ABSTRACT
***Journal of Cotton Research and Development* 26 (2) July, 2012**

J. Cotton Res. Dev. **26** (2) : 147-154 (July, 2012)

STMS markers for genetic diversity of *Gossypium hirsutum* L. core collection

V. M. PAIKRAO, A. B. DONGRE* , S. S. PANDE AND M. P. RAUT
Biotechnology Laboratory, Central Institute for Cotton Research, Nagpur 440 010
**E-mail : abdcicr@gmail.com*

ABSTRACT: Forty core accessions of *G. hirsutum* L. were analyzed for genetic diversity, relationship and molecular identity. Twenty-two polymorphic STMS primers produced a total of 118 alleles of which 82 were found to be polymorphic with an average of 4.21 alleles/primer, resulted in 73.51 per cent polymorphism and average numbers of polymorphic alleles/primer were observed to be 3.15. Different primers produced a different level of polymorphism among different core accessions. The similarity coefficient of dendrogram calculated by STMS markers was found to be in the range of 0.48-1.00. The UPGMA clustering pattern of forty cotton core accessions using STMS markers showed that all forty core accessions could be grouped in two broad clusters, cluster I and cluster II with similarity coefficient of 0.48 and bootstrap support of 100 per cent. Principal Coordinate Analysis (PCA) based on genetic similarity matrices were used to visualize the genetic relationships among core accessions. Based on the clustering pattern, genetically distinct core accessions were identified that could be potentially important sources of accessions for further cotton improvement in the country.

J. Cotton Res. Dev. **26** (2) : 155-158 (July, 2012)

Bioefficacy of selected isolated *Bacillus thuringiensis* strains against *Helicoverpa armigera*

RAVITA, KAMLA CHAUDHARY AND SANJEEV KUMAR*
Department of Molecular Biology and Biotechnology, CCS Haryana Agricultural University, Hisar 125 004
**E-mail : sanjeevksidhar@gmail.com*

ABSTRACT : Harmful resident effects of chemical insecticides have diverted our attention to use *Bacillus thuringiensis* based bio insecticides for specific insect control. An attempt has been made to isolate and characterize native strains of *Bacillus thuringiensis* (*Bt*) effective against *Helicoverpa armigera* (from soil and dead insect larvae). Of the total sixty *Bt* isolates (20 from soil and 40 from larval cadavers) 4 isolates L 10, L 32, L 33 and S 14 caused 100 per cent mortality of larvae of *H. armigera*. Selected *Bt* strains *Bacillus thuringiensis* preparations. Dipel and Halt both under laboratory and field conditions were effective in controlling the larvae of *H. armigera.*

J. Cotton Res. Dev. **26** (2) : 159-162 (July, 2012)

Biochemical tests: Reliable tools for estimation of germination in *desi* cotton (*Gossypium arboreum* L.)

RAHUL JHAMB, V.S.MOR*, O. S. DAHIYA, AXAY KUMAR AND AMIT SINGH
Department of Seed Science and Technology, CCS Haryana Agricultural University, Hisar 125 004
**E-mail : virendermor@gmail.com*

Abstract : Seed is a vital ingredient in agriculture. The quick and reliable estimation of planting value is more important in both internal and external seed trade. The standard germination test requires longer period for prediction of viability. In search of quick and reliable laboratory test for estimation of germination**,** 20 seed lots of *desi* cotton (*Gossypium arboreum*) were evaluated by tetrazolium test (Tz), dehydrogenase activity test (DHA) and electrical conductivity test (EC). These seed lots were also tested for standard germination in the laboratory under controlled conditions for comparison of reliability of the quick tests. The results indicated that all biochemical tests showed significant association among the parameters. Standard germination had significant and positive correlation with Tz test (0.907**), DHA test (0.964**) whereas negative and significant correlation with EC (-0.951**). Therefore, Tz and DHA tests were found more reliable predictor for estimation of standard germination. The combination of these could estimate standard germination to a reliable level (R^2 = 0.989).

J. Cotton Res. Dev. **26** (2) 163-166 (July, 2012)

Stability analysis of *Bt* transgenic cotton hybrids of *Gossypium hirsutum* L. for lint yield and fibre quality traits

TARANJIT SINGH, R S SOHU*, PARAMJIT SINGH, PANKAJ RATHORE, P. S. SEKHON, G. S. BUTTAR, H. HASSAN AND GURPREET SINGH

Department of Plant Breeding and Genetics, Punjab Agricultural University, Ludhiana 141 004
**E-mail : rssohu@rediffmail.com*

ABSTRACT : The pooled analysis of variance revealed highly significant genotypic, environmental and genotype environment (GE) interaction mean squares for all the traits. Highly significant mean squares for heterogeneity between regressions were also observed for all the characters which indicated that the predictions can be made about the stability of hybrids over the environments. But the significance of deviation from regression for all the hybrids under test showed that none of the hybrids gave stable performance over environments for any fibre trait. In spite of this some hybrids like MRC 6304 *Bt* and Bunny *Bt* showed above average stability for lint yield, 2.5 per cent span length, fibre strength. Similarly MRC 6301 *Bt*, RCH 134 *Bt* and LHH 144 N*Bt* gave stable performance for some fibre traits.

J. Cotton Res. Dev. **26** (2) 167-171 (July, 2012)

Diallel analysis for quantitative traits in *Gossypium hirsutum* L.

K. T. AMBHORE, S. P. PANDIT, V. A. LODAM* AND B. R. PATIL
Department of Agricultural Botany, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola 444 104
**E-mail : lodam000agricos@gmail.com*

ABSTRACT : The present study was undertake to estimates the general and specific combining ability in full diallel mating design involving six parents. The variance due to *gca* was higher than *sca* for all the characters indicating the predominance of additive gene action. Out of six parents AKH 8660, AKH 08l and LRK 516 was good general combiner for seed cotton yield/plant and with most of the yield components. Three F, crosses *i.e.* AKH 87B x LRK 516, AKH 87B x AKH 081, AKH 8660 x AKH 081 and two reciprocal crosses AKH 081 x AKH 87B and LCMS 2 x AKH 70G were good specific combiner for seed cotton yield/plant and also with some of the yield components.

J. Cotton Res. Dev. **26** (2) : 172-175 (July, 2012)

In solium selection for cotton transformants resistant to kanamycin

SUMA C. MOGALI*, B.M. KHADI AND I.S. KATAGERI
University of Agricultural Sciences, Dharwad 580 005
**E-mail : sumamogali@gmail.com*

ABSTRACT: The kanamycin resistance encoded by the transgene neoomycin phosphotransferase II gene (npt II) of transposon Tn_5 is widely used in higher plant genetic transformation and is commonly used as a reporter gene. In this report the feasibility of applying kanamycin with the aid of cotton swab (weighing about 200 mg), completely saturated with kanamycin @ 300 mg/l in selecting for kanamycin resistant cotton transformants, grown in soil has been assessed. The kanamycin resistant transformants were effectively selected by this method. This procedure makes kanamycin as useful as the herbicide resistance genes in providing a truly culture free screening and bypasses the problems associated with sterile techniques.

J. Cotton Res. Dev. **26** (2) : 176-180 (July, 2012)

Direct and residual effect of integrated nutrient management on productivity and fertility status of cotton wheat cropping system

DEVRAJ*, PROMILA KUMARI, K.K.BHARDWAJ, PERVENDER SHEORAN, R.S.ANTIL, B.S.DUHAN AND GURNAM SINGH
Department of Soil Science, CCS Haryana Agricultural University, Hisar 125 004.
**E-mail : devraj_chauhan@rediffmail.com*

Abstract : A field experiment was conducted for three successive years (2004-2006) at Research Farm, CCS Haryana Agricultural University, Hisar to study the direct and residual effect of INM on productivity and fertility status of cotton wheat cropping system. Nine treatment combinations *i.e.* control (T_1), RDF (T_2), RDF+$ZnSO_4$ (T_3), RDF+$FeSO_4$ (T_4), RDF+$ZnSO_4$+$FeSO_4$ (T_5), 50 per cent N through pressmud + 50% N through urea (T_6), 25% N through pressmud + 75% N through urea (T_7), RDF+S(T_8) and RDF+$ZnSO_4$ foliar (T_9) were applied to cotton. Just after harvesting of cotton, wheat was grown in the same plots with recommended dose of fertilizers. The highest seed cotton yield (2401 kg/ha) was observed where RDF+S was applied and yield was about 14 per cent higher than that of RDF. Pressmud was also found to be a good source of

nutrients and about 6 per cent higher productivity in terms of seed cotton yield was observed when 50 per cent N was applied through pressmud and remaining 50 per cent N was applied through urea. The residual effect of these treatments was also observed on succeeding wheat crop and about 9 and 6 per cent higher grain yield of wheat was observed with the application of RDF+S (T_8) and pressmud (T_6) applied treatment. The post harvest available N, K and S status were decreased as compared to initial values, however, available P increased over its initial value in all the treatments.

J. Cotton Res. Dev. **26** (2) : 181-185 (July, 2012)

Effect of salt stress on antioxidative enzymes in the leaves of salt tolerant and salt sensitive genotypes of cotton

NISHA KUMARI, VEENA JAIN* AND GURMEET TALWAR
Department of Biochemistry, CCS Haryana Agricultural University, Hisar 125 004
**E-mail : rvjain@hau.ernet.in; veena.nicejain@gmail.com*

ABSTRACT : The present study was carried out to investigate the effect of NaCl salinization on antioxidative enzymes in salt sensitive (H 1236) and salt tolerant (H 1226) cotton genotypes. Activities of various antioxidative enzymes, *viz.*, glutathione reductase (GR), catalase (CAT), peroxidase (POX) and ascorbate peroxidase (APX) increased in both genotypes but the level of increase was much higher in the tolerant genotype (H 1226) as compared to salt sensitive genotype (H 1236). Though there was no increase in superoxide dismutase activity upon NaCl treatment, the basal level of superoxide dismutase was much higher in the tolerant genotype (57.60 units/gFwt.) as compared to the sensitive genotype (44.93 units/gFwt.). The basal constitutive activities of H_2O_2 detoxifying enzymes *viz.* peroxidase and ascorbate peroxidase were also higher in tolerant genotype. The results presented show that higher increase in activities/higher basal activities of antioxidative enzymes may be responsible for imparting salt tolerance in H 1226.

J. Cotton Res. Dev. **26** (2) 186-189 (July, 2012)

Drip fertigation of major, secondary and micronutrients for enhancing the productivity of extra long staple *Bt* cotton

P.NALAYINI*, S.PAUL RAJ AND K. SANKARANARAYANAN
Central Institute for Cotton Research, Regional Station, Coimbatore 641 003
**E-mail: nalayiniganesh@gmail.com*

ABSTRACT : Field experiment was conducted during 2006-2007 and 2007-2008 cropping season (August – February) at Central Institute for Cotton Research, Regional Station, Coimbatore to find out the efficient water conservation method and to standardize the optimum fertigation technique for ELS *Bt* cotton, RCHB 708. The results revealed that ELS *Bt* cotton responded significantly to poly mulch + drip and drip method. Among the water conservation techniques, poly mulch + drip method recorded significantly higher seed cotton yield (average of 6732 kg/ha) followed by drip system without poly mulch with an average seed cotton yield of 5033 kg/ha as against the lowest seed cotton yield of 4096 kg/ha under conventional method. The enhancement in seed cotton yield was 64.4 per cent due to drip + poly mulching and 22.8 per cent due to drip. Among the nutrient management techniques, application of 100 per cent of recommended NPK (120: 60: 60 kg/ha, N and K in four equal splits) with either foliar spraying of 0.15 per cent boron as solubor (twice) during flowering to boll development stages or magnesium sulphate @ 50 kg/ha as drip fertigation were *on par* with application of either 100 per cent or 75 per cent of recommended NPK with 50kg each of zinc sulphate, magnesium sulphate and foliar spraying of boron 0.15 per cent as solubor.

J. Cotton Res. Dev. **26** (2) : 190-193 (July, 2012)

Influence of *in situ* soil moisture conservation and INM techniques on yield and economics of rainfed *Bt* cotton

D.N GOKHALE, A.S. CHAVAN AND S.K. RASKAR*
Department of Agronomy, College of Agriculture, Marathwada Agricultural University, Parbhani 431 402
**E-mail : mr.sandeepraskar@rediffmail.com*

ABSTRACT : A field experiment was conducted during 2007-2008, 2008-2009 and 2009-2010 at Marathwada Agricultural University, Parbhani. The experiment was laid out in a split plot design with three replications. The treatment comprises of three soil moisture conservation techniques and six integrated nutrient management practices. As regards to *in situ* soil moisture conservation techniques treatment S_1 opening of furrow in alternate row recorded significantly highest seed cotton yield (2758, 2214 and 1452 kg/ha) as compared to treatment S_3 cotton + straw mulching (2421, 2003 and 1233 kg/ha) and treatment S_2 intercropping of cotton with soybean (2036, 1626 and 1106 kg/ha) during 2008-2008, 2008-2009 and 2009-2010 respectively. The treatment I_6 application of 100 per cent RDF + micronutrients Zn, Fe based on soil testing and treatment I_5 - application of RDF with soil testing 75 per cent through Inorganic + 25 per cent through vermicompost were *at par* with each other and recorded significantly higher seed cotton and seed cotton equivalent yield as compared to rest of the fertilizer treatments. Cotton + soybean intercropping system recorded significantly higher gross, net returns and benefit: cost ration as compared to rest of the moisture conservation techniques.

J. Cotton Res. Dev. **26** (2) 194-198 (July, 2012)

Response of *Bt* and non *Bt* cotton (*Gossypium hirsutum* L.) hybrids to nutrient and pest management

A.S.TAYADE*, A.R.RAJU AND M.V.DHOBLE
Marathwada Agricultural University, Parbhani 431 402
**E-mail : drast_agron@rediffmail.com*

ABSTRACT : Field experiments were conducted during *kharif* seasons of 2004-2005 and 2005-2006 at Parbhani to study the response of *Bt* and non *Bt* cotton (*Gossypium hirsutum*) hybrids to nutrient and pest management. Transgenic MECH 184 *Bt* cotton hybrid was found most advantageous and produced significantly higher seed cotton yield/plant, bigger boll size, seed cotton yield (ha), harvest index and matured earlier as compared to both non *Bt* cotton hybrids (MECH 184 non *Bt* and PHH 316). The pooled seed cotton yield results indicated that MECH 184 *Bt* cotton produced significantly higher seed cotton yield (1658 kg/ha) over non *Bt* counterparts (1071 kg/ha). The performance of MECH 184 *Bt* was exceedingly superior and it produced 54.20 and 52.77 per cent more seed cotton yield than MECH 184 and PHH 316 non *Bt* cotton hybrids The response of insecticidal pest management in cotton hybrids was found quite effective in controlling cotton pest complex and finally realized significantly higher seed cotton yield (1377 kg/ha) than biopesticidal pest management (1163 kg/ha).The application of graded level of chemical fertilizer *i.e.* 100:50:50 and 80:40:40 kg NPK/ha under rainfed condition were equally effective in enhancing plant height, number of internodes, monopods, sympods picked bolls, and recorded significantly higher seed cotton yield (1349 and 1148 kg/ha),respectively over application of FYM 10 t/ha (1148 kg/ha).

J. Cotton Res. Dev. **26** (2) 199-201 (July, 2012)

Performance of cotton varieties under different growing environments based on agrometeorological indices in semi arid conditions of Hisar

NARESH KUMAR*, RAM NIWAS, M. L. KHICHAR , BARUN BISWAS AND O. P. BISHNOI
Department of Agricultural Meteorology, CCS Haryana Agricultural University, Hisar 125 004
**E-mail : iaas.hisar@gmail.com*

ABSTRACT : Present study was carried out during *kharif* 2007 and 2008 to enumerate performance of HS 6 and H 1226 under three different growing environments. Pooled data of two years showed that 15 April sown crop required more days to reach a particular phonological stage, whereas lesser days were recorded under 15 May sowing. Variety HS 6 took less days in all growing environments as compared to H 1226 for all cumulative the phenophases. H 1226 utilized higher number of heat units as compared to HS 6. Highest values of these indices were obtained for 15 April sowing followed by 1 May and were lowest in 15 May sowing. Both the varieties consumed more cumulative heat units (HU) to attain all the phenophases under 15 April sowing. The number of bolls/plant were significantly higher in H 1226 (64.8 and 73.3) than HS 6 (58.7 and 60.2) during both seasons. Seed cotton yield was also recorded significantly higher (23.8 q/ha) in 15th April sown crop and lowest (19.6 q/ha) in 15th May, sown crop during both the seasons.

J. Cotton Res. Dev. **26** (2) : 202-203 (July, 2012)

Integrated nutrient management in *hirsutum* cotton

M.S. SHAH AND R.I. SISODIA*
Main Cotton Research Centre, Rajmata Vijayaraje Scindia Krishi Vishwa Vidyalaya, Khandwa 457 339
**E-mail : risisodia2010@gmail.com*

ABSTRACT : A field experiment was conducted to find out the suitable nutrient management strategies for *hirsutum* cotton variety JK 4 under rainfed conditions for three years during *kharif* 2005-2006, 2006-2007 and 2007-2008 in sandy clay loam soil at Main Cotton Reserarch Station, Khandwa. The treatments were absolute control, FYM @ 10t/ha, recommended dose (RD) of NPK (80: 40: 20 kg/ha), RD of N alone, RD of N and P, RD of NPK+5t/ha FYM, 50 per cent RD of NPK+10 t/ha FYM, 50 per cent RD of NPK+10 t /ha FYM+2 per cent urea, RD of NPK+10 t/ha FYM and RD of NPK+ Sunhemp @ 15 kg/ha. Application of RD of NPK+ 10 t/ha FYM (T 9) recorded highest seed cotton yield during all the three years of experimentation (1924, 1723 and 2010) kg/ha, respectively. Lowest seed cotton yield was record with absolute control.

J. Cotton Res. Dev. **26** (2) 204-206 (July, 2012)

Influence of plant geometry and nitrogen levels on performance of cotton hybrids under rainfed conditions in vertisols of Andhra Pradesh

S. BHARATHI *, G.M.V. PRASADA RAO, S. RATNA KUMARI AND V. CHENGA REDDY
Acharya N. G. Ranga Agricultural University, Regional Agricultural Research Station, Lam, Guntur 522 034
**E- mail : bharathi_says @yahoo. com*

ABSTRACT : A field experiment was conducted at Regional Agricultural Research Station, Lam, Guntur under rainfed condition during *kharif*, 2009 to work out optimum spacing and nitrogen level for cotton

hybrids KDCHH 712 and NCS 145. Among the two hybrids tested, NCS 145 recorded higher seed cotton yield than that with KDCHH 712. Further, closer spacing with 25 per cent more than the recommended dose *i. e.*150 kg N/ha recorded higher seed cotton yield in both the hybrids. Quality of the fibre was not influenced by either spacing or fertilizer application. Further, no significant variations were observed regarding seed index and lint index.

J. Cotton Res. Dev. **26** (2) 207-208 (July, 2012)

Effect of spacing and fertilizer levels on *hirsutum* cotton variety H 1300 in canal command area of north west Rajasthan

P. L. NEHRA* AND P. S. YADAV
Swami Keshwanand Rajasthan Agricultural University, Agricultural Research Station, Sriganganagar 335 001
**E-mail : pl.nehra@yahoo.co.in*

ABSTRACT: The results revealed that narrow spacing of 67.5 x 30 cm gave significantly higher seed cotton yield over wider spacing. Application of 125 per cent of recommended dose of fertilizer produced the higher seed cotton yield (2121 kg/ha) but statistically *at par* with 100 per cent recommended dose of fertilizer (2063 kg/ha). Therefore, application of 100 per cent R.D.F (80:40:20 kg/ha) seems to be the optimum dose for *hirsutum* cotton variety H 1300 with RS 2013, *at par* results have been obtained.

J. Cotton Res. Dev. **26** (2) : 209-211 (July, 2012)

Effect of spacing and canopy management on yield, quality and economics of *Bt* cotton

K. SHEKAR*, M. VENKATA RAMANA, S.SRI DEVI AND S. RATNA KUMARI
Department of Agronomy, Acharya N. G. Ranga Agricultural University, Hyderabad 500 030
**E-mail : shekaragrico@gmail.com*

ABSTRACT : The experimental results revealed that 90 x 30 cm spacing recorded significantly higher seed cotton yield (1668 kg/ha) and net monetary returns (Rs.24, 209/ha) over that of 90 x 45 cm and 90 x 60 cm spacings. Among the canopy management practices, seed cotton yield (1635 kg/ha), net returns (Rs.24, 572/ha) were significantly higher with two sprays of chloro mepiquat chloride when compared to single spray (1556 kg/ha), (Rs.23,267/ha), de topping (1310 kg/ha), (Rs.17, 566/ha) and control (1282 kg/ha), (Rs.17,494/ha), respectively. Quality parameters did not differ significantly either with the spacing or canopy management practices except for fibre strength.

J. Cotton Res. Dev. **26** (2) 212-213 (July, 2012)

Effect of square removal on distribution of fruiting forms in cotton

H. S. THAKARE* AND V. KUMAR
Navsari Agricultural University, Navsari 396 450
**E-mail : harish_0503@yahoo.co.in*

ABSTRACT : A field experiment was carried out at Navsari Agricultural University, Main Cotton Research Station, Surat during *kharif* 2008-2009. Twenty treatments, consisting of 5 hybrids of cotton (*viz.,* RCH 2 *Bt*, JKCH 99 *Bt*, NCEH 2R *Bt*, Mallika *Bt* and non *Bt* G.Cot.Hy.10) and 2 concentrations of ethylene [*i.e.* 30 and 45 ppm at square initiation (30-40 DAS)] and one time hand removal of squares to study the

effect of square removal on temporal and spatial distribution of fruiting forms in cotton. The results indicated that the higher number of bolls in the first (1st) and second (2nd) position of the fruiting branch and on the lowest fruiting branches in *Bt* hybrids as compared to non *Bt* hybrid and in square removal treatments (*i.e.* 30 and 45 ppm ethylene and mechanical removal of square) bear good number of fruiting forms at basal sympodia as compared to untreated control.

J. Cotton Res. Dev. **26** (2) 214-218 (July, 2012)

Impact of area wide management of cotton mealybug, *Phenacoccus solenopsis* (Tinsely) in Faridkot district of Punjab

SATNAM SINGH*, J.S. BRAR, SUNEET PANDHER, SUKHJINDER KAUR, P. JEYAKUMAR AND O. M. BAMBAWALE
Punjab Agricultural University, Regional Station, Faridkot 151 203
**E-mail : satnam@pau.edu*

ABSTRACT : The mealybug *Phenacoccus solenopsis* (Tinsely) (Hemiptera: Pesudococcidae) appeared as a serious threat to cotton in northern India during 2007-2008. An intensive area wide management strategy was carried out for three years in major (29) cotton growing villages of Faridkot from 2008 to 2010. Four cotton fields (two fixed and two random) at least of one acre size were selected to evaluate the impact of formulated area wide pest management programme. The fixed fields were marked using GPS (global positioning system). The data was recorded at weekly intervals on mealybug incidence using four scale grading (0-4) to calculate the per cent infestation and intensity of infested plants. Intensive surveys were carried out to educate the farmers about the effective management of mealybug through on and off-farm trainings, village level meetings, radio talks, newspapers etc. The important management practices disseminated among the growers were eradication of the weed hosts of mealybug from the main and around the field; deep burial of the infested weeds in the soil and not to dispose in water source such as canal etc, regular monitoring of the cotton fields; spot treatment of infested plants with recommended insecticides in rotation, washing of the implements before and after using to avoid dispersal of the mealybug. This programme had a great impact on mealybug incidence as compared to the year of outbreak *i.e.* 2007. The average per cent incidence was 8.06, 8.17 and 4.97 in 2008, 2009 and 2010, respectively which is indicative of the successful management of the pest in the progressive years of study. The intensity of the infested plants which was 1.07, 0.85 and 0.57 in 2008, 2009 and 2010, respectively, indicated that mealybug was present but with negligible intensity. The programme resulted in overall successful management of the pest in the major cotton pockets of Faridkot.

J. Cotton Res. Dev. **26** (2) 219-221 (July, 2012)

Comparative efficacy of different bio and synthetic insecticides against mealybug, *Phenacoccus solenopsis* Tinsley on transgenic cotton

SUNEET PANDHER*, SATNAM SINGH AND JYOTI JAIN
Punjab Argicultural University, Regional Station, Faridkot 151 203
**E-mail : suneet@pau.edu*

ABSTRACT : In the present study, new molecules including biopesticides were evaluated for their efficacy against mealybug. Among the insecticides tested during two years, 2008-2009 and 2009-2010, synthetic/ conventional insecticides *e.g.* Chlorpyriphos and Profenophos yielded the best results with maximum reduction in pest population. Among the biopesticides, entomopathogen *F. pallidoroseum* and fish oil resin soap gave the good results during 2008-2009 and 2009-2010 respectively. Slow knockdown action could be considered

one of the constraints under heavy pest attack as seen in 2008-2009 but 15 days after spray, mortality was *at par* in all the insecticides. During 2009-2010, entomopathogen *F. pallidoroseum* showed the maximum mean per cent reduction of 32.55 over control and was *at par* with *B. bassiana* (30.07).

J. Cotton Res. Dev. **26** (2) 222-226 (July, 2012)

Bioefficacy of *Verticillium lecanii* (1.15% WP) against sucking pest complex on transgenic *Bt* cotton

S. B. PATIL*., S. S. UDIKERI. AND N. B.VANDAL
Agricultural Research Station, University of Agricultural Sciences, Dharwad 580 007
**Email : patilsb_ent@rediffmail.com*

Abstract : *Verticillium lecanii* (Verticel) 1.15 per cent WP, entomopathogenic fungi was bioevaluated against sucking pest complex on transgenic *Bt* cotton in comparison with acetamiprid 20SP at Agricultural Research Station, Dharwad. Verticel @ 7.50 kg/ha registered least number of thrips, aphids and leafhoppers and found to be *on par* with acetamiprid 20 SP @ 100 g/ha. At 5.00 kg/ha, it was also found effective. Significantly higher seed cotton yield of 27.15q/ha (2008-2009) and 23.50 q/ha (2009-2010) was obtained through protection by Verticel @ 7.50 kg/ha respectively which was proved to be *on par* with acetamiprid 20 SP.

J. Cotton Res. Dev. **26** (2) 227-229 (July, 2012)

Evaluation of some new molecules against pink bollworm, *Pectinophora gossypiella* (Saunders) in cotton

R. K. KALYAN*, D. P. SAINI AND URMILA
Maharana Pratap University of Agriculture and Technology, Agricultural Research Station, Banswara 327 001
**E-mail : rkkalyan@rediffmail.com*

ABSTRACT: The field experiment was conducted at Agricultural Research Station, Banswara during *kharif 2006* and 2007 to study the relative efficacy of some new molecules namely, L. cyhalothrin 2.5 EC @ 25 a.i., thiodicarb 75 SP@ 750 a.i., profenophos 50 EC @ 500 a.i. along with chlorpyriphos 20 EC @ 500 a.i., quinalphos 25 EC @ 500 a.i. and deltamethrin 2.8 EC @15 a.i./ha against pink bollworm. On the basis of pink bollworm larvae/20 green bolls, per cent green bolls damage and per cent locule damage and seed cotton yield/ha, thiodicarb 75 SP @ 750 a.i., L. cyhalothrin 2.5 EC @ 25 a.i. and deltamethrin 2.8 EC @15 a.i./ha were recorded the best treatments. B: C ratio was calculated on the basis of mean yield, the treatment L. cyhalothrin 2.5 EC gave highest B: C ratio of 22.3, followed by profenophos 50 EC (5.4) and deltamethrin 2.8 EC (5.1).

J. Cotton Res. Dev. **26** (2) 230-233 (July, 2012)

Biological parameters of *Chrysoperla carnea* Stephens as influenced by *Bt* and non *Bt* cotton fed insect pests

P. N. MAGAR*, N. S. SATPUTE AND S. S. MADANKAR
Department of Entomology, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola 444 104
**Email: pramodmagar08@gmail.com*

ABSTRACT : A laboratory experiment was conducted to study the influence of *Bt* and non *Bt* cotton fed preys on biological parameters of *Chrysoperla carnea* and it was found that there was non significant *Bt* cotton mediated effect on the performance of *C. carnea* indicating the safety of *Bt* cotton to non targets. However, influenced performance of *C. carnea* was found due to prey suitability. The results revealed that the biological parameters like larval and pupal period, adult longevity, fecundity, incubation period of *C. carnea* was significantly influenced by different preys. Overall, significantly minimum days were required for completion of life cycle of *C. carnea* when fed on aphids. However, the life cycle seems to be prolonged when *C. carnea* was fed on leafhoppers. The predatory potential was also studied and it was found that *C. carnea* consumed maximum number of aphids (193.87), followed by *Helicoverpa armigera* Hubner (179.53 eggs and neonates) and least number of leafhoppers nymphs (142.74). Thus, the data on biological parameters and predatory potential revealed that the aphids were the most suitable prey for *C. carnea* followed by *H. armigera*, whereas, leafhopper was least suitable.

J. Cotton Res. Dev. **26** (2) 234-237 (July, 2012)

Influence of weather parameters on the incidence of thrips, *Thrips tabaci* Lindemann in cotton

S. SELVARAJ* AND D. ADIROUBANE
Department of Entomology, GB Pant University of Agriculture and Technology, Pantnagar 263 145
**E-mail : selvas84@gmail.com*

ABSTRACT : The studies were conducted at Pandit Jawaharlal Nehru College of Agriculture and Research Institute, Karaikal to see the influence of weather factors on the incidence of thrips, *Thrips tabaci* at five different date of sowing on three different varieties of cotton. It was observed that *T. tabaci* had three peak periods of incidence *i. e.* fifth week of March, first week of April and second week of April, respectively. Thus, peak period coincided with seven week to nine week old crop. Maximum thrips population was build up at temperature range from 23° to 34° C, relative humidity range from 90 to 70 per cent, rainfall 1.5 mm and wind velocity 4.7 to 5.6 km/h. The higher incidence of thrips population was recorded in SVPR 3 followed by MCU 7 and SPCH 22. Thrips population build up showed a significant and positive correlation with temperature, relative humidity and sunshine h, whereas negative correlation with wind velocity, rainfall, and evaporation.

J. Cotton Res. Dev. **26** (2) 238-242 (July, 2012)

Seasonal incidence of major sucking insect pests of *Bt* cotton and their natural enemies in Marathwada region

N.K.BHUTE*, B.B.BHOSLE, B.V. BHEDE AND D.G.MORE
Department of Entomology, Marathwada Agriculture University, Parbhani 431 402
**E-mail: nandu.bhute@rediffmail.com, nandu.bhute@gmail.com*

ABSTRACT : The field experiments were conducted during *kharif* 2007-2008 and 2008-2009 at Marathwada Agricultural University, Parbhani. Studies on seasonal incidence of major sucking insect pests of *Bt* cotton clearly indicated that during *kharif* 2007-2008 the incidence of aphids was highest (86.45/aphids/3 leaves) during 37th MW. Leafhopper's highest population (13.80 /3 leaves) was observed during 40th MW also thrips reached at highest incidence (110.10 thrips/3 leaves) in 40th MW. Highest incidence of whitefly (52.75 /3 leaves) was noticed during 45th MW while mealybug's highest incidence was 42.40 mealybugs/2.5 cm shoot length was observed in 51st MW. During *kharif* 2008-2009 the peak incidence of aphids (75.40/three leaves) observed in 35th MW while Leafhopper's peak (13.75) was recorded in 39th MW. The peak incidence of thrips (107.65/ three leaves) was recorded in 40th MW and whitefly (63.00 whiteflies/3 leaves) in 45th MW. The peak incidence of mealybugs 2.25 mealybugs/2.5 cm shoot length noticed in 49th MW. Further, with regard to seasonal incidence of predators like coccinellids, chrysopids, syrphids and spiders on *Bt* cotton it did not differ significantly. The predators were present throughout the season. When there was incidence of sucking insect pests like aphids, whitefly, mealybug etc. Simple correlation studies revealed that weather parameters *viz.,* rainfall, rainy days, morning and evening RH showed significant and negative correlation with aphids and whitefly population while maximum temperature showed positively significant correlation with jassids, thrips and whitefly population. All weather parameters showed significantly negative correlation with the infestation of mealybugs.

J. Cotton Res. Dev. **26** (2) : 243-247 (July, 2012)

An approach to manage sucking pest complex with plant products in cotton eco system

S. L. BORKAR*, S. V. SARODE AND K. D. BISANE*
Department of Entomology, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola 444 104
**E-mail : kolbisane@yahoo.co.in*

ABSTRACT : An experiment was carried out for two consecutive years of 2004-2005 and 2005-2006. In all, twenty different treatments comprising of NSE (*Neem* seed extract) 5 per cent, *neem* oil 1 per cent, Azadirachtin 1500 ppm @ 2 ml/l, CASE (Custard apple seed extract) 5 per cent were evaluated initially against sucking pests and continued further for evaluation against bollworms by scheduling the treatments *viz.*, HaNPV 250 LE/ha, *Bt* 1000 g/ha and spinosad 45 SC @ 0.01 per cent (0.2 ml/l). The application of *neem* oil 1 per cent merged as the most effective treatment in recording the minimum population of aphids and whitefly, while NSE 5 per cent was observed to be most effective in recording the lowest population of leaf hoppers and thrips. The treatment NSE 5 per cent followed by spinosad 45 SC observed as the most effective treatment as it has obtained the highest seed cotton yield. In general, the botanicals were effective upto 3 days after treatment.

J. Cotton Res. Dev. **26** (2) : 248-250 (July, 2012)

Impact of weather parameters on the appearance and development of bacterial blight of cotton in Haryana

ASHWANI KUMAR*, P. K. CHOHAN, R. SINGH, J. K. DANG AND M. S. CHAUHAN
Department of Plant Pathology, CCS Haryana Agricultural University, Hisar 125 004
**E-mail: dahiya.ashwani@gmail.com*

ABSTRACT : Among the diseases, bacterial blight is one of the most important diseases of cotton causing considerable damage to the cotton in Haryana state. Studies were conducted at the Research Area, Department of Plant Pathology, CCS Haryana Agricultural University, Hisar to find out weather based conditions to predict the bacterial blight of cotton incited by *Xanthomonas axonopodis* pv. *malvacearum* in Haryana on a susceptible cultivar HS 6. The present study revealed that disease developed faster, when the atmospheric temperature (maximum, average 34.6±1°C) and (minimum, average 25.0±1°C) with relative humidity ranged above 85.5 per cent followed by rains during the standard week of 34-36th.

J. Cotton Res. Dev. **26** (2) : 251-253 (July, 2012)

Effect of different sowing dates and spacings on the incidence of cotton leaf curl virus disease (CLCuD) under Haryana conditions

R. SINGH, ASHWANI KUMAR*, M.S. CHAUHAN, JAGDISH BENIWAL AND P. K. CHOHAN
Department of Plant Pathology, CCS Haryana Agricultural University, Hisar 125 004
E-mail : dahiya.ashwani@gmail.com

ABSTRACT : The cotton leaf curl virus disease (CLCuD) is a complex and serious threat in irrigated cotton belt of north India including Haryana, Punjab and Rajasthan. Studies were conducted at the Research Farm, Department of Plant Pathology, CCS Haryana Agricultural University, Hisar to find out the effect of sowing dates and plant spacings on the incidence of CLCuD on cotton (*Gossypium hirsutum*) cultivars HS 6 and H 1098. The present study revealed that disease incidence in both the varieties (HS 6 and H 1098) was highest (100 and 99.7%, respectively) in plots sown during first week of April. Disease incidence and intensity was highest at a spacing of 67.5 x 45 cm *viz.,* 25.6 and 17.6 per cent, respectively. The present study indicated that the incidence of CLCuV and seed cotton yield had remained depend on the plant spacings however, there has been no association among them.

J. Cotton Res. Dev. **26** (2) 254-257 (July, 2012)

Assessment of avoidable yield losses due to sucking pests in *Bt* cotton hybrids

P.S. SHERA*
Department of Plant Breeding and Genetics, Punjab Agricultural University, Ludhiana 141 004
**E-mail : psshera@rediffmail.com*

ABSTRACT: The relative abundance and avoidable losses due to sucking insect pests were estimated on three transgenic *Bt* cotton hybrids, *viz.*, RCH 134 (Bollgard I), MRC 6301 (Bollgard I) and NCS 145 (Bollgard II) under field conditions at Punjab Agricultural University, Ludhiana. Under unsprayed conditions, the mean population of leafhopper nymphs was more in NCS 145 BG II as compared to RCH 134 *Bt* and MRC 6301 *Bt*. The peak population of leafhopper was recorded 90 days after sowing (DAS) in NCS 145 BG II (26.0 / 3 leaves), 100 DAS in RCH 134 *Bt* (19.8 / 3 leaves) and 110 DAS in MRC 6301 *Bt* (18.6 / 3 leaves). The whitefly population crossed economic threshold level (6 adults / leaf) only once after 60 DAS in all the three hybrids. The extent of avoidable losses were 252 kg/ha (11.9 %) in MRC 6301 *Bt* as against 263 kg/ha (11.2 %) in RCH 134 *Bt* and 290 kg/ha (16.2 %) in NCS 145 BG II. The increase in yield due to control of sucking pests resulted in net profit of Rs 6224, 5916 and 6160/ha with a cost benefit ratio of 1: 5.7, 1: 5.4 and 1: 4.2 in RCH 134 *Bt*, MRC 6301 *Bt* and NCS 145 BG II, respectively.

J. Cotton Res. Dev. **26** (2) : 258-260 (July, 2012)

Management of anthracnose of cotton (*Gossypium* spp.) caused by *Colletotrichum capsici in vitro* by chemicals and bioagents

HOSHIYAR SINGH, JAGDISH BENIWAL*, V.K. MALIK AND H.S. SAHARAN
**E-mail : jbeniwal2016@gmail.com*

ABSTRACT: An attempt was made to see the efficacy of different chemicals and bioagents for the management of anthracnose of cotton. The experiment was conducted in Department of Plant Pathology, CCS Haryana Agricultural University, Hisar during 2009-2010. Results revealed that carbendazim and salicylic acid at 500 and 1000 ppm concentration gave 100 and 51.51 per cent growth inhibition of *Colletorichum capsici.* Among bioagents *Trichoderma viride* (88.00%) was found most effective in inhibiting the growth of the pathogen followed by *Pseudomonas fluorescens* (86.00%). Copper oxychloride among the conventional fungicide and magnesium sulphate among the non conventional chemicals gave significantly less growth inhibition. As compared to other fungicides all conventional fungicides gave maximum growth inhibition at 500 ppm concentration.

J. Cotton Res. Dev. **26** (2) 261-266 (July, 2012)

An analysis of growth and instability of cotton production in Maharashtra

A. R. REDDY*, SHUBHANGI ALEXANDER, SACHITA M. YELEKAR AND ANURADHA NARALA
Central Institute for Cotton Research, Nagpur 440 010
**E-mail : ar.reddy@gmail.com*

ABSTRACT : Compound growth rates of area, production and productivity were calculated by fitting exponential function for the period 1980-1981 to 2009-2010 as well as sub periods. It was found that during 2000-2001 to 2009-2010 cotton performed very well in most of the cotton growing districts and production increased at a significant high rate due to the increase in the productivity. Though there was a significant growth in area during 1990-1991 to 1999-2000 but it did not make any significant effect on production. Decomposition analysis revealed that change in the yield was the major source of output growth.

J. Cotton Res. Dev. **26** (2) 267-271 (July, 2012)

Ecofriendly absorbent cotton from non spinnable fibres

S. G. GAYAL*, R. D. NAGARKAR, N. D. KAMBLI AND R. P. KADAM
Chemical and Biochemical Processing Division, Central Institute for Research on Cotton Technology, Mumbai 400 019
**E-mail : sggayal@hotmail.com*

ABSTRACT : Absorbent cotton is also known as surgical cotton or cotton wool and mainly used for medical purposes in hospitals, nursing homes, dispensaries and at home (for first aid) etc. It is better known among masses as absorbent cotton because of its property of high fluid absorbency. Conventionally absorbent cotton is prepared by treating the short staple cotton with alkali. The present paper deals with the preparation of bio-absorbent cotton from short staple cotton using pectinase preparation. The enzymatically prepared absorbent cotton prepared from Bengal *desi* and RG8 cotton varieties is ecofriendly and reduces chemical pollution. The bioabsorbent cotton fulfills the standard norms and qualities and could find its application in biomedicine as surgical cotton.

J. Cotton Res. Dev. **26** (2) 272-276 (July, 2012)

Kraft paper and corrugated boxes from cotton plant stalks for packaging of mangoes

R. D. NAGARKAR*, A. J. SHAIKH , R. M. GURJAR AND M. G. AMBARE
Chemical and Biochemical Processing Division, Central Institute for Research on Cotton Technology, Mumbai 400 019
**E-mail : ravinagarkar@rediffmail.com*

ABSTRACT : A process was standardised to prepare good quality kraft paper from cotton plant stalks. Corrugation trials were successfully conducted on the kraft paper preparation. The corrugated boxes of desired sizes and designs were prepared for their suitability for packaging of fruits like mangoes was assessed by carrying out transportation trials. Results indicated that good quality kraft paper suitable for manufacture of CFB boxes can be prepared from cotton plant stalks. The CFB boxes, both regular CFB boxes and CFB boxes made of cotton plant stalk pulp were found to be suitable for packaging, transportation and storage of Alphonso mango fruits.

J. Cotton Res. Dev. **26** (2) 277-280 (July, 2012)

Socio economic impact and problems associated with *Bt* cotton production in Haryana

A. K. GODARA*, BAS KAUR, O.P. BISHNOI, S.K. MEHTA AND ASHOK KUMAR
Department of Extension Education, CCS Haryana Agricultural University, Hisar 125 004
**E-mail:godaraak@rediffmail.com*

Abstract: Present explanatory study was conducted in purposively selected Fatehabad district of Haryana state, due to maximum yield of cotton. A random sample of 80 *Bt* cotton growing farmers from 4 randomly selected villages was chosen as respondents of the study. Majority of the respondents perceived that *Bt* cotton reduces the insecticide use and thus health hazard incidences, increases household income and employment. Besides this, lack of lodging resistant *Bt* cotton hybrid, high rate of seedling mortality due to rain or high temperature at the time of germination causes repeated sowing, inadequate availability of quality *Bt* cotton seeds at sowing time in market, lack of coordination between service, supply and marketing agencies/ organizations were perceived as major problems.

J. Cotton Res. Dev. **26** (2) 281-285 (July, 2012)

Technological communication sources utilization pattern of Haryana women farmers for cotton cultivation

URMILA DEVI*, SHASHI KANTA VARMA, BAS KAUR, DEVENDER SINGH AND ASHOK KUMAR
Department of Home Science Extension Education, CCS Haryana Agricultural University, Hisar 125 004
**E-mail : urmil_dhukia@rediffmail.com*

ABSTRACT : The present investigation was carried out to study the technological communication sources utilization pattern by the farm women about recommended package of practices for cotton cultivation. A proportionate random sample of 150 farm women were selected from two districts (Sirsa and Fatehabad) of Haryana which were selected purposively as cotton is grown in large scale . It was found that most of the respondent used localite source of information whereas, the respondents using cosmopolite and mass media sources of information least frequently and only, radio, farm magazine, television and cassette recording were frequently used. It can also be inferred from the findings that family members, friends and neighbours as localite source of information were found to be fully satisfied by wherea as. The cosmopolite source of information were found somewhat satisfied**/**not satisfied and mass media sources such as, television, radio and audio visual aids were found somewhat satisfactory source of information by the farm women. On the other hand they perceived most needed localite sources such as village leader, *panchayat* members, traditional folk media and progressive farm men/women. All mass media and cosmopolite sources of information were perceived most needed for repetition of information except radio and television regarding cotton cultivation. So it can be concluded that women were not more aware of different sources of information, therefore, it can be inferred that need based training for farm women may be organized using different mass media and cosmopolite communication sources to enhance their potentiality to meet the challenges of the society and also for transfer of cotton cultivation technology.

J. Cotton Res. Dev. **26** (2) 286-289 (July, 2012)

Technological training need and interest of farm women for cotton cultivation operations of Haryana state

SHASHI KANTA VARMA*, URMILA DEVI, DEVENDER SINGH, VINITA JAIN AND ANITA GOYAL

Department of Extension Education and Communication Management, CCS Haryana Agricultural University, Hisar 125 004

**E-mail : shashikvarma@rediffmail.com*

ABSTRACT : The study was conducted in four villages, two from Raniya block (Sirsa) and two from Bhattu block (Fatehabad) of Haryana during 2004-2005 and 2005-2006. A purposive proportionate sample of 150 farm women, who were actively involved in farming, was selected. The data were collected with the help of structured interview schedule. The collected data were processed, tabulated and analyzed by using frequency, percentage, mean weight score, rank, etc. An equal number (46.00%) of the farm women were in young and middle age group belonging to general and backward caste. More than 64.67per cent were illiterate, having low family education status, negligible social participation belonging to nuclear family with agriculture as their main occupation, low innovative proneness. Regarding information input sources, use of localite source were of high extent, while low cosmopolite and mass media exposure. It is concluded that the weeding were found the most needed and interested training area by farm women with the highest rank of 2.49 mean score while the medium rank was found for storage, manure and fertilizer application ,harvesting and land preparation . The lowest rank of 1.39, 1.45 and 1.45 average mean score was found for irrigation, threshing and insect pest control respectively. Farm women reported their need and interest for farming in cotton cultivation.

J. Cotton Res. Dev. **26** (2) 290-291 (July, 2012)

Training needs of farmers' on *Bt* cotton technology

JOGENDER SINGH*, UDAIVIR SINGH, GURNAM SINGH, DEV RAJ, PARVENDER SHEORAN AND V.P. CHAHAL

CCS Haryana Agricultural University, Hisar 125 004

**E-mail : jstomarv@yahoo.com*

ABSTRACT: A study was conducted in Sirsa and Fatehabad districts of Haryana state to measure the farmers' training needs for *Bt* cotton production technology and their relationship with selected characteristics of *Bt* cotton farmers. Findings of the study revealed that majority of the *Bt* cotton farmers (56.67%) required intense training on features of *Bt* cotton production technology followed by insect surveillance, manures and fertilizer, *Bt* cotton varieties, harvesting and marketing. Correlation analysis revealed that area under *Bt* cotton, annual income and socio-economic status were found positively and significantly correlated with training needs.

J. Cotton Res. Dev. **26** (2) 292-296 (July, 2012)

Effect of blended cotton on dimensional properties of weft knitted fabrics

NISHA ARYA*, KRISHNA KHAMBRA, NIRMAL YADAV AND S. ARYA
Department of Textile and Apparel Designing, CCS Haryana Agricultural University, Hisar 125 004
**E-mail : nishasangwan@gmail.com*

ABSTRACT : The work was planned to study the dimensional properties of weft knitted P/C blended fabrics in different blend ratios. Six cotton varieties/hybrids available at CCS Haryana Agricultural University, Hisar *viz.*, HS6, H1117, H1098, HHH81, HHH223 and H974 were taken for the study. The fibre properties (fineness, mean fibre length, bundle strength, maturity coefficient and uniformity ratio) of all the cotton varieties were analyzed to select one of the best spinnable variety. Based on the preference of respondents and experts polyester fibre was selected for blending and spinning with the cotton. The study revealed that blending of cotton with polyester in different ratios was found to improve certain properties of cotton as well as polyester fabric. The dimensional properties *i.e.* loop length, bulk and area shrinkage decreased whereas stitch density and tightness factor increased with increased proportion of polyester in the blend. Maximum variability was observed in area shrinkage (CV wales = 11.85 and CV course = 4.10) followed bulk (CV=5.46) and stitch density (CV=3.87), loop length (CV = 0.80) and tightness factor (CV=0.82) showed very low variability. Being the producer of cotton, the rural masses can take up or adopt knitting as an income generating source, to set up a small scale enterprise.

J. Cotton Res. Dev. **26** (2) 297-299 (July, 2012)

Constraints perceived by the farmers in adoption of cotton production practices

ASHOK KUMAR*, S.K. MEHTA, A. K. GODARA, BAS KAUR AND URMILA DEVI
Deptartment of Extension Education, CCS Haryana Agriculture University, Hisar 125 004
**E-mail:grower@rediffmail.com*

ABSTRACT: The study was conducted in districts of Sirsa and Mahendergarh of Haryana state, on the basis of traditional and non traditional cotton growing farmers, respectively. In total, 160 farmers were interviewed. The high cost of farm inputs, adulteration in seeds, fertilizer and pesticides and low support price of the farm produce were most serious constraints pointed out by the respondents. The lack of technical guidance for various cotton production practices was also pointed out as one of the most serious constraint by the majority of the farmers. The cotton growers also perceived the failure of crop due to unfavorable weather condition and inadequate insect pest control as serious constraints.
