additive genetic system present in the worthful parents and the complementary epistatic effects in the F1s act in the same direction.

Total soluble solid (TSS) at maturity stage:

The estimates of total soluble solids is useful in that it reflects on the percentage of total sugars that is useful in nutritions ingredient in the fodder for cattle. Selvi (1984) observed high heterosis for total soluble solids upto 14.82 per cent in one hybrid. Twentyfive hybrids exhibited significant and positive heterosis over better parent. The hybrids with the combination except M 35-1, K7 and FS_1(14.53 to 18.86 ; 2.95 to 25.73**) showed significant heterosis indicated presence of substantial non- additive component for total soluble solids content. These hybrids could be exploited for obtaining desirable segregants with high total soluble solids content. The hybrid 3660 A x Co 25 (18.17 ; 12.99**) produced high heterosis may be due to contribution of advance genes from both the parents and also produced transgressive segregants.

Crude protein yield per plant :

Among the forty two hybrids, twenty exhibited heterobeltiosis which may be attributed to the present of genes with favourable dominance. The hybrid namely 2077 A x Co 11 (16.91 ; 85.41**) showed high *per se* and 3660 Ax M 35-1 (20.81 ; 99.01**) recorded highest *per se* performance and heterosis could be utilized in the varietal improvement Programme. Other important hybrids namely 2219 A x Fs_1 (8.10; 60.71**) and 3660 A x Co 25 (10.78 ; 6.31**) has HETEROSIS could be expected to yield promising material in segregating generations.

Dry matter yield per plant :

The highest positive and significant heterosis was exhibited by hybrid 2077 A x M 35-1 (201.669 ; 45.07**) Seven cross combinations recorded significant heterobeltiosis except 2219 Ax SPV 472. This revealed the positive effect of dominant genes of the parents. The parent Combination 2077 A and M 35-1 could be the most advantageous for the dry matter production. Hence, based on their *per se* performance and heterobeltiosis, the hybrid 2077 A x M 35-1 may serve as a a source population for realising superior segregants for this trait. This could be achieved through simple pedigree method of plant breeding.

Note:The figure given in the parenthesis are *per se* performance and Heterobeltiosis.

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EFFECT OF DIFFERENT PICKINGS ON THE QUALITY OF UPLAND COTTONS

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ABSTRACT

Overall, in all the varieties studied, higher mean fibre length values were recorded in second picking with desirable bundle tenacity and micronaire value over other pickings. The extent of variation in fibre properties differed between boll maturation periods. Pickings had significant effect on quality of fibre suggesting picking-wise marketing of the produce to get premium price in the market.

Variations in fibre quality due to pickings are largely dependent on varieties used corresponding to their respective boll maturation periods. Other factors like colour, accumulation of trash particles etc., lead to deterioration in kapas or lint grade. In India, cotton is hand picked and harvested in several pickings by mostly engaging labour on contract basis at Rs.1/- per Kg. of (approx) Kapas

Table 1. Variation in fibre characters of different pickings

Variety	Mean fibre length (mm)			Bundle Tenacity (g/t)			Micronaire value			% Mature fibres		
	P1	P2	P3	P1	P2	P3	P1	P2	P3	P1	P2	P3
NA 920	23.5	25.7	23.3	39.6	38.7	40.3	4.0	3.5	3.4	59	55	52
NA 1002	23.9	24.2	22.1	34.4	35.8	36.6	4.0	4.0	3.1	56	49	47
JK 276-4	22.5	23.4	21.0	39.6	43.4	44.9	3.9	3.9	2.9	68	58	51
NA 1280	23.5	23.9	22.0	35.2	36.6	35.7	4.1	3.7	3.3	57	47	48
Surat Dwarf	22.5	22.2	21.2	40.4	42.9	41.2	3.8	3.6	3.2	61	50	51
LH 900	20.7	21.1	19.3	42.2	45.0	44.5	3.8	3.9	3.4	61	51	43
ADB 10050	24.8	26.5	24.2	39.5	41.0	42.4	3.8	3.9	3.5	62	46	47
B 1007	25.5	28.3	25.3	38.5	39.8	38.1	3.6	3.6	2.6	69	51	47
L 389	27.1	27.4	24.7	39.0	45.5	40.2	3.1	3.1	2.8	66	49	47
LK 861	26.2	28.1	27.2	40.1	43.7	43.5	3.9	3.6	3.2	61	52	51
LPS 141	22.0	25.0	22.3	36.0	41.6	38.8	3.1	2.8	2.8	67	53	48
MCU-5	26.6	29.3	25.8	38.9	44.7	43.3	4.1	3.2	3.3	63	54	54
AKH-081	24.7	25.3	24.0	35.9	38.5	36.4	3.6	3.7	3.1	65	46	48
S.Em	Varieties	0.41			1.00			0.08			1.7	
	Pickings	0.14			0.44			0.05			0.7	
C.D.	Varieties	1.21			2.93			0.23			N.S	
	Pickings	0.39			1.24			0.13			2.1	
C.V.	Varieties	5.11			7.50			6.80			3.60	
	Pickings	3.53			6.80			8.60			8.40	

Table 2. Effect of picking time on fibre properties (Pooled over varieties).

Fibre property	P1	P2	P3	CD
Mean fibre length (mm)	24.1	25.3	23.3	0.39
Bundle tenacity (g/t)	38.5	41.4	40.5	1.24
Micronaire value (/in)	3.7	3.5	3.1	0.13
% mature Fibres	63	51	49	2.1

P1 - First picking, P2 - Second Picking, P3 - Third Picking.

picked. So there is every possibility of immature locks also being picked for getting extra weight of the kapas (due to excessive moisture content). This, in turn causes microbial damage to the kapas stored in wet conditions.

Several workers reported the influence of picking dates on the quality and quantity of cotton (Sundaram *et al.*, 1972), They observed deterioration in fibre quality in later pickings. The present study was undertaken to find out the extent of variations in the quality of lint in successive pickings of different varieties.

MATERIALS AND METHODS

A field trial with thirteen genotypes viz., NA 920, NA 1002, NA 1280, JK 276-4 LH 900, Surat Dwarf, ADB 10050, B 1007, L 389, LK 861, LPS 141, MCU-5 and AKH-081 in RBD with three replications was conducted during kharif 1988-89 at Regional Agricultural Research Station, Lam, Guntur on August 1, 1988. The spacing adopted was 105 x 60 cm. Recommended agronomical practices were adopted with respect to fertilizers, plant protection etc. Three pickings were done at monthly intervals commencing from February 2, 1989. The ginned lint samples (picking-wise) were tested for various fibre properties like mean fibre length (by Bear Sorter), fibre fineness (by Micronaire), bundle tenacity (by Stelometer) and percentage of mature fibres (by caustic Soda method) as per CTRL standards (Sundaram, 1979). The data were statistically analysed and the results are presented in Table 1.

RESULTS AND DISCUSSION

Mean fibre length (mm) : Highly significant differences were observed among varieties and pickings. The interaction between varieties and pickings was also significant. The mean values for various varieties pooled over pickings ranged from 20.3 mm (LH 900) to 27.3 mm (MCU 5). Four long duration varieties viz., MCU 5 (27.3 mm), LK 861 (27.2mm), B 1007 (26.6mm) and L 389 (26.4 mm) gave significantly higher mean fibre length values over the general mean (24.3 mm). Fibres of second picking were significantly longer than those of first and third pickings (Table 2.). Mean length of early maturing varieties i.e., LH 900, AKH 081, Surat Dwarf, JK 276-4 was not affected by picking time unlike medium and long duration varieties. The increase in fibre length in second picking might be due to the coincidence of active physiological stage of the crop with increased available soil moisture, and thereby more available nutrients at boll formation stage.

Fibre Fineness and Maturity : Varietal differences in Micronaire value and in pickings were significant but their interaction was non significant. The extent of variation among varieties was from 2.9 (LPS. 141) to 3.7 (ADB. 10050). In general, there was a gradual and significant reduction in Micronaire value in successive pickings. All the varieties recorded low Micronaire value in the final picking.

Significant differences in fibre maturity between pickings were observed but their interaction with varieties was non significant. Fibres from first picking had higher no. of mature fibres than those from later pickings (Table 2). The lowering of mature fibre percentage and the fineness of the fibres from later pickings might be due to any of the following causes or their cumulative effect i.e., climatic conditions like rainfall, temperature etc., during the boll development stage besides pest attack etc., These findings are in agreement with those of Gipson and Joham, (1968), and Antony and Kesavan Kutty (1975).

Bundle tenacity (g/tex) : Variations due to varieties and due to pickings were significant for bundle tenacity while their interaction effect was non significant. Among the varieties tested, the range of variation was from 35.6 g/tex (NA 1002) to 43.8g/tex (LH 900), the general mean being 40.1 g/tex.

Fibres of second and third pickings were significantly stronger than those of first picking (Table 2). This might be due to the presence of more immature fibres in later pickings since the effect of immature fibres is to increase the values of bundle tenacity.

It is evident from the above discussion that picking intervals had highly significant effect on fibre quality. Mean fibre length, bundle tenacity and fineness of fibres increased while maturity decreased in the second picking as compared to first picking. similar trends continues in the third picking except for mean fibre length which decreased (Table 1). The differences in fibre quality between pickings might have been due to several environmental and genetical factors. Moreover, bolls formed early in the season would get more nutrition than bolls formed later.

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COMBINING ABILITY STUDIES THROUGH L X T ANALYSIS FOR SEED CHARACTERS IN COTTON (*G.hirsutum* L.)

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ABSTRACT

The combining ability for seed characters in cotton was estimated in a 'line' X tester' analysis, involving seven lines of *G.hirsutum* (differing in grades of fuzz) and four varieties as testers. Both additive and non-additive gene action was observed for fuzz grade, single seed weight, single seed coat weight and single seed kernel weight. Crosses recording high sca effects (in the desired direction) involved parents with high x high or low x low gca effects. The parents (lines) TCH 89/7 (naked seed) is a good combiner for fuzz grade, single seed coat weight and single seed kernel weight; TCH 65/8 (sparsely fuzzed) for fuzz grade, single seed weight and single seed kernel weight, and TCH 96/6 for single seed coat weight. And among testers MCU 5 is a good combiner for single seed weight and single seed kernel weight; MCU 7 for single seed coat weight and LRA 5166 for fuzz grade.

The decisions on the choice of a suitable breeding approach for improvement of any character depends upon the genetic control of a character under study. The present study was undertaken to obtain information on general and specific combining ability effects on four seed characters such as fuzz grade, single seed weight, single seed coat weight, single seed kernel weight, in cotton through a line x tester analysis (Kempthorne, 1957). This helped for devising efficient breeding methodology for effecting genetic improvement on seed characters.

MATERIALS AND METHODS

The experimental material comprising of seven lines differing in fuzz grades such as fully fuzzed (CTCH(63/1, TCH 63/4, TCH 104/1, and TCH 70/7), sparsely fuzzed (TCH 65/8 and TCH 96/6) and naked (TCH 89/7) as females. And four testers namely, MCU 5, MCU 7, MCU 9 and LRA 5166 as males, the crosses were effected during 1989 (Winter) in a line x tester model. All the F_1 s of the 28 crosses along with the parents were raised in a randamised block design with three replications. And each entry represented by a single row of ten plants spaced 30 cm apart. The data were recorded on five plants taken randomly per row for fuzz grade using (Hutchinson and Ramaiah, 1938) grade chart on fuzzgrade.

Single seed weight was taken using an Electronic balance. After spliting open the single seed by a sharp razor and thumb, single seed coat weight and single seed kernel weights were taken separately.