

Research Report No. 5
January, 1963

Measured crop performance

COTTON
1962

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Performance of Cotton Varieties in North Carolina 1962

Cotton has been a major agricultural crop of North Carolina for many years. It is becoming increasingly more important as efficiency of production increases. Varieties are assuming an important role in this increased efficiency.

The adaptability of cotton in North Carolina has been increased by the continued efforts of plant breeders to develop varieties more specifically suited to various climatic conditions and production systems. New varieties are continually being released as possible replacements for older, less suited varieties. The cotton variety picture has changed notably within recent years and indications are that this trend will continue. No longer is North Carolina a one-variety state. Today, several varieties are offered for sale in this State, although some of them are variate forms of certain basic types.

The cotton producer thus has a choice, and his success in production may be influenced considerably by the variety he selects for planting. Choice of variety is influenced not only by production potential, but also by disease resistance, suitability for mechanical harvesting, earliness of maturity, quality of fiber, storm resistance, etc.

The data presented in this report provide information on the performance of commercial varieties and experimental lines grown in various geographical areas of the State. Information of this nature serves as a guide to cotton breeders in their development of varieties and to growers for use in choosing a variety to plant their next crop.

This report presents the results of the North Carolina Official Cotton Variety Trials for the 1962 season, and summarizes the results of tests conducted during the past three years.

EXPERIMENTAL PROCEDURE

In this program are included experimental lines and commercial varieties developed by public and private agencies. One requirement for acceptance is quantitative data from experiments in which the proposed entry is compared with recognized varieties. These data must reveal meritorious performance in order for a variety to qualify for the tests.

Any individual or firm may make application for having entries included. A fee is charged on an entry basis. Personnel of the testing program may include entries about which further information is desired.

Agencies Sponsoring Entries

Alabama Agriculture Experiment Station, Auburn, Alabama
 Auburn Seed Company, Sikeston, Missouri
 Bobshaw Pedigreed Seed Company, Indianola, Mississippi
 Coastal Plain Experiment Station, U.S.D.A., Tifton, Georgia
 Coker Pedigreed Seed Company, Hartsville, South Carolina
 DeKalb Agricultural Association, Inc., DeKalb, Illinois
 Delta and Pine Land Co., Scott, Mississippi
 Empire Pedigreed Seed Co., Haralson, Georgia
 Georgia Agricultural Experiment Station, Experiment, Georgia
 Louisiana Agricultural Experiment Station, Baton Rouge, Louisiana
 North Carolina Agricultural Experiment Station, Raleigh, N. C.

Test Locations

Four locations were used in 1962 with two in the Coastal Plain Area and two in the Piedmont as shown in Figure 1. Three of the tests were located on private farms^{1/} and the fourth was on an experiment station. The Edgecombe County test had a poor stand due to extremely dry weather following planting, was late and severely damaged by boll weevils; therefore, it was discarded. A randomized block design with six replications was used at each location. Plot size at all locations was one row 50 feet long. Row spacing varied at each location as shown in Table 1.

Seasonal Conditions

The 1962 growing season was characterized by unfavorably cool dry weather following planting and excessive rain during the mid growing season with ideal conditions for harvest. A good stand was obtained at the Scotland and Rutherford tests and the cotton at each of these locations made good yields of good quality cotton. The stand at the Union County test was only fair and boll weevil control was not complete. The quality of the cotton in the Union County test was poor.

Cultural Practices

Cultural practices, such as seed bed preparation, date of planting, fertilization, cultivation and boll weevil control measures were in accord with good farming practices and were the same for all entries in a given test - Table 1. Planting, harvesting and yield measurements were directly supervised by personnel of the North

^{1/} The co-operative spirit and civic-minded service rendered by the farmers who provided land and the necessary cultural practices for these trials and the co-operation of the county agents are gratefully acknowledged.

Figure 1. Locations of N. C. Cotton Trials



Scotland County

Gilchrist Farms, A. F. McMillan, Manager, Laurinburg, N. C.
Scotland County Agricultural Agent J. B. Caudill.

Union County

R. W. Howey, Waxhaw, N. C.
Union County Agricultural Agent J. A. Marsh.

Rutherford County

Van McDaniels, Ellenboro, N. C.
Rutherford County Agricultural Agent J. A. Crawford.

Edgecombe County

Upper Coastal Plain Research Station
Clyde McSwain, Supt., Rocky Mount, N. C.
Edgecombe County Agricultural Agent J. C. Powell.

Carolina Agricultural Experiment Station. The experiments in Scotland and Union Counties were mechanically harvested. The test in Rutherford County was picked by hand.

Criteria for Evaluating Cotton Varieties^{2/}

Yield of Seed Cotton: The plots were harvested individually and average pounds of seed cotton per acre were calculated.

Yield of Lint: This was calculated using the lint percentage of each plot and converting the pounds of seed cotton per plot to pounds of lint per acre.

Lint Percentage: A 50 boll sample was taken from each plot at each location. The weight of lint ginned from this sample of seed cotton was expressed as a percentage of the weight of seed cotton.

Staple Length:^{3/} A Federal Cotton Inspector determined the staple length on the ginned samples of each plot.

Bolls per Pound of Seed Cotton: The number of bolls required to make one pound of seed cotton was determined by weighing the 50 boll samples from each plot at each location and converting it to a pound basis.

Fiber Length:

U.H.M. (Upper Half Mean). The length in inches of the half of the fibers by weight which contains the longer fibers was determined. Values for U.H.M. approximates classer's staple.

^{2/} Statistical analysis were made in the Statistical Laboratory under the supervision of John O. Rawlins. This assistance is gratefully acknowledged.

^{3/} Acknowledgement is given to The Cotton Division, Agricultural Marketing Service, U.S.D.A., Raleigh, North Carolina for making staple length determinations.

Mean. The average length in inches of all fibers longer than 1/4 inch was determined.

Uniformity. The ratio of mean length to U.H.M. is expressed in percentage.

Fiber fineness micronaire. The fineness of the sample taken from the ginned lint was measured by the Micronaire and expressed in standard (curvilinear scale) Micronaire units.

Fiber strength T_1 . The fiber strength of a bundle of fibers was measured on the Stelometer with two jaws holding the fiber bundle separated by an 1/8 inch spacer. Strength is expressed in terms of grams per grex.

Fiber elongation E_1 . The percentage elongation at break of the center 1/8 inch of the fiber bundle was measured for T_1 strength on the Stelometer.

The operations and measurements required for the development of data on yield and such other agronomic characters as boll size and lint percentage were performed by personnel at the experiment station. Fiber samples from one replication each of the Scotland and Rutherford tests were sent to the U. S. Cotton Fiber Laboratory, Knoxville, Tennessee, where fiber and spinning tests were made.

Table 1. Cultural practices for cotton performance trials.

Area and co-operator	Fertilizer lbs/A	Herbicide pre-emerge	Top dressing lbs/A	Row spacing in.	Date of plant.	Date of harvest
Scotland Co.	500					
A.F. McMillian	5-10-10	Karmex		36"	May 3	Oct.26
Union Co. Drill	400					
R. W. Howey	5-10-10					
Row	650					
	10-10-10	Karmex		38"	May 2	Oct.29
Rutherford Co.	375		200			
Van McDaniels	10-20-20	Karmex	14-0-14	40"	May 8	Oct.25

RESULTS

Varietal performance may vary from year to year and annual results may seem inconsistent; therefore, performance data obtained over a period of years are more reliable than for any one year.

The data presented in Tables 2 and 3 are summary data for various years and locations and indicate how varieties have been performing over a period of years at various locations. A three year average performance is shown for lines and varieties in Table 2. Three of the six varieties tested over a three year period averaged approximately 700 pounds or more of lint per acre. These were: DeKalb 108A, DeKalb 108 and Coker 100A.

In Table 3 entries are compared which have been in the tests for the past two years. Six of the ten varieties tested yielded close to 700 pounds or more of lint per acre. DeKalb 108A, 108 and 108D had the higher yields followed very closely by Carolina Queen, Auburn 56 and Coker 100A. There was little difference in lint per cent and staple length for the varieties tested. Bolls per pound of seed cotton ranged from 56 to 76.

The data in Table 4 are a summary of the three locations tested in 1962. Carolina Queen and DeKalb 108A were at the top of the test on yield of lint, although there were no statistical difference in the top ten entries. The varieties Coker 100A, Coker 59-121, DeKalb 220, DeKalb 108D and Empire WR 61-P 595 had yields of lint in excess of 800 pounds. There was little difference in lint per cent and staple length for the higher yielding varieties. Lint per cent for all varieties ranged from 33.9 to 37.8. Bolls per pound of seed cotton ranged from 55 to 80.

Fiber properties are also presented in this report from one replication each of the Scotland and Rutherford tests. Fiber length

on the U.H.M. ranged from 1.07 to 1.20, and approximated the staple length. Most varieties and lines showed good uniformity for fiber length. The Atlas varieties tended to have high fiber strength. Varieties also differed for fiber elongation and micronaire. Fiber properties are important to the manufacturer and should be considered in choosing a variety for quality.

Individual location data are presented in Tables 5, 6, and 7. The Scotland and Rutherford tests had the most uniform stand and were considered the better tests.

In selecting a variety for planting, characteristics that influence a profitable production should be studied. Amount of lint produced per acre is an important criterion, yet the variety should be resistant to prevalent diseases, particularly fusarium wilt. If the cotton is to be mechanically harvested, then it should mature uniformly and be compact. Seed quality is most important to the successful production of cotton. Weak seed do not perform well under adverse weather conditions at planting time. Other plant characteristics considered in selecting a variety of cotton are storm resistance, plant type and boll size. Lint characteristics, such as staple length, gin turnout, and fiber quality affect prices, harvesting costs and market demands.

Table 2. Summary of cotton performance trials. Three year average - 1960-1962.

Variety or line	Lint lbs/A	Seed cotton lbs/A	Lint %	Staple length in.	Bolls/lbs. of seed cotton
DeKalb 108A	758	2101	36.3	35	64
DeKalb 108	741	2079	35.7	35	64
Coker 100A (WR)	697	1944	36.0	35	72
<u>Mean of Test</u>	<u>695</u>	<u>1919</u>	<u>36.4</u>	<u>35</u>	<u>67</u>
Rex	675	1867	36.7	35	62
Dixie King	667	1814	36.9	35	59
Stardel	632	1709	37.0	35	80

Table 3. Summary of cotton performance trials. Two year average 1961-62.

Variety or line	Lint lbs/A	Seed cotton lbs/A	Lint %	Staple length in.	Bolls/lbs. of seed cotton
DeKalb 108A	783	2214	35.6	35	62
DeKalb 108	744	2144	34.8	36	60
DeKalb 108D	734	1992	36.8	35	61
Carolina Queen (C-139)	712	2001	35.4	35	66
Auburn 56	704	2020	33.8	35	67
Coker 100A (WR)	693	1982	35.1	35	67
<u>Mean of Test</u>	<u>681</u>	<u>1925</u>	<u>35.4</u>	<u>35</u>	<u>65</u>
Rex	676	1930	35.6	36	56
Dixie King	631	1768	36.0	35	56
Stardel	594	1668	35.8	35	75
M 8948	540	1532	35.9	35	76

Table 4. Performance of cotton varieties. Average of three locations - Rutherford, Union and Scotland Counties - 1962.

Variety or line	Lint lbs/A	Seed cotton lbs/A	Lint %	Staple length in.	Boll/lbs. of seed cotton	Fiber properties ^{1/}						
						Fiber length			Fiber	Fiber	Fiber	
						UHM in.	Mean in.	Uniform- ity %	strength T ₁	elongation E ₁	fineness micronaire	
Carolina Queen (C-139)	889	2431	36.8	1 1/8	69	1.14	.96	84	1.86	7.2	4.80	
DeKalb 108A	847	2368	36.3	1 1/8	65	1.12	.94	84	1.83	7.7	4.60	
Coker 100A 59-63	835	2311	36.5	1 1/8	70	1.20	1.02	85	1.78	7.8	4.46	
Coker 59-121	825	2218	37.4	1 1/8	62	1.17	1.01	86	1.83	7.8	4.66	
DeKalb 220	814	2209	36.8	1 1/8	64	1.14	.94	82	1.84	7.5	4.60	
DeKalb 108D	808	2183	37.1	1 1/8	67	1.09	.90	83	1.84	7.8	4.51	
Empire WR 61-P 595	806	2214	36.9	1 3/32	56	1.11	.94	85	1.81	6.6	4.39	
DeKalb 108	795	2214	36.1	1 5/32	62	1.17	.98	84	1.83	7.3	4.42	
Auburn 56	787	2164	34.6	1 1/8	69	1.11	.94	85	1.90	8.4	4.29	
Atlas 59-180	770	2054	37.8	1 1/8	63	1.12	.94	84	1.80	6.9	4.75	
Empire WR 61-B	762	2089	36.9	1 1/8	56	1.14	.94	82	1.86	6.8	4.48	
Dixie King	752	2099	36.1	1 1/8	56	1.16	.98	84	1.84	6.8	4.60	
Coker 59-138	752	2123	36.0	1 1/8	70	1.18	.98	83	1.81	8.2	4.56	
Coker 100A (WR) 1962	750	2117	35.8	1 1/8	71	1.18	.99	84	1.84	8.0	4.53	
Coker 59-108	749	2126	35.5	1 1/8	68	1.12	.93	83	2.00	7.8	4.36	
Empire WR 61-A	742	2040	36.9	1 1/8	55	1.12	.94	84	1.76	7.2	4.46	
Coker 60-801	733	2141	35.0	1 1/8	63	1.18	1.00	85	1.82	6.3	4.38	
<u>Mean of Test</u>	<u>728</u>	<u>2030</u>	<u>36.2</u>	<u>1 1/8</u>	<u>67</u>	<u>1.14</u>	<u>.96</u>	<u>84</u>	<u>1.90</u>	<u>7.4</u>	<u>4.52</u>	
Rex	724	2068	36.3	1 1/8	58	1.12	.94	84	1.80	6.2	4.68	
Coker 59-126	710	2030	35.3	1 1/8	69	1.18	.98	83	1.87	7.9	4.36	
Atlas 59-63	682	2025	34.0	1 3/32	80	1.07	.92	86	2.22	7.2	4.56	
Dixie King (B X D)	684	1925	36.0	1 1/8	56	1.12	.95	85	1.86	6.6	4.62	
Auburn-M	663	1853	36.0	1 1/8	65	1.13	.94	83	1.86	8.0	4.56	
M-8948	645	1762	36.8	1 1/8	79	1.10	.92	84	1.88	9.6	4.20	
Stardel	604	1668	36.6	1 1/8	74	1.16	.96	83	2.07	6.4	4.55	
Atlas 59-92	594	1723	34.6	1 1/8	78	1.12	.95	85	2.10	7.5	4.59	
Atlas 59-182	590	1756	33.9	1 1/8	78	1.16	.95	82	2.24	6.6	4.65	
Stoneville 7A	544	1465	37.7	1 1/8	71	1.16	.99	85	1.96	7.2	5.05	
Deltapine 5540	522	1454	36.2	1 1/8	73	1.15	.94	82	1.97	7.6	3.89	
L.S.D. (.05)	118	336	1.0		6							
(.01)	158	449	1.3		7							
C. V. (%)	16	17	4		7							

^{1/} Average of one rep. each of the Scotland and Rutherford tests.

Table 5. Performance of cotton varieties - Scotland County - 1962.

Variety or line	Lint lbs/A	Seed cotton lbs/A	Lint %	Staple length in.	Bolls/lb. of seed cotton	Fiber properties					
						Fiber length			Fiber strength	Fiber elongation	Fiber fineness
						UHM in.	Mean in.	Uniform- ity %	T ₁	E ₁	micronaire
Carolina Queen (C-139)	1173	3375	35	1 1/8	66	1.19	1.00	84	1.95	6.1	4.95
DeKalb 108A	1132	3389	33	1 3/32	60	1.16	.97	84	1.84	7.4	4.63
Empire (WR) 61-P 595	1058	3109	34	1 1/8	56	1.15	.98	85	1.98	5.7	4.35
Coker 59-138	1052	3160	33	1 1/8	68	1.16	.97	84	1.78	7.9	4.73
Coker 59-121	1049	2960	35	1 1/8	61	1.22	1.04	85	1.82	7.4	4.55
Coker 100A 59-63	1027	3054	34	1 1/8	67	1.24	1.05	85	1.78	7.3	4.35
Coker 59-108	1005	2961	34	1 1/8	66	1.15	.95	83	2.04	7.4	4.48
Coker 100A (WR) 1962	1004	2971	34	1 1/8	67	1.22	1.01	83	1.84	7.1	4.63
Empire (WR) 61-A	987	2911	34	1 1/8	56	1.14	.96	84	1.82	7.3	4.28
Atlas 59-63	982	3003	33	1 3/32	74	1.11	.95	86	2.23	7.2	4.65
DeKalb 108D	977	2754	36	1 1/8	62	1.10	.91	83	1.92	7.3	4.67
Empire (WR) 61-B	961	2811	34	1 1/8	56	1.16	.97	84	2.01	5.9	4.43
DeKalb 108	957	2826	34	1 1/8	60	1.19	1.01	85	1.85	7.0	4.50
Auburn 56	954	2946	32	1 1/8	66	1.15	.96	83	1.98	7.7	4.28
Dixie King	941	2763	34	1 1/8	56	1.16	.99	85	1.88	5.8	4.65
Dixie King (B X D)	938	2804	33	1 1/8	55	1.17	.99	85	1.94	5.8	4.48
Atlas 59-180	929	2658	35	1 1/8	62	1.15	.96	83	1.81	6.5	4.85
<u>Mean of Test</u>	<u>917</u>	<u>2721</u>	<u>34</u>	<u>1 1/8</u>	<u>64</u>	<u>1.17</u>	<u>.98</u>	<u>84</u>	<u>1.95</u>	<u>6.9</u>	<u>4.57</u>
Rex	911	2837	34	1 1/8	58	1.16	.97	84	1.88	6.1	4.55
Coker 60-801	911	2822	34	1 1/8	64	1.17	1.00	85	1.97	5.8	4.58
DeKalb 220	898	2617	34	1 1/8	63	1.14	.93	82	1.84	7.4	4.82
Coker 59-126	851	2618	33	1 1/16	65	1.26	1.06	84	1.95	7.9	4.30
Auburn-M	799	2347	34	1 1/8	62	1.18	.99	84	1.85	7.5	4.53
Stardel	759	2241	34	1 1/8	67	1.18	.97	82	2.13	6.2	4.60
Atlas 59-92	729	2203	33	1 1/8	75	1.11	.93	84	2.19	7.1	4.93
Atlas 59-182	707	2235	32	1 1/8	70	1.15	1.02	89	2.29	6.3	4.85
Stoneville 7A	694	1979	35	1 1/8	68	1.17	1.00	85	1.99	7.1	5.23
M-8948	659	1953	34	1 1/8	73	1.16	.97	84	1.94	9.0	4.28
Deltapine 5540	632	1876	34	1 1/8	71	1.18	.97	82	1.98	7.2	3.93
L.S.D. (.05)	168	491	1		3						
(.01)	228	649	1		4						
C. V. (%)	16	16	3		4						

Table 6. Performance of cotton varieties - Union County - 1962.

Variety or line	Lint lbs/A	Seed cotton lbs/A	Lint %	Staple length in.	Boll/lbs. of seed cotton
DeKalb 220	517	1374	38	1 1/8	70
Coker 100A 59-63	510	1361	37	1 1/8	76
Atlas 59-180	498	1324	38	1 1/8	65
DeKalb 108	493	1324	37	1 1/8	70
DeKalb 108A	485	1306	37	1 3/32	76
Auburn 56	470	1324	36	1 1/8	75
M-8948	469	1199	39	1 1/8	88
DeKalb 108D	468	1247	38	1 1/8	75
Empire WR 61-P 595	468	1228	38	1 3/32	59
Carolina Queen (C-139)	465	1243	37	1 1/8	80
Coker 60-801	447	1254	36	1 1/8	66
Empire WR 61-B	442	1170	38	1 1/8	61
Coker 59-121	440	1161	38	1 5/32	68
Dixie King	438	1178	37	1 3/32	57
Auburn-M	430	1174	37	1 1/8	69
Coker 59-138	430	1153	37	1 1/8	78
<u>Mean of Test</u>	<u>429</u>	<u>1162</u>	<u>37</u>	<u>1 5/32</u>	<u>74</u>
Coker 100A (WR) 1962	424	1164	36	1 1/8	81
Coker 59-108	420	1187	36	1 3/32	72
Dixie King (B X D)	411	1124	36	1 1/8	60
Rex	409	1111	37	1 1/8	61
Coker 59-126	404	1112	36	1 1/8	77
Empire WR 61-A	399	1065	38	1 3/32	58
Atlas 59-63	374	1087	34	1 1/8	92
Stardel	347	916	38	1 1/8	85
Deltapine 5540	343	929	37	1 1/8	80
Atlas 59-92	342	994	35	1 1/8	88
Stoneville 7A	342	862	40	1 1/8	86
Atlas 59-182	335	971	35	1 1/16	90
L.S.D. (.05)	91	244	1		6
(.01)	121	322	2		8
C. V. (%)	19	18	3		8

Table 7. Performance of cotton varieties - Rutherford County - 1962.

Variety or line	Lint lbs/A	Seed cotton lbs/A	Lint %	Staple length in.	Bolls/lb. of seed cotton	Fiber properties					
						Fiber length			Fiber	Fiber	Fiber
						UHM in.	Mean in.	Uniform- ity %	strength T ₁	elongation E ₁	fineness micronaire
Carolina Queen (C-139)	1030	2675	38	1 1/8	62	1.10	.91	83	1.77	8.2	4.65
DeKalb 220	1028	2636	38	1 1/8	59	1.15	.95	83	1.83	7.6	4.38
Coker 59-121	985	2534	39	1 1/8	57	1.12	.97	87	1.84	8.2	4.78
DeKalb 108D	979	2547	38	1 1/8	64	1.08	.90	83	1.85	8.3	4.35
Coker 100A 59-63	968	2518	38	1 1/8	66	1.16	.99	85	1.78	8.3	4.58
Auburn 56	938	2222	36	1 5/32	64	1.07	.91	85	1.81	9.0	4.30
DeKalb 108	934	2491	37	1 3/16	57	1.15	.95	83	1.81	7.6	4.33
DeKalb 108A	925	2409	38	1 1/8	59	1.07	.91	85	1.82	8.0	4.58
Empire (WR) 61-P 595	892	2304	39	1 3/32	52	1.07	.89	83	1.64	7.5	4.43
Atlas 59-180	884	2180	41	1 1/8	61	1.09	.91	83	1.78	7.3	4.65
Empire (WR) 61-B	883	2286	39	1 1/8	51	1.12	.92	82	1.71	7.6	4.53
Dixie King	878	2355	37	1 5/32	54	1.16	.98	84	1.79	7.7	4.55
Coker 59-126	874	2359	37	1 3/16	65	1.10	.91	83	1.79	7.9	4.43
Rex	853	2257	38	1 1/8	55	1.07	.90	84	1.72	6.3	4.80
Coker 60-801	842	2349	36	1 5/32	58	1.20	.99	82	1.68	6.8	4.18
Empire (WR) 61-A	841	2144	39	1 1/8	51	1.10	.92	84	1.70	7.2	4.63
<u>Mean of Test</u>	<u>837</u>	<u>2206</u>	<u>38</u>	<u>1 1/16</u>	<u>62</u>	<u>1.11</u>	<u>.93</u>	<u>81</u>	<u>1.72</u>	<u>7.8</u>	<u>4.47</u>
Coker 59-108	822	2230	37	1 5/32	65	1.09	.91	83	1.95	8.2	4.23
Coker 100A (WR) 1962	822	2216	37	1 1/8	67	1.14	.97	85	1.83	8.8	4.43
M-8948	806	2132	38	1 1/8	75	1.05	.86	82	1.83	10.3	4.13
Coker 59-138	774	2056	38	1 3/16	65	1.19	.98	82	1.84	8.4	4.38
Auburn-M	761	2038	37	1 1/8	63	1.08	.88	81	1.87	8.5	4.58
Atlas 59-182	728	2062	35	1 1/8	73	1.05	.88	84	2.18	7.0	4.45
Atlas 59-92	710	1971	36	1 5/32	72	1.14	.97	85	2.01	7.9	4.25
Dixie King (B X D)	704	1848	38	1 1/8	53	1.07	.91	85	1.79	7.3	4.75
Stardel	704	1847	38	1 5/32	70	1.14	.95	83	2.01	6.5	4.50
Atlas 59-63	690	1986	35	1 1/8	74	1.03	.88	85	2.22	7.1	4.48
Stoneville 7A	596	1554	38	1 5/32	59	1.15	.98	85	1.92	7.2	4.87
Deltapine 5540	592	1558	38	1 5/32	69	1.12	.91	81	1.96	7.9	3.85
L.S.D. (.05)	137	416	2		5						
(.01)	181	550	2		7						
C. V. (%)	14	16	4		7						