ABSTRACTS
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J. Cotton Res. Dev. **10** (1) 1-6 (January, 1996)

Combining ability analysis in *Gossypium arboreum* L.

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ABSTRACT : A study was undertaken in a lint x tester (10 x 4) model to assess the combining ability effects for plant height, boll number, boll weight, ginning percentage, 2.5 per cent span length, lint yield, seed index, lint index and seed cotton yield in *Gossypium arboreum* L. Plant height, boll number, lint and seed cotton yield are governed by additive gene action indicating early fixation of superior genotypes for these traits, however, non-additive gene action are important for all the traits. General combining ability effects of the commercial parents indicated that none of the tester parent proved to be all round good general combiner for all the traits studied. Amongst females LD 143, LD 327 and Ac-36 were good general combiners. The cross LD 327 x RG-8 showed high specific combining ability effects for all the characters except ginning percentage and 2.5 per cent span length.

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Diallel analysis of genetic components of variation for agronomic characters in upland cotton

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ABSTRACT : The diallel analysis (Hayman, 1954) is an efficient method of obtaining a quickest overall picture of the genetic control of a character in a number of inbred varieties by partitioning the genetic variance into its components. The method also investigate the genetical basis of heterosis in the F_1 progeny of these lines. The present study of 10 x 10 diallel crosses of upland cotton (*Gossypium hirsutum* L.) was therefore, attempted to determine the genetic components of variation and heritability in narrow sense for six characters which could help in deciding the breeding programmes.

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Combining ability analysis for agronomic traits in *Gossypium hirsutum* Linn.

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ABSTRACT : A 10 x 10 diallel cross analysis (without reciprocals) of *Gossypium hirsutum* L. were used to study combining ability for plant height, number of monopodia, number of sympodia, number of loculi, number of seeds and days to boll bursting. Both general and specific combining ability variances were highly significant and the former was predominant for all the traits. 'Laxmi' for plant height and sympodial branches; '108 F' and 'EC 11282' for days to boll bursting. 'MCU-5' for plant height; 'Acala glandless' for loculi and seeds; 'DPL 16' for monopodia and loculi; 'Auburn 56' and 'Br_2' for loculi and 'EC 110605' for monopodial and sympodial branches, and days to boll bursting, were the best general combiners. The g. c. a. effects however, includes dominance gene action and not the additive gene effects. The heterosis depends on additive x dominance and/or dominance and dominance x dominance gene

action. The negative or positive associations of the interacting alleles present in the parental lines greatly inflated the g. c. a. and s. c. a. effects.

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Heterosis for yield and yield components in upland cotton (*Gossypium hirsutum* L.)

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ABSTRACT : Heterosis was studied in 48 crosses over check (HS-6) in a line x tester analysis for yield and yield contributing attributes in American cotton. Significant heterosis was observed for almost all the characters for several crosses except lint index. High heterotic effects were recorded for seed index, number of bolls, boll weight, seed cotton yield; whereas, low for ginning out-turn. High heterotic expression in yield seemed to be associated with high degree of heterosis for boll weight and number of bolls per plant. Economic heterosis (over check variety) was high in H-1021 x S-12 (160.37%) cross combination which yielded highest cotton seed yield per plant and hence, could be utilised in further breeding programmes.

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Studies on integrated weed management in rainfed hybrid cotton

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ABSTRACT : A study of integrated weed management in rainfed hybrid cotton during 1990-91 and 1991-92 showed that it was possible to control the weeds by spraying 2.51 of Butachlor or 1.51 Pendemethalin as pre-emergence spray followed by two intercultivations at 45 DAS and 90 DAS and this integrated method of weed control saved the cost of labour required for weeding. The integrated method of weed control saved the cost of labour required for weeding. The integrated method of weed control resulted in higher seed cotton yield of 2370 kg/ha resulting into a net additional return of Rs. 13466/ha over unweeded control, while weed free check recorded a seed cotton yield of 2285 kg/ha with a net additional return of Rs. 10916/ha.

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Effect of type of seedbed on emergence and growth of hybrid cotton seedlings

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ABSTRACT : A field experiment to study the effect of type seedbed on growth and emergence of hybrid cotton seedlings indicated that sowing on the top of ridges increased the root length (23.3 cm), number of lateral roots (53.5) and root dry weight (68 mg/plant) at 14 DAS when compared to sowing on flat bed. Sowing on the top of ridge increased the seedling vigour as indicated by higher leaf dry matter accumulated (124 mg/plant) at 14 DAS as compared to flat bed (80 mg/plant) and significantly improved the field emergence (88.7%) compared to flat bed (80.2%) and ring and basin method (70.3%).

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Effect of gibberellic acid and salt stress on translocation pattern of photosynthates in *Gossypium arboreum* during cotyledonary leaf development

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ABSTRACT : Gibberellic acid effect on the translocation pattern of labelled photosynthates in cotton plant under NaCl salt stress (0, 3 and 9 dS/m) were investigated at various stages of expansion and growth of cotyledonary leaf. Present pot culture studies revealed that translocation of 14c photosynthates decreased in different organs under NaCl salt stress at first and second stages (NaCl treatment given just after emergence of seedlings and 7 days after emergence of seedlings). However, differential effects of GA_3 alone and its combination with NaCl was seen at various stages in different organs. As translocation of 14c photosynthates in cotyledonary and remaining leaves was increased with GA_3 alone as well as its combination with NaCl at first three stages (treatments given at 0, 7 and 14 days after emergence of seedling) but at fourth stage (treatment given at 21 days after emergence) greater amount of 14c photosynthates was translocated to stem with different combinations of NaCl and GA_3.

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Integrated weed management in cotton-A review

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ABSTRACT : Cotton is an important fibre crop of India. Losses due to weeds range from 15 per cent to as high as 85 per cent, thus it seems to be the major constraint in cotton production. In cotton, weed competition upto 75 DAS (days after sowing) drastically reduces the yield and when crop is kept weed free upto 75 DAS, the yield losses are minimised. The most critical period in this crop is between 50 to 75 DAS. Application of pre-plant (trifluralin 0.75 to 0.84 kg or fluchloralin 1.0 to 1.5 kg/ha) or pre-emergence (pendimethalin 1.0 to 1.5 kg or oxfluorfen 0.15 kg/ha) herbicide with one hand weeding or hoeing at 45 to 60 DAS is more effective than herbicides alone. Better weed control can be achieved through use of surfactant, herbicide mixture or sequential application of herbicides. The integration of chemical control with hand weeding, mulching or intercropping can significantly reduce the weed growth and can provide higher seed cotton.

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Measurement of risk in cotton yield in the Marathwada region

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ABSTRACT : In the present study an attempt was made to measure risk in yield of cotton crop in the Marathwada region as the cotton production largely depends on vagaries of nature. The study is based on secondary data for the period from 1980-81 to 1989-90. Three parameters of risk *viz.*, coefficient of variation, probability of crop failure and crop loss ratio were estimated to measure the risk. The probability of crop failure was around 50 per cent due to vagaries of nature, particularly due fluctuation in rain fall during crop growth period. The coefficient of variation ranged between 24.9 per cent to 47.6 per cent indicating instability in lint yield. The crop loss ratio ranged between 17 per cent to 23 per cent. Thus, to reduce risk of the farmer in cotton cultivation, there is an urgent need to introduce insurance scheme for cotton crop.

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Effect of spacing and nitrogen levels on productivity of hybrid cotton (RAJHH-16) grown under irrigated condition of North-West Rajasthan

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ABSTRACT : A field experiment was conducted for two seasons 1992 and 1993 at Agricultural Research Station, Srigangaganagar to study the effect of spacing and nitrogen levels on productivity of hybrid cotton (RAJHH-16) grown under irrigated condition of North-West Rajasthan. It was observed that optimum spacing and nitrogen doses for hybrid cotton are 67.5 x 60 cm and 150 kg N/ha, respectively to realize good yield. The result of present investigation revealed that Hybrid RAJHH-16 produced significantly (19.49%) higher seed cotton yield than the variety RST-9.

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Community analysis of nematodes in the rhizosphere of cotton in cotton belts of Tamil Nadu

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ABSTRACT : Community analysis of nematodes in the rhizosphere of eight cultivated and hybrid varieties in 7 major cotton growing districts of Tamil Nadu revealed that the reniform nematod, *Rotylenchulus reniformis* had the highest frequency, density and prominence value. Next to the reniform nematode this had the highest prominence values are *Helicotylenchus* spp., *Tylenchorhynchus mashoodi*. The latter though stand fourth in frequency, ranked second in terms of density. The varieties affected due to reniform nematode with high densities are MCU 5, LRA 5166 and DCH 32 among eight varieties surveyed. Index of similarity worked out for the nematodes associated with cotton showed that the population of nematodes occurring in Coimbatore is highly comparable with the population in Chithambaranar district and rest of the districts are disimilar. *Rotylenchulus reniformis, Tylenchorhynchus mashoodi* and *Hoplolaimus seinhorsti* are considered to be key pests of cotton in Tamil Nadu.

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Morphological and biochemical character assoication in pest tolerant and susceptible cotton genotypes

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ABSTRACT : Correlation of some morphological and biochemical parameters involved in insect pest resistance in cotton were studied under unprotected (UP) and minimum plant protected (PP) conditions. Strong negative correlation of number of bracteole teeth with seed cotton yield was noticed both in UP and PP. Pest tolerant genotypes had thicker boll rinds and short boll period which is established by positive and negative correlation, respectively with yield in protected as well as unproected conditions. Total sugars, reducing sugars and protein in the reproductive parts were negatively correlated with seed cotton yield and the contents of these biochemical constituents were high in susceptible entries. No Significant correlation between tannin and seed cotton yield was observed under unprotected conditions. However, it was negative and significant in protected conditions.

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Evaluation of the influence of intercropping and plant products on the incidence of leafhopper on rainfed cotton

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ABSTRACT : Leafhopper incidence studies in intercropped rainfed cotton at Regional Research Station, Aruppukottai during North-East monsoon season revealed that, cotton intercropped with clusterbean (2 : 1) reduced the leafhopper incidence by about 50 per cent when compared to the sole crop of cotton. While testing the bio-efficacy of plant products and insecticides, monocrotophos 0.04 per cent recorded the minimum incidence of leafhopper followed by dimethoate 0.05 per cent, phosphamidon 0.03 per cent and methyl demeton 0.025%. Plant products namely, neem oil 3.0 per cent and neem seed kernel extract 5 per cent suppressed the leafhopper incidence by 42 per cent and 45 per cent, respectively.

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Role of foliar sprays with different chemicals on dry boll rot incidence of cotton

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ABSTRACT : In this study, efforts are made to study the role of different fungicides in combinations with insecticides on the incidence of dry boll rot of cotton both on boll as well as locule basis. R I+copper oxychloride combination was least effective on both the varieties i. e. H 777 and G 27. R I+carbendazim+streptomycin sulphate remained the best combination followed by R. I+copper oxychloride and R. I+carbendazim on variety H 777 while on G. 27 the another combination of R.I.+copper oxychloride gave the least incidence of dry boll rot of cotton both on boll as well as locule basis followed by R.I.+carbendazim+streptmycin sulphate and R.I.+carbendazim. Low locule incidence was recorded on the combinations of R.I.+carbendazim; R.I.+copper oxychloride and R.I.+carbendazim+streptomycin sulphate.

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Evaluation of different methods of estimating losses from boll rots under Haryana conditions

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ABSTRACT : In this study, efforts are made through five different treatments (Natural infection, artificial inoculated control, possible complete protection from diseases possible complete protection from bollworms and possible complete protection from diseases and bollworms) indicated that possible complete protection from diseases and bollworms gave significantly lower boll rot incidence (green and dry boll rot basis), locule infection and higher yield of seed cotton.

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Distribution and frequency of mycoflora and bollworms associated with green boll rots after pesticidal protection on different cultivars

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ABSTRACT : In this study, eleven treatments were tried to record the incidence of micro-organisms, bollworms and micro-organisms and bollworms on *hirsutum* and *arboreum* cultivars during 1987-1989 at CCS Haryana Agricultural University, Hisar. R.I.+Carbendazim+Streptomycin sulphate, R.I+Carbendazim, R.I.+Thiophanate-M and R.I.+Copper oxychloride treatments were found quite effective in reducing the incidence of micro-organisms, insect (bollworms) and both whereas R.I.+Mencozeb, R.I. and Carbendazim+Streptomycin sulphate were found least effective treatments during 1987 to 1989.