### **Chemical control of root rot complex of cotton\***

VINAY KATHPAL<sup>1</sup> AND M. S. CHAUHAN<sup>2</sup>

*Department of Plant Pathology*

*Haryana Agricultural University, Hisar-125 004*

**ABSTRACT** : Efficacy of commonly recommended fungicides viz., quintozone (Brassicol, 75 W. P.), carbendazim (Bavistin, 50 W. P.), thiophanate-M (Cercobin, 70 W. P.), carboxin (Vitavax, 75 W. P.), MEMC (Emisan, 6 Hg), captafol (Difolatan, 80 W. P.) and thiram (Thiride, 75 W. P.) was tested. The fungitoxicants were used as seed soak treatments, pre-and post-sowing soil drench and seed soak treatment plus soil application against root rot complex of cotton in multiple sick plots having soil pathogens viz., *Macrophomina phaseolina* (Tassi) Goid [= *Rhizoctonia bataticola* (Taub) Butler] and *Rhizoctonia solani* (Kuhn). It was observed that seed treatment or soil application of carbendazim followed by carboxin effectively control pre-and post-emergence seedling mortality. Pre-sowing soil drench of test fungicides provided better disease control as compared to post-sowing soil drench. No significant differences in disease control were noted when the test chemicals were used either as seed treatment+pre-sowing soil drench or seed treatment+post-sowing soil drench except in case of carboxin which gave relatively better disease control when used as seed treatment+pre-sowing soil drench.

*J. Cotton Res. Dev.* 1 (2) 124-130 (July 1987)

### **Studies on planting patterns and intercropping in cotton**

S. C. DESHMUKH<sup>1</sup>, R. I. SISODIA<sup>2</sup> AND K. C. MANDLOI<sup>3</sup>

*Main Cotton Research Station*

*Jawahar Lal Krishi Viswa Vidyalaya, Khandwa-450 001*

**ABSTRACT** : Seed cotton yield under skip row method of planting increased by 4.1 to 12.9% over soild planting and paired row planting, respectively. Intercrops viz **urd**, soybean and groundnut reduced the

yield of seed cotton but on the contrary did not influence monetary returns compared to pur crop of cotton. Intercropping of groundnut seems to be more profitable, from the point of view of net income, followed by **urd** and soybean.

*J. Cotton Res. Dev.* **1** (2) 131-140 (July 1987)

## **Bases of resistance in cotton to *Amrasca biguttula biguttula* (Ishida)**

RAM SINGH<sup>1</sup>

*Division of Entomology*

*Indian Agricultural Research Institute, New Delhi-110 012*

**ABSTRACT :** Rearing of jassid *Amrasca biguttula biguttula* (Ishida) on resistant genotypes of cotton resulted in poor survival, longer developmental period, smaller size and weight of insects. It was because of higher hair density and hair length on lower leaf surface and higher amounts of non-reducing sugars, tannins, free gossypol and silica in leaves of such genotypes as these factors had significant negative correlation with pest incidence. Quantities of proteins and free amino acids were also significantly lower in resistant genotypes in comparison to susceptible ones. The effects of total sugars, reducing sugars, pH and moisture content of leaves were of less significance.

*J. Cotton Res. Dev.* **1** (2) 141-143 (July 1987)

## **Phenotypic stability of quantitative characters in upland cotton**

SUNIL SETH<sup>1</sup>, B. P. S. LATHER<sup>2</sup>, B. R. MOR<sup>3</sup> AND B. S. CHHABRA<sup>4</sup>

*Department of Plant Breeding*

*Haryana Agricultural University, Hisar-125 004*

**ABSTRACT :** Substantial amount of genotype-environment interaction was accounted for by the the linear function of genes for characters; first fruiting node number, number of loculi per boll, seed index, lint index, yield of seed cotton and ginning out-turn, whereas rest of the characters displayed considerable amount of non-linear function of genes.

*J. Cotton Res. Dev.* **1** (2) 144-152 (July 1987)

## **Incidence of cotton whitefly, *Bemisia tabaci* (G.) in relation to wheather factors of nagarjuna sagar project area of andhra pradesh**

N. VENUGOPAL RAO<sup>1</sup> AND A. S. REDDY<sup>2</sup>

*Department of Agricultural Entomology*

*Andhra Pradesh Agricultural University, Rajendranagar, Hyderabad-500 030*

**ABSTRACT :** The cotton whitefly build up in Andhra Pradesh showed negative correlation with the abiotic factors like rainfall and temperatures during 1984, 85 and 86 crop seasons. The pest also showed negative correlation with co-sucking pests of cotton and positive correlation with natural enemies of it.

*J. Cotton Res. Dev.* **1** (2) 153-156 (July 1987)

## **Genetic of Heterosis of Desi cotton (*G. arboreum* L.)**

B. S. CHHADRA<sup>1</sup> AND B. R. MOR<sup>2</sup>

*Department of Plant Breeding  
Haryana Agricultural University, Hisar-125 004*

**ABSTRACT :** The nature and magnitude of gene effects for five quantitative characters were investigated during two seasons i. e. **kharif** 1981-82 and 1982-83, in two crosses of **desi** cotton (*G. arboreum* L.). All the three types of gene effects i. e. additive dominance and epistasis were found to play a significant role in the inheritance of yield of seed cotton and boll number. It is also evident that heterosis for these two traits resulted from the divergent mechanism. Population improvement approach in the form of biparental matings coupled with recurrent selection was considered more effective.

*J. Cotton Res. Dev. 1 (2) 157-166 (July 1987)*

## **Plant Height and its importance in upland cotton\***

D. N. BHARADWAJ<sup>1</sup>

*Department of Genetics  
Agricultural Institute, Tashkent, USSR-700 183*

**ABSTRACT :** Like other qualitative characters, short staturedness in cotton has got a major attention of plant breeders these days. The short statured habit in cotton favours development of more sympodial type of branching. Plant height positively correlates with days to maturity and bioproductivity, while negatively with harvest index and seed cotton yield. Plant height is governed by dominant type of genes. Short statured varieties like Tashkent 6 and C 4534 were attained about less than one meter height, small leaf area, higher assimilation index with higher index so these varieties yielded better than others during all the three years. These short statured varieties can be successfully exploited in hybridization programmes for intensification in cotton.

*J. Cotton Res. Dev. 1 (2) 172-177 (July 1987)*

## **Effect of nitrogen levels and time of picking on fibre qualities of different cotton genotypes**

D. S. NEHRA<sup>1</sup> AND M. S. KAIRON<sup>2</sup>

*Department of Plant Breeding  
Haryana Agricultural University, Hisar-125 004, India*

**ABSTRACT :** Field experiments were conducted during 1981 and 1982 at the Research Farm of Haryana Agricultural University, Hisar. Picking intervals have no effect on GOT, seed index, lint index, fibre length and maturity coefficient. Fibre fineness and strength decreased with the advancement of picking intervals. Nitrogen levels had no effect on GOT but seed index, length and fineness increased with the increased dose of nitrogen, whereas reverse trend was noticed in case of maturity coefficient and strength. Genotypes differed significantly among themselves in respect of fibre quality.

*J. Cotton Res. Dev. 1 (2) 178-182 (July 1987)*

## **Combining ability analysis in upland cotton**

I. P. SINGH<sup>1</sup>, B. S. CHHADRA<sup>2</sup> AND R. B. SINGH<sup>3</sup>

*Department of Plant Breeding  
Haryana Agricultural University, Hisar-125 004, India*

**ABSTRACT :** Seven-parents diallel analysis in upland cotton was conducted to study combining ability in respect of seven characters. Highly significant GCA and SCA effects were observed for all the characters except boll weight. GCA and SCA effects were relatively more important than SCA. Advanced breeding lines 2, 3 and 7 were selected as good combiners for most of the characters for further breeding programme.

*J. Cotton Res. Dev.* **1** (2) 183-186 (July 1987)

## **Different tolerance of *Myrothecium roridum* to Ex fr. causing *Myrothecium* leaf spot of cotton to insecticides**

SURJEET SINGH<sup>1</sup> AND INDU JALALI<sup>2</sup>

*College of Agriculture*

*Haryana Agricultural Campus University, Kaul, India*

**ABSTRACT :** Comparative efficacy of five insecticides was evaluated against *Myrothecium roridum* to elicit information on spore germination germ tube elongation and mycelial growth. The trend of results obtained in spore germination and mycelial growth inhibition was not related to each other. Malathion was highly toxic in inhibiting spore germination as well as tube length but was less toxic to vegetative growth.

*J. Cotton Res. Dev.* **1** (2) 187-189 (July 1987)

## **Variability and correlation studies in upland cotton (*Gossypium hirsutum* Linn.)**

SHER SINGH VERMA<sup>1</sup>, B. P. S. LATHER<sup>2</sup>, URMIL VERMA<sup>3</sup> AND A. S. MEHLA<sup>4</sup>

*Seed Technology Unit*

*Haryana Agricultural University, Hisar-125 004, India*

**ABSTRACT :** Significant varietal differences were recorded in all eight characters studied in 21 American varieties. High genetic coefficient of variation and high genetic advance were estimated for number of bolls per plant, plant height and lint index. High estimates of heritability were obtained for halo length, ginning outturn, 100-seed weight and lint index. Number of bolls per plant was positively and significantly correlated with seed cotton yield. Ginning outturn and 100-seed weight showed significant positive correlation with lint index. It indicated that substantial yield improvement could be achieved if selection pressure was applied simultaneously on boll number per plant.

*J. Cotton Res. Dev.* **1** (2) 190-198 (July 1987)

## **Antibiosis mechanism of resistance in cotton genotypes to *Earias vittella* (Fab.)**

RAM SINGH<sup>1</sup> AND R. A. AGARWAL<sup>2</sup>

*Division of Entomology*

*Indian Agricultural Research Institute, New Delhi-110 012*

**ABSTRACT :** Squares and green bolls of 10 genotypes of cotton showing diverse reactions to the attack of spotted bollworm, *Earias vittella* were used for antibiosis studies. Variations in the developmental period (larval+pupal) ranged from 19.00 to 24.66 days and 18.06 to 23.67 days, larval weight from 25.54 to 63.32 mg and 36.00 to 62.00 mg, pupation from 25.48 to 70.75% and 45.40 to 97.00%. Pupal weight

from 26.36 to 56.79 mg and 40.77 to 58.00 mg, moth emergence from 58.53 to 80.37% and 50.00 to 95.50% on squares and bolls of tested genotypes, respectively. Least susceptible genotypes affected these post-embryonic developmental parameters adversely. Tannin, free gossypol and silica of squares and bolls showed significant negative correlation with developmental parameters of this pest.

*J. Cotton Res. Dev.* **1** (2) 199-204 (July 1987)

## **Effect of Zn on its peridical uptake and oil content in *Hirsutum* cotton**

J. C. SHARMA<sup>1</sup>, V. K. GUPTA<sup>2</sup> AND M. S. KAIRON<sup>3</sup>

*Department of Soils*

*Haryana Agricultural University, Hisar-125 004*

**ABSTRACT :** The results of field experiment in a loamy sand soil revealed that zinc uptake by *Hirsutum* cotton increased with increase in zinc rates. Broadcasting of ZnSO<sub>4</sub>.7H<sub>2</sub>O both at lower and higher levels recorded higher Zn uptake over drilling. The uptake of Zn both at squaring and flowering stages followed the order : leaves>stems>petioles. At harvest, seed accumulated the highest Zn and the order of Zn uptake was : Seed>leaves>stems>bur>lint>petioles. Foliar spray of Zn resulted in higher uptake of Zn than its placement. The highest uptake of 98.7 g/ha was recorded by broadcast at 10 kg Zn/ha<sup>-1</sup>. Broadcast of Zn both at lower and higher levels produced the higher oil content (20.4 and 21.9%) as compared to drill (19, 3 and 20.2%).

*J. Cotton Res. Dev.* **1** (2) 205-209 (July 1987)

## **Uses of cotton plant stalk-an agricultural waste**

A. D. TANEJA<sup>1</sup> AND A. D. SHARMA<sup>2</sup>

*Cotton Section, Department of Plant Breeding,*

*Haryana Agricultural University, Hisar-125 004*

**ABSTRACT :** This article describes the various possible industrial application of cotton plant stalk, which is an agricultural waste. The cotton plant contains about 45-48% alpha cellulose and 24-27% lignin. Besides its use as fuel to a limited extent, it can be utilised for the production of boards fillers pulp and paper, regenerated cellulose and cellulose derivatives viz., esters and others; microcrystalline cellulose furfural-an important industrial chemical, lignin for various industries and animal feeds. Some of these industries can be set up in rural areas where the raw material is available in abundance and hence it would provide additional employment to rural masses.