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Yield and Plant Characteristics of 200 Different Cotton (*Gossypium spp.*) Genotypes

Fatih Kıllı[1*], Tahsin Beycioglu[2]
[1]Kahramanmaraş Sütçü İmam University Agricultural Faculty, Field Crops Department, Kahramanmaras – Türkiye
[2]Pamukkale University Agricultural Faculty, Field Crops Department, Denizli – Türkiye
[*]Corresponding Author: fakilli@ksu.edu.tr

Abstract— *The experiment was conducted to determine the yield and plant characteristics (plant height, number of sympodial branches, boll number, seed cotton weight, 100-seed weight, seed cotton yield and seed yield,) of two-hundred different cotton (Gossypium spp.) genotypes in Kahramanmaras (Türkiye) conditions using a randomized complete block design with four replications in 2018 and 2019. At the end of the study, it was determined that there were statistically significant differences among the cotton genotypes for all investigated characteristics. Results of two year average showed that plant height, number of sympodial branches, boll number, seed cotton weight,, 100-seed weight, seed cotton yield and seed yield for cotton genotypes ranged between 53.10 – 110.50 cm, 4.2 – 12.0 no. plant^{-1}, 4.5 – 18.3 no. plant^{-1}, 2.0 – 6.4 g, 7.7 – 13.5 g, 1290 – 6230 kg ha^{-1}and 880 – 406 kg ha^{-1}, respectively. As a result of the study, AzGR-11835 and NIA-UFAQ for seed cotton yield had the highest value.*

Keywords— *Cotton, yield, plant characteristics.*

I. INTRODUCTION

Cotton, which is the main raw material of the textile industry, is of great importance for Türkiye economy. According to 2022 data in Türkiye, cotton is cultivated in an area of 573 thousand hectares and a total of 1.02 million tons of fiber cotton is produced from these areas (Anonymous, 2022). The cotton produced cannot meet the country's needs and approximately 1.2 million tons of fiber cotton are imported annually. For this reason, it is necessary to breed new high-yield and high-quality cotton varieties and offer them to cotton producers. Seed cotton yield is related to the number of plants per unit area, the number of bolls per plant and the seed cotton weight per boll (Kaynak et al., 1994). Cotton is a plant produced depending on environmental conditions. Cotton yield varies depending on the genetic structure of the variety used, the genetic yield potential of the variety, the growing technics by the producers who are effective in revealing this potential, and the environmental conditions of the place where it is grown (Kıllı and Bolek, 2006). Climatic conditions are also an important factor in the variety reaching the desired yield and fiber quality values (Esbroeck and Bowman, 1988). Yield and fiber quality characteristics emerge through the interaction of all these factors. Studies have reported that 48% of genetics, 28% of product management, and 24% of variety-product management interaction are effective on net yield increase (Liu et al., 2013). Breeding and adaptation studies are continuing by researchers to determine cotton varieties that are highly productive and have good adaptability (Bowman, 2000; Zeng et al. 2018; Engizek et al., 2021). In this study, plant height, number of sympodial branches, boll number, seed cotton weight, 100-seed weight, seed cotton yield and seed yield parameters were investigated in 200 different cotton genotypes in Kahramanmaras (Türkiye) conditions.

II. MATERIALS AND METHODS

Two hundred different cotton (*Gossypium spp.*) genotypes (Table 1) were grown during the 2018 and 2019 growing season in Kahramanmaras, which is located in the Eastern Mediterranean region of Turkey (between 37º 36' north parallel and 46º 56' east meridians). The soils of the experimental area are alluvial soils carried by rivers and they are deposited horizontally in different layers and first class agricultural land. The pH of soils is 7.53, slightly alkaline, lime content is high (20.24%) and organic matter content (2.65%) is low (Anonymous, 2019a). Kahramanmaras province has typical Mediterranean climatic conditions with hot and dry summers and mild, rainy winters. In 2018 and 2019, average air temperature during the growing season changed from 18.40°C (April) to 29.10°C (August) and from 14.20°C to 29.59°C (August), respectively. The temperature at the experimental field during the growing season was convenient for cotton farming, while the temperatures of July and August were higher than the other months. There was considerable versatility in amount and distribution of precipitation from month to month. The rainfall was highest in October (115.00 mm), and there was an extended dry and hot period during July and September (Anonymous, 2019b). The experimental design was a randomized complete block with three replications. Cultivars, consisting of one rows 5.0 m long with 0.70 m spacing between rows, were planted in the first half of May in both years. Cotton cultivars were sown by hands, and after emergence, plants hand-thinned to the desired intra-row spacing of 0.20 m. Recommended insect and weed control methods were employed during the growing season as needed. The experimental area received 60 kg N and 60 kg P_2O_5 ha^{-1} as a seedbed application. Additional band-dressing of 90 kg N ha^{-1} was applied at the square stage. In both years overall 7 irrigations were applied and weeds were controlled by hoeing.

TABLE I. Cotton genotypes used in the study.

Genotypes									
No	Name	No	Name	No	Name	No	Name	No	Name
1	MNH-786	41	Carolina Queen	81	Viky (ES-20021)	121	Acala 1064	161	Mex 68
2	BH-118	42	AfricaES(20025)	82	Sorbon	122	Acala Cluster	162	Europa
3	Ziroatkar-68	43	Acala Tex	83	AĞDAŞ 3	123	Auborn 56	163	TX No: 1389
4	Sindh-1	44	Tx No: 1412	84	Sugdiyon-2	124	TAM 94 L 25 P1	164	Ionia
5	AGC 85	45	Karnak 55	85	CIM-240	125	Aden	165	Helius
6	CIM 401	46	Mex 106	86	Sure Grow 125	126	Acala Okra VA2-4	166	NIAB 874
7	Frego Cluster	47	Dpl 5540-85-subokra	87	AzGR-3775	127	Deltapine 905	167	Ligur
8	AzGR-11468	48	Deltapine 120	88	Ujchi 2 Uzbek	128	Acala 29	168	NIAB 777
9	CIM-506	49	Acala 1517-70	89	Ziroatkar-64	129	Giza 45	169	Tex 2167
10	Sohni	50	TAM C155 - 22 ELS	90	AGC 208	130	Earlipima	170	Fibermax 819
11	CIM-70	51	Deltapine 45 – vert	91	B557	131	Acala 1517 SR2 – vert	171	Tex 843
12	994	52	Acala 44	92	CRIS-342	132	Acala N 28-5	172	Acala 32
13	VH 260	53	Deltapine 15A	93	MNH-814	133	Deltapine 26	173	Acala 1-13-3-1
14	Stoneville 474	54	Brown Egyptian	94	KORİNA	134	AzGR-11835	174	Deltapine 61
15	Malmal-MNH-786	55	Deltapine 12	95	FH 142	135	RANTOS	175	Deltapine 15
16	AzGR-11836	56	Deltapine 25	96	TX No: 1416	136	AĞDAŞ17	176	Deltapine 14
17	Marvi	57	Acala Nunn's	97	Stoneville 213	137	NIAB-111	177	Acala Shafter Station
18	Ziroatkar-81	58	Acala 1517 D	98	ACALA SJ 3	138	Tex 1216	178	Acala 1517-91
19	AzGR-11834	59	Acala Morell	99	Mex 123	139	Mex 122	179	Acala Tex
20	AzGR-11839	60	TAM B147 – 21	100	Fibermax 832	140	Tx No: 2700	180	Deltapine 714 GN
21	Stoneville 506	61	TAM 87 G3- 27	101	Giza 75	141	Stoneville 014	181	Acala 1517 C
22	NIBGE-2	62	Acala Glandless	102	Tex 844	142	Stonville 108 SR	182	Acala 44 WR
23	MNH-990	63	Acala 4-42	103	Tx No: 2383	143	TX No: 2382	183	Deltapine 50
24	Sadori	64	Acala 442	104	Bulgar 6396	144	Hopicala – vert	184	Acala SJ1
25	Penta	65	TAM C66 - 26	105	Deltapine 20	145	Eva	185	Crumpled
26	Aboriginal79	66	Deltapine Staple	106	Agala Sindou	146	Mex 102	186	Deltapine 41
27	Nova	67	TOGO	107	Tex 1152	147	NIAB 78	187	TAM C66 - 16
28	Shazbaz	68	NIAB-KIRN	108	NIAB 111	148	Stoneville 731N	188	TAM 01 E - 22
29	Deltapine 5816	69	Sivon	109	Mehrgon	149	Tashkent	189	Acala Harper
30	Deltapine 565	70	Alba Acala 70	110	CAMPU	150	Stonville 504	190	Acala-55-5
31	Stoneville 2B	71	NIA-UFAQ	111	Stoneville 3202	151	CASCOT L7	191	Deltapine 80
32	Deltapine 50 –vert	72	Giza 7	112	Stoneville 62	152	Avesto	192	Tropical 225
33	MNH-493	73	CRIS-134	113	Giza 70	153	Darmi	193	TAM 04 WB - 33
34	Stoneville 508	74	Acala Naked	114	Deltapine 62	154	Giza 59	194	Acala Mexican
35	AzGR-7711	75	SAMOS	115	Acala Okra	155	Tadla 25	195	Acala 3080
36	Stoneville 256	76	AĞDAŞ 6	116	Acala Young's	156	New Mexican Acala	196	Acala 51
37	Stoneville 5A	77	Zeta 2	117	TAM B182	157	Giza 83	197	TAM A106- 16ELS
38	Tamcot Sphinx	78	AĞDAŞ 7	118	Deltapine SR-5	158	Stoneville 256-315	198	TAM B139 - 17 ELS
39	Bulgar 73	79	AGC 375	119	TAM C147 -42	159	Arcota-129	199	Deltapine SR4
40	Stoneville 618 BBR	80	Haridost	120	Giza 75	160	NIAB 846	200	Acala SS 2280

In the experiment, the harvest was done twice by hand. The first harvest commenced when the cotton was approximately 70% open; the second harvest was three weeks later. In the experiment, ten randomly tagged plants from each plot were evaluated for plant height, sympodial branches, boll number and seed cotton weight. Harvested seed cotton from each plot was ginned with the machine of roller gin and separated as seed and fiber. One hundred randomly seeds with four replications were weighed and the average of 100 seeds weight was determined. Seed yield (kg ha^{-1}) was calculated as: [seed percentage (%) X seed cotton yield (kg ha^{-1})] (Kıllı and Beycioglu, 2020). Seed cotton yield was determined after hand harvesting from each plot twice and weighing the seed cotton. Data of all parameters from the study were analyzed using the MSTAT-C statistical programming. The significant of the difference between means was compared by Duncan test ($P < 0.05$).

III. Results and Discussion

A considerable variation was observed for investigated characteristics among cotton genotypes (Table 2). The distribution of 200 cotton genotypes for plant height is shown in Figure 1A. According to the two hundred cotton genotypes, plant height weight value was 81.8±28.7 cm (Table 2), and it ranged from 53.03 cm (TAM 04 WB - 33) to 110.62 cm (Marvi). The highest plant height values were obtained from Marvi (110.62 cm), NIA-UFAQ (108.98 cm) and TOGO (108.19 cm) respectively (Table 3). The lowest plant height were recorded in genotype TAM 04 WB - 33 (53.03 cm). Differences among the genotypes are due to variability in environmental conditions and genetic makeup (Usman *et al.*, 2017). Cotton genotypes showed significant differences in terms of sympodial branches. Average sympodial branches value over all genotypes was 8.1±3.9 no.$plant^{-1}$ (Table 2). Sympodial branches values varied between 4.17 no.$plant^{-1}$ and 12.06 no.$plant^{-1}$ (Figure 1B and Table 3). The highest sympodial branches values were from Acala Young's (12.06 no. $plant^{-1}$), Haridost (11.66 no. $plant^{-1}$) and BH-118 (10.70 no. $plant^{-1}$) genotypes, respectively; the lowest sympodial branches values were obtained from TAM04 WB-33 (4.17 no. $plant^{1}$), New Mexican Acala (4.73 no. $plant^{-1}$) and Hopicala-vert (5.03 no. $plant^{-1}$) genotypes, respectively.

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TABLE II. Average values of yield and plant characteristics of two hundred different cotton genotypes.

	Plant height (cm)	Sympodial branches (no.plant^{-1})	Boll number (no.plant^{-1})	Seed cotton weight (g)	100-Seed weight (g)	Seed cotton yield (kg ha^{-1})	Seed yield (kg ha^{-1})
Average	81.8 ± 28.7	8.1 ± 3.9	11.4 ± 6.9	4.2 ± 2.2	10.6 ± 2.9	3760 ± 2468	2470 ± 1590
Analysis of variance for traits							
Genotypes	**	**	**	**	**	**	**
CV (%)	3.28	5.24	4.06	7.20	2.82	4.12	2.45

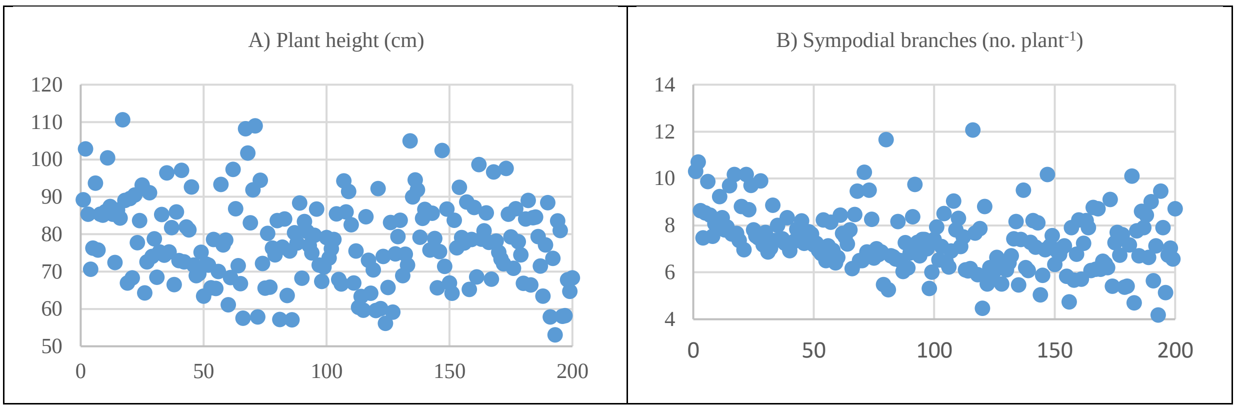
** Significant at the 0.01 level

The distribution of 200 cotton genotypes for boll number per plant is shown in Figure 1C. According to the two hundred cotton genotypes, boll number per plant was 11.4 ± 6.9 no. plant^{-1}, and it ranged from 4.43 to 18.29 no. plant^{-1}. The highest boll number values were obtained from NIA-UFAQ (18.29 no. plant^{-1}) and CRIS-134 (18.16 no. plant^{-1}) respectively. The lowest boll number per plant values were recorded in genotype Giza-75 (4.43 no. plant^{-1}) and Crumpled (5.10 no. plant^{-1}). According to the two hundred cotton genotypes, seed cotton weight was 4.2 ± 2.2 g, and average seed cotton weight values of cotton genotypes were ranged from 1.99 to 6.48 g (Figure 1D and Table 3). Maximum seed cotton weight was observed in Acala Glandless (6.48 g) followed by TAMB139-17ELS (6.13 g) while minimum seed cotton weight was observed in Acala Numn's (1.99 g). Seed cotton weight is directly related to the seed cotton yield (Usman *et al.*, 2017). The differences among cultivars for seed cotton weight per boll might have been due to the difference in genetic potential of the cultivars. The significant differences among varieties for seed cotton weight per boll had also been reported by Ehsan *et al.* (2008), Ali *et al.* (2009), Ali *et al.* (2017), and Killi and Beycioglu (2020).

The distribution of 200 cotton genotypes for 100-seed weight is shown in Figure 1E. According to the two hundred cotton genotypes, 100-seed weight value was 10.6±2.9 g, and it ranged from 7.68 g to 13.53 g. The highest 100 seed weight values were obtained from Acala 1517 SR2-vert (13.53 g), Earlypiam (12.77 g), TAM A106-16ELS (12.66 g) and Europa (12.45 g) respectively. The lowest 100 seed weights were recorded in genotype MNH-493 (7.68 g), Acala-29 (7.72 g), Marvi (8.22 g), Acala Num's (8.69 g), CRIS-342 (8.82 g) and MNH-814 (8.90 g). Patel (2003) stated that 100 seed weight values differ according to cotton species; Efe et al. (2013), 100 seed values of some mutant cotton varieties brought from Azerbaijan in the Southeastern Anatolia region varied between 9.4 and 12.7 g; Yuka (2104) stated that the weight of 100 seeds in 13 different cotton genotypes varied between 8.13 – 10.71 g; Kıllı and Beycioglu (2020) reported that the weight of 100 seeds in different cotton genotypes varied between 9.11 – 12.65 g. The fact that the 100 seed weight values we obtained in the study showed a wide variation between about 7 g and 13 g (Figure 1E and Table 3), and also the differentiation from the findings of the researchers was due to the presence of genotypes from different species and the high number of genotypes.

Seed cotton yield was significantly affected by genotypes (Table 2). The distribution of 200 cotton genotypes for seed cotton yield is shown in Figure 1F. According to the two hundred cotton genotypes, seed cotton yield was 3760 ± 2468 kg ha^{-1}, and it ranged from 1291.4 to 6392.1 kg ha^{-1}. AzGR-11835 (6392.1 kg ha^{-1}) gave the highest seed cotton yield followed by NIA-UFAQ (6227.8 kg ha^{-1}). The lowest seed cotton yield was obtained Acala Nunn's (1291.4 kg ha^{-1}). Jones (2001) and Iqbal and Khan (2011) reported that seed cotton yield differed significantly among different genotypes.

Cotton genotypes showed significant differences in terms of seed yield per hectare. Average seed yield value over all genotypes was 2117.5 kg ha^{-1} (Table 3). Seed yield values varied between 881 kg ha^{-1} and 4059 kg ha^{-1} (Figure 1G and table 3). The highest seed yield values were from NIA-UFAQ (4059 kg ha^{-1}) and AzGR-11835 (3859.2 kg ha^{-1}) genotypes, respectively; the lowest seed yield values were obtained from Acala 51 (881.0 kg ha^{-1}) and Acala Nunn's (927.3 kg ha^{-1}) genotypes, respectively. Sawan *et al.* (2007) reported the seed yields per hectare in cotton were 1828 – 2084 kg; Sawan (2016) also reported the seed yield per hectare was 1810 – 2130 kg; Tekeli (2016), in his study with 46 cotton genotypes, found that the seed yield was significantly different between genotypes and the seed yields per hectare were 596.9 kg and 2616.6 kg; Kıllı and Beycioglu (2020) reported that the seed yield per hectare ranged from 1731.1 to 2721.4 kg.



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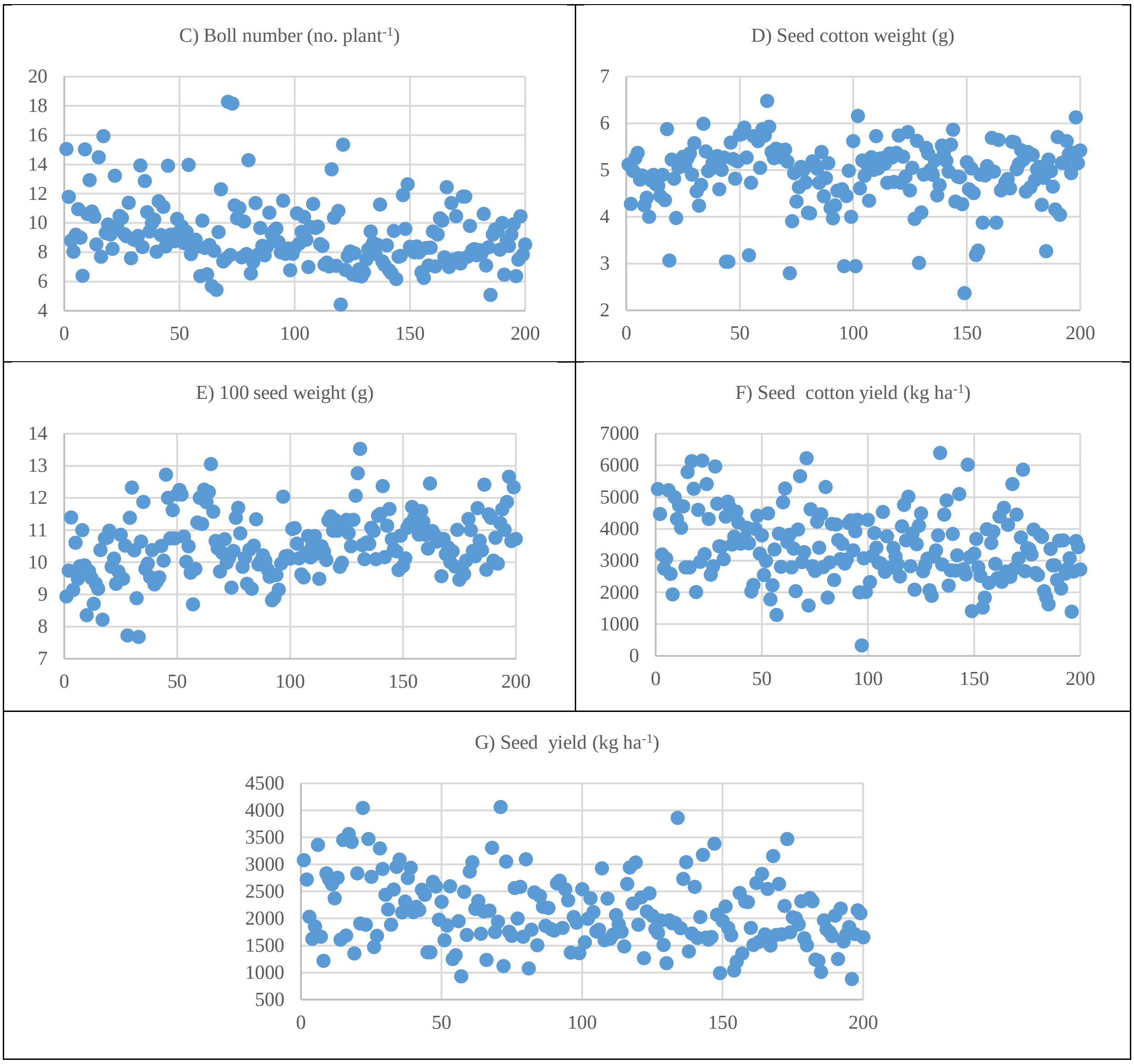

Figure 1. Distribution of 200 cotton genotypes for investigated traits ((plant height, sympodial branches, boll number, seed cotton weight, 100-seed weight, seed cotton yield and seed yield).

TABLE III. Two years average value of investigated characteristics of two hundred different cotton genotypes.

Genotype number	Plant height (cm)	Sympodial branches (no.plant^{-1})	Boll number (no.plant^{-1})	Seed cotton weight (g)	100-Seed weight (g)	Seed cotton yield (kg ha^{-1})	Seed yield (kg ha^{-1})
1	89.17	10.30	15.05	5.12	8.94	5255.5	3078.9
2	102.80	10.70	11.79	4.28	9.74	4468.7	2720.1
3	85.31	8.63	8.81	4.98	11.39	3190.6	2027.6
4	70.58	7.47	8.04	5.26	9.14	2749.2	1620.5
5	76.22	8.53	9.20	5.37	10.61	3061.8	1850.2
6	93.63	9.86	10.94	4.80	9.48	5218.8	3358.8
7	75.74	8.43	9.00	4.89	9.88	2588.4	1661.6
8	85.35	7.53	6.39	4.25	11.00	1934.3	1218.3
9	85.07	8.06	15.03	4.41	9.90	4996.4	2831.7
10	85.98	8.23	10.62	4.00	8.35	4310.7	2723.9
11	100.37	9.23	12.93	4.78	9.72	4734.5	2630.9
12	87.35	8.33	10.78	4.90	9.51	4037.2	2369.8
13	85.33	7.80	10.43	4.70	8.71	4713.0	2753.0
14	72.41	7.93	8.54	4.67	9.34	2788.6	1604.9
15	86.42	9.69	14.50	4.45	9.17	5790.8	3450.2
16	84.30	7.63	7.69	4.90	10.38	2792.1	1682.8
17	**110.62**	10.17	15.94	4.36	8.22	6134.3	3558.6
18	88.96	7.66	9.32	5.88	10.74	5262.3	3412.1

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19	66.94	7.36	9.91	3.07	10.76	2009.0	1352.8
20	89.50	8.80	9.23	5.23	10.98	4600.1	2833.6
21	68.27	6.96	8.23	4.82	9.86	2967.0	1904.3
22	90.43	10.16	13.23	3.98	10.11	6148.0	4042.5
23	77.72	8.67	9.71	5.06	9.33	3201.1	1885.7
24	83.57	9.70	10.48	5.17	9.71	5409.0	3467.1
25	93.09	7.80	10.34	5.29	10.85	4313.7	2770.4
26	64.21	7.55	9.25	5.09	9.48	2560.3	1472.9
27	72.56	7.46	9.10	5.26	10.52	2828.3	1677.5
28	91.02	9.90	11.38	5.36	7.72	5962.6	3293.9
29	73.98	7.17	7.60	4.91	11.38	4788.8	2914.1
30	78.75	7.70	8.88	5.58	12.32	3451.0	2434.5
31	68.47	6.86	8.83	4.55	10.37	3435.5	2163.4
32	75.24	7.03	9.12	4.24	8.88	3042.7	1883.8
33	85.24	8.86	13.94	4.69	**7.68**	4388.7	2535.2
34	74.38	7.35	8.36	5.99	10.64	4854.6	2955.0
35	96.38	8.00	12.87	5.40	11.88	4675.5	3089.3
36	75.25	7.40	10.74	4.98	9.79	3509.3	2109.6
37	81.69	7.43	9.42	5.02	9.96	3756.8	2309.7
38	66.52	7.23	9.99	5.16	9.54	4543.5	2748.5
39	85.91	8.33	10.24	5.26	10.38	4198.5	2935.5
40	72.92	6.92	8.04	5.30	9.31	3532.0	2114.8
41	97.01	7.26	11.49	4.59	9.41	3633.0	2213.4
42	72.54	7.33	9.19	5.01	9.53	3706.0	2157.2
43	81.93	7.83	11.10	5.27	10.51	4035.0	2531.0
44	81.15	7.70	8.40	3.04	10.05	3548.4	2438.3
45	92.61	8.19	13.92	3.04	12.72	2030.1	1371.6
46	71.67	7.23	9.20	5.59	12.00	2230.0	1372.2
47	68.84	7.43	9.21	5.24	10.74	3995.8	2676.4
48	69.39	7.73	8.76	4.82	11.62	4417.7	2586.9
49	75.09	7.63	10.28	5.19	10.74	3224.0	1977.8
50	63.37	7.16	9.40	5.76	12.11	3798.5	2305.1
51	71.96	7.23	9.77	5.78	12.25	2544.2	1594.5
52	71.74	6.93	8.61	5.91	12.10	2987.7	1868.7
53	65.58	6.80	9.41	5.27	10.80	4489.4	2593.7
54	78.55	8.23	13.98	3.18	10.01	1779.4	1248.9
55	65.49	6.50	7.88	4.73	10.50	2227.8	1319.8
56	69.97	7.13	8.38	5.73	9.68	3351.8	1950.7
57	93.28	8.13	8.87	**1.99**	8.69	**1291.4**	927.3
58	77.09	6.93	8.39	5.62	9.79	3850.3	2488.8
59	78.34	6.40	6.37	5.05	11.24	2804.4	1691.5
60	61.11	6.63	10.17	5.88	12.00	4842.9	2866.2
61	68.33	8.43	8.30	5.74	11.19	5276.2	3041.2
62	97.33	7.66	6.50	**6.48**	12.26	3583.9	2176.0
63	86.76	7.50	8.50	5.93	11.87	3812.1	2322.9
64	71.57	7.20	5.70	5.39	12.19	2783.5	1715.6
65	66.77	7.80	8.10	5.26	13.05	3378.9	2125.0
66	57.50	6.15	5.43	5.46	11.57	2039.8	1234.1
67	108.19	8.46	9.39	5.44	10.66	3984.3	2144.4
68	101.68	9.46	12.30	5.28	10.43	5658.5	3305.0
69	83.03	6.50	7.37	5.35	9.71	2954.2	1748.2
70	91.83	6.50	7.53	5.44	10.29	3271.4	1938.4
71	108.98	10.26	**18.29**	5.18	10.72	**6227.8**	**4059.0**
72	57.80	6.86	7.81	2.80	9.99	1588.4	1115.6
73	94.37	9.50	18.16	3.91	10.15	4620.0	3049.5
74	72.13	8.26	11.20	4.94	9.21	2820.0	1753.4
75	65.53	6.60	10.33	4.33	10.35	2673.5	1675.1
76	80.16	7.00	11.03	4.64	11.38	4228.6	2559.9
77	65.83	6.76	7.66	5.07	11.69	3405.8	1998.4
78	76.20	6.86	10.10	5.00	10.90	4463.3	2582.1
79	74.43	5.47	7.87	4.74	9.86	2799.6	1659.3
80	83.63	11.66	14.30	4.09	10.13	5316.0	3095.4
81	57.17	5.26	6.56	4.08	9.33	1840.0	1076.9
82	76.46	6.70	7.33	5.19	10.39	2943.8	1792.8
83	84.06	6.66	11.36	5.13	9.17	4152.5	2481.0
84	63.60	6.56	7.83	5.03	10.52	2388.4	1503.7
85	75.46	8.16	9.67	4.73	11.34	4139.5	2414.4
86	57.07	6.50	8.43	5.39	9.93	3647.1	2213.0
87	80.36	6.03	7.80	4.44	10.04	3043.8	1860.7

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88	77.63	7.26	8.40	4.83	10.21	3526.3	2193.0
89	88.30	6.18	10.70	5.15	10.05	2905.5	1804.1
90	68.16	6.83	9.26	4.19	9.78	3040.3	1773.9
91	83.33	8.36	9.47	3.97	9.55	4179.1	2650.1
92	80.68	9.75	9.63	4.25	8.82	4263.1	2697.0
93	76.93	7.27	8.70	4.56	8.90	3323.7	1823.3
94	74.93	6.70	8.00	4.56	9.60	3924.8	2542.5
95	79.67	7.40	11.53	4.59	9.15	4283.5	2333.9
96	86.71	7.40	7.90	2.95	9.96	2001.3	1370.2
97	71.70	7.00	8.26	4.45	12.04	3282.0	2026.5
98	67.30	5.31	6.77	4.99	10.19	3074.1	1921.3
99	71.23	6.00	7.90	4.00	10.20	2015.0	1358.9
100	79.06	7.40	8.30	5.62	10.11	4280.5	2541.4
101	73.60	7.93	10.67	2.95	11.04	2326.1	1559.9
102	76.03	6.53	8.60	6.16	11.06	3146.7	1991.3
103	78.56	7.10	9.40	4.61	10.58	3868.7	2369.3
104	85.40	8.50	10.43	5.21	10.12	3403.7	2116.5
105	67.83	6.43	8.86	4.88	9.62	2931.3	1760.9
106	66.66	6.23	7.00	5.12	9.53	2911.8	1792.7
107	94.20	6.90	9.73	4.35	10.30	4535.9	2928.0
108	85.93	9.03	11.30	5.28	10.82	2648.0	1596.9
109	91.40	7.80	9.66	5.01	10.15	3764.3	2364.7
110	82.46	8.30	9.77	5.73	10.54	2774.0	1624.8
111	66.87	7.10	8.56	5.04	10.82	2791.6	1698.4
112	75.43	7.50	8.43	5.25	10.27	3397.0	2062.5
113	60.43	6.10	7.16	5.26	9.48	3131.7	1896.4
114	63.27	6.06	7.30	5.14	10.50	2889.5	1751.4
115	59.63	6.16	7.03	4.73	10.33	2497.0	1482.6
116	84.67	**12.06**	13.67	5.36	10.07	4084.0	2639.8
117	72.97	7.67	10.36	5.27	11.30	4754.3	2940.1
118	64.16	5.90	7.07	4.75	11.43	3637.0	2275.7
119	70.43	7.86	10.83	5.37	10.98	5013.4	3033.1
120	59.53	4.46	**4.43**	5.74	11.31	2820.5	1880.9
121	92.20	8.80	15.36	4.73	10.98	3855.7	2385.9
122	60.06	5.50	6.80	5.29	9.86	2088.7	1262.8
123	74.03	6.20	7.73	4.86	9.99	3516.4	2129.7
124	56.13	5.87	8.06	5.82	11.07	4097.8	2464.4
125	65.70	6.06	6.50	4.57	11.32	4485.7	2044.6
126	83.10	6.63	7.93	5.05	10.91	2672.0	1804.1
127	59.10	6.26	6.41	3.96	10.50	2858.8	1729.3
128	74.66	5.50	6.83	5.63	11.32	3061.4	1959.5
129	79.33	6.26	6.35	3.02	12.07	2063.5	1506.4
130	83.72	6.10	6.63	4.10	12.77	1894.8	1174.1
131	68.86	6.40	7.50	4.91	**13.53**	3125.7	1962.9
132	74.60	6.70	8.20	5.48	10.53	3321.4	1912.8
133	71.70	7.42	9.43	5.36	10.10	3794.3	1918.4
134	104.93	8.16	8.63	5.01	10.62	**6392.1**	3859.2
135	89.97	5.46	7.90	4.90	10.57	2884.3	1817.7
136	94.47	7.40	8.50	5.21	11.07	4453.6	2728.8
137	91.83	9.50	11.27	4.46	10.97	4893.5	3036.7
138	79.13	6.20	7.37	4.68	10.10	2211.4	1387.1
139	84.17	6.07	7.13	5.53	11.45	2692.8	1720.0
140	86.63	7.27	8.47	5.39	11.50	3844.3	2585.6
141	85.93	8.20	6.77	5.20	12.37	2681.6	1637.4
142	75.73	7.07	6.57	4.97	10.16	3166.4	2024.0
143	85.60	8.10	9.46	5.55	11.14	5099.3	3173.2
144	78.80	5.03	6.17	5.87	11.66	2693.5	1646.2
145	65.63	5.87	7.70	4.33	10.72	2736.1	1607.7
146	75.27	6.96	7.76	4.86	10.40	2564.5	1657.2
147	102.40	10.17	11.90	4.85	10.34	6019.6	3381.7
148	71.40	7.13	9.60	4.27	9.76	3114.7	2067.9
149	86.70	7.56	12.66	2.37	10.83	1409.7	986.6
150	66.93	6.33	8.37	5.17	9.89	3220.0	1951.8
151	64.16	6.90	8.10	4.59	10.12	3680.7	2217.1
152	83.70	6.76	8.00	5.04	11.07	2791.4	1821.3
153	76.33	7.03	8.40	4.51	11.20	2517.1	1689.2
154	92.50	7.13	8.00	3.19	11.72	1523.1	1034.2
155	79.03	5.83	6.63	3.28	11.37	1838.5	1201.7
156	77.63	4.73	6.26	4.91	11.21	3989.2	2467.5

157	88.57	7.90	8.30	3.88	10.86	2300.7	1353.9
158	65.16	5.66	7.10	4.89	11.59	3555.4	2312.8
159	78.58	6.77	8.31	5.09	11.26	3912.1	2303.7
160	87.13	8.23	9.43	4.97	10.85	2900.7	1825.5
161	68.50	5.70	7.03	5.69	10.42	2443.5	1507.6
162	98.60	7.23	9.23	4.97	12.45	4390.0	2654.1
163	78.60	8.20	10.33	3.88	10.97	2335.0	1567.0
164	80.83	7.90	10.16	5.65	10.84	4663.5	2823.5
165	85.67	6.07	7.66	4.57	10.64	2660.7	1703.6
166	77.76	8.76	12.46	4.61	10.69	4126.4	2548.1
167	67.90	6.13	7.00	4.74	9.57	2496.4	1499.1
168	96.63	8.70	11.36	4.81	10.73	5410.0	3151.3
169	78.10	6.13	7.50	4.61	10.25	2750.0	1693.0
170	75.17	6.47	10.47	5.61	10.46	4452.8	2636.9
171	73.33	6.36	7.60	5.60	10.00	3068.6	1703.5
172	72.03	6.20	7.23	5.02	10.34	3730.0	2229.5
173	97.58	9.10	11.81	5.13	9.87	5862.8	3467.2
174	85.33	5.40	11.80	5.43	11.01	2666.1	1743.6
175	79.26	7.26	7.70	5.23	9.46	3395.0	2018.1
176	70.83	7.70	9.80	4.54	9.80	3359.3	2000.2
177	86.76	6.73	8.13	5.39	9.63	3195.0	1891.2
178	77.93	7.60	8.22	4.63	10.05	3977.9	2316.7
179	74.46	5.36	7.80	5.33	11.35	2610.7	1631.0
180	66.80	5.40	8.16	4.79	11.00	2545.7	1504.3
181	84.03	7.17	7.90	5.02	10.35	3816.4	2376.8
182	88.96	10.10	10.63	5.07	10.19	3750.7	2316.7
183	66.43	4.70	7.10	4.26	11.68	2040.7	1237.2
184	84.40	7.77	8.33	4.84	10.67	1843.6	1214.4
185	84.56	6.70	5.10	3.27	10.37	1624.3	1010.6
186	79.30	8.60	9.23	5.23	12.41	3372.8	1964.7
187	71.43	7.90	9.56	4.98	9.77	2854.3	1797.0
188	63.36	8.43	9.47	4.65	11.49	2854.3	1746.7
189	77.06	6.63	8.17	4.16	11.38	2390.7	1669.4
190	88.40	9.00	10.00	5.71	10.05	3632.8	2051.0
191	57.80	5.63	6.47	4.05	10.76	2117.9	1247.9
192	73.53	7.13	8.80	5.16	9.96	3634.2	2180.1
193	**53.03**	**4.17**	8.43	5.16	11.22	2595.7	1576.3
194	83.53	9.46	9.23	5.62	11.65	2740.1	1697.0
195	80.97	7.90	9.93	5.34	11.01	3073.6	1842.1
196	58.03	5.13	6.37	4.94	11.88	1395.0	**881.0**
197	58.16	6.73	7.50	5.37	12.66	2657.1	1709.7
198	67.73	7.03	10.47	6.13	10.66	3615.0	2147.1
199	64.66	6.56	7.83	5.15	12.33	3421.4	2092.3
200	68.26	8.70	8.53	5.42	10.73	2723.6	1648.5
Average	81.82	8.11	11.36	4.87	10.55	3451.4	2117.5

IV. Conclusion

In this study was aimed to determine the plant characteristics (plant height, sympodial branches, boll number per plant, seed cotton weight per boll and 100-seed weight), seed cotton yield and seed yield of two-hundred different cotton (Gossypium spp.) genotypes in Kahramanmaras (Turkiye) conditions. As a result of the study, AzGR-11835 and NIA-UFAQ cotton genotypes for seed cotton yield gave the best results. It was determined that there were significant differences between genotypes and there were quite wide and significant variations in terms of all the examined characteristics. These variations between genotypes can be evaluated in the breeding of new cotton varieties.

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