

## ABSTRACTS

*Journal of Cotton Research and Development* 3(2) July, 1989

---

*J. Cotton Res. Dev.* 3 (2) 107-116 (July 1989)

### **Cytological aspects of haploidy in the genus *Gossypium* L.-A review**

M. V. THOMBRE AND S. S. METHTRE

*All India Co-ordinated Cotton Improvement Project  
Mahatma Phule Agricultural University, Rahuri-413 722*

**ABSTRACT :** A review of occurrences of haploids spontaneous, induced by interspecific hybridization, irradiation, semigamy, and studies on their cytology breeding behaviour and their use in cotton breeding has been made. From the literature reviewed so far, it appears that haploids in tetraploid cottons and in their interspecific crosses occur quite frequently, their cytological studies indicated formation of maximum up to G-9 bivalents indicating residual homeology between A. D. genomes.

Comparatively fair amount of bivalent formation observed in different types of haploids was discussed on the basis of residual homology between component genomes, segmental duplication, gene controlled pairing and genotypic background of the parents. These observations have induced possibility of seven ( $n=x=7$ ) as a basic chromosome number of the genus, *Gossypium* L.

*J. Cotton Res. Dev.* 3 (2) 117-122 (July 1989)

### **Quantitative estimate of seed obtained from 100 kg Kapas After Processing**

I. P. SINGH, D. P. SINGH AND D. K. JAIN

*H. A. U. Cotton Research Station  
Sirsa*

**ABSTRACT :** The study was undertaken to estimate the extent of losses incurred during drying, ginning, acid delinting and grading in **kapas**. It was revealed that losses during the process of drying, ginning, acid delinting and seed grading recorded were 4.76, 1.64, 34.33 per cent, respectively. Weight of seed recovered was 35 kg from 100 kg **kapas**.

*J. Cotton Res. Dev.* 3 (2) 130-135 (July 1989)

### **Electrophoretic studies in upland cotton (*Gossypium hirsutum* L.)**

A. P. TYAGI, B. R. MOR AND J. S. YADAVA

*Department of Crop Science  
University of Nairobi, Post Bag 31907, Nairobi, Kenya*

**ABSTRACT :** Intermating was carried out in an  $F_2$  of two diverse parents namely, J. 34 and I. C. 1926 by selecting plants as males and females using N. C.-I mating design. The populations, an intermating and  $F_3$  were analysed alongwith both the parents using the method given by Davis (1964) for different isoenzymes viz., alpha-amylase, catalase, esterase and peroxidase. The electrophoretic zymographic patterns in parents, BIPs and  $F_3$ s for alpha-amylase and catalase were the same. One alpha-amylase band at Rf 0.17 and two catalases at Rf 0.37 and 0.48 appeared. For esterase and peroxidase enzymes 2 and 1 band appeared, respectively, in all the three populations. Whereas one extra band at Rf 0.19 in esterase and at Rf 0.47 in peroxidase was also observed in the recurrent parent (J. 34). The appearance of

the extra band the recurrent parent could be attributed to the recessive gene mutation during its evolution (may be artificial). It, therefore, indicates that varietal differences did not exist for these enzymes in the material under study.

*J. Cotton Res. Dev.* **3** (2) 136-139 (July 1989)

### **Effect of sowing dates and spacings on productivity of *Arboreum* variety LD 327**

R. K. SHARMA, JAI SINGH AND B. S. SANDHU

*Department of Plant Breeding*

*Punjab Agricultural University, Ludhiana-141 004*

**ABSTRACT :** Field experiments were conducted during **kharif**, 1987 and 1988 with different sowing dates and spacings on newly evolved high yielding *arboreum* cotton variety LD 327 at Punjab Agricultural University, Ludhiana. The closer plant-to-plant spacing of 15 cm had significantly higher seed-cotton yield than wider spacings of 30 and 45 cm with row-to-row spacings of 60 or 67.5 cm. However, yield remained unaffected with increase in row spacing from 60 to 67.5 cm. April 25, May 5 and May 15 sowing were rated at par with respect to yield, whereas May 25 recorded higher bollworms incidence as well as diapausing pink bollworm larvae than the early sowings while the differences were non-significant among different spacings.

*J. Cotton Res. Dev.* **3** (2) 140-146 (July 1989)

### **A study on host plant resistance to bollworms (*Heliothis* spp.) in cotton using isogenic lines**

M. G. BHAT, R. J. KOHEL AND D. W. ALTMAN

*Cotton and Grain Crops Genetics Research Unit*

*USDA-ARS, Southern Crops Research Laboratory,*

*P. O. Drawer DN, College Station, Texas 77841, USA*

**ABSTRACT :** A study on eight isogenic lines of AET-5 was carried out with the objective of determining the role of three morphological characters on resistance to *Heliothis zea* (Boddie) and *H. virescens* (F) in upland cotton (*Gossypium hirsutum* L.). The eight isogenic lines, which varied for nectariless, glabrous (smooth) and okra leaf characters, were studied in an unprotected field experiment grown in 1984 in College Station, Texas. The lines were screened for *Heliothis* damage to squares, green bolls, open bolls and open locules and also for egg and larval counts. Larval population and green boll damage tended to be the highest in the isolines having the normal characters (AET-5 NeHN) and to be the lowest in the isolate having the combination of nectariless, smooth and okra leaf (AET-5 ne Sm<sub>2</sub> L<sup>0</sup>). Smooth and okra leaf individually tended to reduce the incidence of *Heliothis* on squares, green bolls, open bolls and open locules and when these two characters were present together, the reduction was more than that of the individual characters.

Green boll damage was the best parameter of recording *Heliothis* damage since this parameter had a high positive and significant correlation with the population of larvae, the damaging stage of the bollworm. The three morphological characters studied were not found to have any adverse effect on seed cotton yield and other yield component characters.

*J. Cotton Res. Dev.* **3** (2) 147-151 (July 1989)

### **Effect of sucking pests on some leaf constituents and yield of seed cotton in two cotton hybrids**

S. N. KULKARNI AND A. K. RAODEO

Marathwada Agricultural University, Parbhani-431 402

**ABSTRACT :** Field experiments were conducted to assess the losses due to sucking pest complex in the leaf biochemicals and yield of seed cotton in two hybrid cottons. All the chemicals (nitrogen, phosphorus, potassium in leaves and oil content in seed) and yield of seed cotton showed considerable reduction due to sucking pests damage. Glabrous hybrid H<sub>4</sub> suffered more losses than hairy hybrid NHH<sub>1</sub>.

*J. Cotton Res. Dev.* **3** (2) 152-155 (July 1989)

### ***In vitro* enzymatic activity of *Myrothecium roridum* isolates\***

N. K. TANEJA, SHEO RAJ AND P. K. SETH

*Central Institute for cotton Research*  
*Post Bag No. 125, GPO, Nagpur-440 001*

**ABSTRACT :** The 17 isolates of *Myrothecium roridum* varied with regard in *in vitro* production of macerating enzymes viz., PG, PMG, PGTE, PMTE and Cx. The activity of all the enzymes put together was found to be higher in case of the isolates which were highly virulent based on the pathogenic variability, showing thereby the close relationship between the enzyme activity and the virulence of the isolates. Based on the enzymatic activity, the isolates could be grouped into four categories.

*J. Cotton Res. Dev.* **3** (2) 156-161 (July 1989)

### **Integrated management of *Fusarium* wilt of cotton**

Y. R. SHARMA, B. S. SANDHU, JAI SINGH, R. K. SHARMA AND M. S. GILL

*Department of Plant Breeding*  
*Punjab Agricultural University, Ludhiana*

**ABSTRACT :** Seed treatment of **desi** cotton (*Gossypium arboreum* L.) with fungicides, Carbendazim 50 WP and Topsin M 70 WP @ 2 g/kg of seed has been found to reduce wilt incidence in the initial stages of plant growth as well as at bol formation phase. April sown crop had higher incidence of wilt than that sown in the second fortnight of May. The growing of a tolerant variety with proper manipulation of sowing date and seed treatment may prove useful in reducing wilt incidence in **desi** cotton.

*J. Cotton Res. Dev.* **3** (2) 162-168 (July 1989)

### **Chemical control of *Rhizoctonia solani* by systemic and non systemic fungitoxicants in cotton**

VINAY KATHPAL, M. S. CHAUHAN AND S. GANGOPADHYAL

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

**ABSTRACT :** Efficacy of seven commonly recommended fungitoxicants, viz., quintozone (Brassicol, 75 W. P.), MEMC (Emisan, 6 Hg), captafol (Difolatan, 80 W. P.), thiram (Thiride, 75 W. P.), carbendazim (Bavistin, 50 W. P.), thiophanate-M (Cercobin, 70 W. P.), carboxin (Vitavax, 75 W. P.) was tested as seed treatment, pre and post-sowing soil drench and seed treatment plus pre-sowing soil drench against root rot of cotton due to *Rhizoctonia solani* Kuhn either singly or joint treatment of two fungitoxicants under screen-house conditions. Carbendazim and quintozone proved to be most effective, whereas thiram and captafol accounted for less disease control when used individually as seed treatment and as soil drench against *R. solani* causing root rot. However, pre-sowing soil drench of fungitoxicants was more effective in controlling root rot as compared to post-sowing soil drench. Among different combinations of fungitoxicants tested as seed treatment the combination of quintozone and carbendazim proved

maximum disease control. However, the efficacy of fungitoxicants when used as joint seed dressings was relatively less as compared to the performance of individual chemicals.

*J. Cotton Res. Dev.* **3** (2) 169-173 (July 1989)

## **Chemical control of myrothecium leaf spot disease of cotton**

N. K. TANEJA AND SHEO RAJ

*Division of Plant Pathology  
Central Institute for Cotton Research,  
Post Bag No. 125, GPO, Nagpur-440 001*

**ABSTRACT :** *In vitro* evaluation of 14 fungicides against *Myrothecium roridum* showed that seven fungicides viz., Bavistin, Blitox 50, Delsan, Dithane M-45, Dithane Z-78, Fytolan and Pausin M were effective in completely inhibiting the growth of the fungus. Testing of six fungicides (Bavistin, Blitox 50, Delsan, Dithane M-45, Dithane Z-78 and Pausin M) under field conditions revealed that all the fungicides were effective in controlling the disease.

*J. Cotton Res. Dev.* **3** (2) 174-184 (July 1989)

## **Rainfall analysis in cotton growing areas : A retrospection**

C. D. RAVINDRAN AND R. G. DANI

*Statistics Section and Division of Crop Improvement  
Central Institute for Cotton Research, Nagpur-440 001*

**ABSTRACT :** Studies on rainfall analysis reflecting on the type of geographical variation in different cotton zones are briefly reviewed. Characteristics of the southwest monsoon have been summarised in the context on agrometeorological and drought studies based on long-term analyses of data on rainfall. General applications of the climatological water budgetting and water balance models have also been reviewed. Instances of rainfall probability analysis in relation to cotton crop/yield have been cited. Some studies on the influence of rainfall distribution on yield and seasonal *versus* locational variation have also been included.

*J. Cotton Res. Dev.* **3** (2) 185-190 (July 1989)

## **Efficacy of herbicides alone and with one dry hoeing for controlling weeds in cotton**

A. S. DHINDWAL, B. D. YADAV AND M. S. KAIRON

*HAU Cotton Research Station, Sirsa*

**ABSTRACT :** Field investigations were carried out for two consecutive years of 1980 and 1981 at the HAU Cotton Research Station, Sirsa to study the efficacy of some herbicides viz., fluchloralin @ 1.20 and diuron @ 0.75 kg a.i./ha as pre-plant and diuron 0.75, paraquat @ 1.00 and diuron @ 0.75 + paraquat @ 1.00 kg a.i./ha as post-emergence, each without and with one dry hoeing at 30 DAS, on weed control and yield of cotton. The results revealed that pre-plant application of fluchloralin @ 1.20 kg a.i./ha as well as a combination of diuron @ 0.75 + paraquat @ 1.00 kg a.i./ha applied post emergence (50 DAS) were quite effective in reducing the population and green bio-mass of weeds, recorded after 75 and 125 days of sowing. However, among the herbicides tested, fluchloralin @ 1.20 kg a.i./ha applied at pre-plant stage proved significantly superior producing greater yield of seed-cotton. Further, supplementation of each herbicide treatment with one dry hoeing at 30 DAS, proved to be a beneficial addition in reducing weed infestation and increasing cotton yields. The potential reduction in seed-cotton yield due to weed

infestation was as high as 41.6% in 1980 and 47.5% in 1981 crop seasons, over the weed-free environment.

*J. Cotton Res. Dev.* **3** (2) 191-194 (July 1989)

## **Response of cotton variety LH 900 in relation to planting dates, plant spacing and time of nitrogen application**

Z. S. BRAR, M. S. DHALIWAL, J. N. KAUL AND S. P. SINGH

*Department of Agronomy*

*Punjab Agricultural University, Ludhiana-141 004*

**ABSTRACT** : Studies on time of planting, plant spacing and time of nitrogen application were made on American cotton cv. LH 900 in 1985 and 1986 at Punjab Agricultural University, Ludhiana. Seed cotton yield was maximum when planted on May 20. Narrow plant spacing of 15 cm gave higher yield than wider spacing of 30 cm. The seed cotton yield and the yield attributes were not significantly affected by the time of nitrogen application.

*J. Cotton Res. Dev.* **3** (2) 195-202 (July 1989)

## **Optimum plot size in desi cotton**

SHARAD BHATNAGAR AND B. P. S. LATHER

*Department of Plant Breeding*

*Haryana Agricultural University, Hisar-125 004*

**ABSTRACT** : A uniformity trial on **desi** cotton (DS-1) was conducted during **kharif**, 1986 at Cotton Research Station, Sirsa (Haryana). The decrease in C. V. with an increase in plot size was observed in either direction but the decrease in C.V. was more rapid along E-W direction. Smith's (1938) equation  $Y = aX^b$  was found suitable for the relationship between plot size and C.V. A plot size of 8.64 sq.m with three replication was considered to be optimum.

*J. Cotton Res. Dev.* **3** (2) 203-207 (July 1989)

## **Polymerization-Crosslinking of acrylamide onto cotton fabric**

SAROJ S. JEET SINGH AND B. N. CHAULKAR

*Department of Clothing & Textiles*

*Haryana Agricultural University, Hisar-125 004*

**ABSTRACT** : Effect of acrylamide polymerization onto cotton using a crosslinking agent and redox catalytic system has been investigated. A pad-dry-cure process was used for the application of finish. The effect of initiators, pH, temperature and duration of drycure reaction was investigated. The most excellent results were obtained using ammonium persulphate sodium thiosulphate as initiators at pH 5.5 after curing at 140°C for 10 minutes. The crease recovery angle was improved without adverse effect on other properties.

*J. Cotton Res. Dev.* **3** (2) 208-214 (July 1989)

## **Effect on herbicides on weeds and growth of *Hirsutum* cotton**

A. S. DHINDWAL, K. L. CHHABRA, M. S. KAIRON AND B. P. S. LATHER

*HAU Cotton Research Station, Sirsa*

**ABSTRACT :** Field investigations were conducted at the HAU Cotton Research Station, Sirsa to test the efficacy of herbicides for controlling weeds and their effect on fruiting behaviour, yield and quality of seed-cotton. The population and dry weight of weeds at various stages of crop growth were reduced drastically with the use of herbicides, except oxyfluorfen @ 0.15 kg a.i./ha which proved ineffective in controlling weeds. On an average, under lesser crop-weed competition, the formation of squares and flowers and also the bolls picked per plant were significantly greater, but the total abscission of these fruiting parts was invariably higher. Amongst the herbicides, cyanazine @ 1.25 kg a.i./ha applied at 20 DAS and supplemented with one dry hoeing at 30 DAS was the most promising treatment giving a mean yield 800 kg seed-cotton per hectare and was statistically at par with weed free treatment. Weeds reduced the mean potential yield by 51.3 per cent. Reduced crop-weed competition had a favourable effect on the quality characters like boll weight, GOT, seed-index, lint-index and fibre length but had no influence on boll infestation.

*J. Cotton Res. Dev.* **3** (2) 215-220 (July 1989)

### **Water absorption characteristics of absorbent polymer prepared by gamma irradiation**

V. IYER, P. V. VARADARAJAN, K. H. SAWAKHANDE AND N. D. NACHANE

*Cotton Technological Research Laboratory, Matunga, Bombay-400 019*

**ABSTRACT :** Superabsorbent polymers were prepared by grafting acrylonitrile grafted to corn starch employing gamma ray radiation as initiator. Since they have good capacity to absorb and retain water, their water holding capacity under various humidity levels was studied. The study of water absorption and desorption cycles on absorbency indicated a decrease in the absorbency values with time. Amendment with soil improved its water holding capacity. Thus, there is good potential use for product as a water conserver under dry conditions and also as a water holding agent in the soil.

*J. Cotton Res. Dev.* **3** (2) 221-227 (July 1989)

### **Effect of various irrigation schedules on yield, consumptive use and water use efficiency of desi cotton (*Gossypium arboreum*) in northern Rajasthan**

B. S. SIDHU, R. K. SIAG AND B. L. VERMA

*Agricultural Research Station*

*Sri Ganganagar-335 001, Rajasthan*

**ABSTRACT :** An experiment of irrigation scheduling in *arboreum* cotton was conducted during **kharif** seasons of 1985-86 and 1986-87 at Agricultural Research Station, Sri Ganganagar (Rajasthan). Results of data revealed that to obtain maximum seed cotton yield of *arboreum* cotton three irrigations at 30 days after sowing, bud formation and boll development stages should be applied in sandy loam soils. Likewise consumptive use, water use efficiency, no. of opened bolls/plant and weight/boll were also found maximum at the application of three irrigations as mentioned earlier.