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Formation of Economically Valuable Characteristics in the Varieties of the Species G. Hirsitum L. And Selection of Valuable Biotypes in Natural and Artificial Irrigation

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Abstract: This article presents the results of experiments in studying the degree of drought tolerance of new cotton varieties - UzFA-703, UzFA-709, Kelajak and Narpay, created by the method of intraspecific geographically distant hybridization and the UzFA-705 variety by the method of radiation mutagenesis. It is shown that the studied cotton varieties differ in terms of seed germination, both in the field and in artificial conditions. Different periods of germination of seeds in the studied varieties are probably related to their genotypic rate of reaction to soil moisture and other environmental conditions. It has been established that when carrying out targeted genetic, selection and seed-growing studies of cotton varieties populations in artificially created conditions, lysimeters quickly achieve their genetic homogeneity in terms of economically valuable traits, resistance to extreme environmental factors and purity of seed material. As a result of experimental data analysis, it was found that the populations of the studied varieties of cotton have a high intrapopulation potential for economically valuable traits, and are also distinguished by drought resistance, yield and high fiber quality. It was found that in order to determine the resistance of new varieties of cotton to biotic and abiotic factors, soil and climatic conditions of the environment, as well as reproduction in a short time in unfavorable conditions of irrigation (agriculture), it is necessary to select resistant forms against an infected background and extreme environmental conditions.

Keywords: Drought resistance, trait, population, germination, fiber quality, cotton.

Introduction

Creation new early ripening, high-yielding cotton varieties with high quality of fiber, resistant to diseases, pests and environmental stress factors, in particular, to drought, the production of their genetically homogeneous, pure-quality seed material, are the most important areas of cotton growing.

In Uzbekistan, there is still no targeted genetic, selection and seed-growing program for the creation of drought-resistant varieties of cotton and the production of their elite seeds. Scientific literature is mainly devoted only to the study of drought resistance mechanisms of

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medium-fiber cotton varieties. At the same time, the creation of new drought-resistant varieties of cotton opens up great opportunities for increasing cotton production in areas with limited irrigation water resources.

As studies in recent years (1, 8) have shown, cotton lines and varieties bred by geographically distant intraspecific hybridization are promising for cultivation under conditions of a lack of irrigation water, wilt infection, rapid spread of aphids and spider mites in crops. The parental forms of these hybrids contain gene complexes that evolved for a long time and separately under sharply differing ecological conditions and, accordingly, exhibit a wider range of variability than during hybridization of ecologically close varieties.

Even more dramatically altered genes carry a wide range of variability are manifested by radiomutants artificially induced by chemical and physical factors, a large percentage of which have genes with new positive economically valuable traits. Numerous theoretical and practical studies in this area (2,3,4,5) have shown that many cotton radiomutants are of great practical value for creating a new starting material resistant to unfavorable factors of the cultivation environment.

To reduce crop losses from environmental pollution with pesticides and reduce the cost of cotton fiber, it is advisable to conduct scientific and practical research on the creation of disease-resistant and insect-pest-resistant lines and varieties of cotton. The selection of lines and varieties that are relatively resistant to new races of pathogens of diseases and insect pests, lines and varieties significantly increases the quantitative and qualitative indicators of cotton products yield and reduces the cost of processing chemicals, which largely prevents environmental pollution and contributes to the improvement of the ecology of cotton growing areas. Based on the foregoing, we studied the effect of irrigation in different phases of the growing season on the formation of economically valuable traits in new varieties of cotton in artificial and field conditions.

Materials and methods

The research material was new medium-fiber cotton varieties - UzFA-703, Kelajak, UzFA-705, Narpay and UzFA-709. These varieties differ from each other in the origin and genotype of the original parental forms. The varieties - UzFA-703, UzFA-709, Kelajak and Narpay were created by intraspecific geographically distant hybridization; and variety UzFA-705 - by radiation mutagenesis. The experiment was carried out in three options of irrigation regime on artificially created backgrounds in lysimeters. The options differed from each other in the number of irrigations in different phases of cotton development, that is; 1.in budding; 2. at the beginning of flowering; 3. in the fruiting phase - the beginning of ripening and 4. in the phase of mass ripening. During the growing season, the options were irrigated according to the following scheme: I - option - 1x2x1x1 = 5 irrigations; II - option - 1x1x1x0 = 3 irrigations; III - option -

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0x1x1x0 = 2 irrigations. The timing of seed germination, the number of days from sowing to flowering and ripening, the height of the main stem of plants, the total number of bolls and the number of mature bolls per plant were determined by the methods of field counts and screenings. The aim of the research was to assess and select homeostatic genotypes with genetic homogeneity, early maturity, high yield, fiber yield and quality, drought resistance in a population of new cotton varieties. The research objectives were to create artificial conditions for determining the drought resistance of cotton in lysimeters; accounting and observation of morpho-economic characteristics; determination in laboratory conditions of the yield and technological indicators of fiber quality; assessment of purity, genetic homogeneity and drought resistance of populations of new varieties, and selection of homeostatic cotton genotypes.

Results and discussion

Studying the germination of seeds of cotton varieties in field and artificial (lysimeter) conditions.

In the field, sowing of seeds was carried out in the third decade of April. The studied varieties differed from each other in terms of seed germination by 2-3 days. The shortest time for seed germination (6-7 days) was observed in varieties Kelajak, UzFA-703 and Narpay. In varieties UzFA-705 and UzFA-709, the seed germination rate was 8-9 days (Table 1). On the fifth day after sowing, the largest number of seedlings per one hundred sown seeds was observed in Kelajak variety (29 pieces), and on the seventh day in Narpay (58 pieces) and UzFA-703 (52 pieces). The latest germination was found in the varieties UzFA-705 and UzFA-709, in which a large number of seedlings appeared only on the eighth day.

Table 1.Germination days of cotton varieties seeds in the field

№	Variety	Number of sown seeds, pcs	Seedlings, pcs				Date of 50% seedlings emergence	Sowing-ripening, days
			30.04	02.05	04.05	06.05		
1	UzFA-703	100	15	52	26	7	2.05	7
2	Kelajak	100	29	48	23	-	1.05	6
3	UzFA-705	100	17	22	56	5	3.05	8
4	Narpay	100	14	58	26	2	2.05	7
5	UzFA-709	100	-	22	61	17	4.05	9

As shown in Table 2, the studied varieties in terms of seed germination under lysimeter conditions, as well as in field conditions, differed from each other by 1-2 days. At the same time, the shortest time for seed germination (5 days) was observed in varieties Kelajak and UzFA-705. In other varieties, the seed germination rate varied from 6 to 7 days. Under artificial conditions, the largest number of seedlings on the fourth day after sowing out of 100 sown seeds was

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observed in varieties Kelajak and Narpay (8 pieces both), on the fifth day - in varieties Kelajak and UzFA-705 (23 and 29 pieces, respectively), on the sixth day - for varieties UzFA-703 and Narpay (21 and 25 pieces, respectively) and on the seventh day - for varieties UzFA-709 (28 pieces). It should be noted that under artificial conditions the seedlings of the studied varieties appeared faster than under field conditions, which, apparently, is associated with the most favorable moisture and heat supply under lysimeter conditions.

Table 2.The number germination days of cotton varieties seeds under lysimeter conditions

№	Variety	Number of sown seeds, pcs	Seedlings, pcs					Average date	Sowing-germination, days
			6.05	7.05	8.05	9.05	10.05		
1	UzFA-703	57	7	18	21	11	-	8.05	6
2	Kelajak	53	8	23	15	7	-	7.05	5
3	UzFA-705	54	4	29	18	3	-	7.05	5
4	Narpay	60	8	16	25	11		8.05	6
5	UzFA-709	56	-	6	19	28	3	9.05	7

Thus, the studied cotton varieties differed in terms of seed germination both in the field and in artificial conditions. Different periods of the studied varieties seeds germination are probably related to their biological characteristics.

Study of morpho-economic characteristics of new cotton varieties in field and artificial (lysimeters) conditions.

The studied varieties differ in the number of days from sowing to flowering and from sowing to ripening, the height of the first fruit branch, the height of the main stem, the number of monopodial and fruit branches, and the number of capsules per plant.

From the data in Table 3, it can be seen that the shortest periods of the sowing-flowering period were of the varieties Kelajak (60.2 days), UzFA-709 (64.3 days) and UzFA-705 (67.2 days), the longest period in Narpay variety (71 ,5 days). It should be noted that the variation in the duration of the phase from sowing to flowering in the studied varieties was ambiguous. Thus, the widest variation was observed in the population of UzFA-709 - σ - 5.2, and Narpay - σ - 5.1, which indicates their genetic heterogeneity and requires further refinement of these varieties for this trait. The populations of the other studied varieties have the highest genetic homogeneity.

Table-3.Indicators of economically valuable traits of cotton varieties in the field

№	Variety	Number of sown seeds, pcs	Sowing-flowering, days		Sowing-ripening, days		Plant height, cm	
			X ± Sx	σ	X ± Sx	σ	X ± Sx	σ

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1	UzFA-703	292	69.2±0.2	3.1	119.8±0.2	3.2	119.6±0.5	5.1
2	Kelajak	280	60.2±0.2	3.9	117.2±0.6	3.7	783±0.4	3.9
3	UzFA-705	250	67.2±0.2	3.0	118.8±0.2	4.1	104.2±0.5	4.8
4	Narpay	288	71.5±0.3	5.1	121.5±0.4	6,0	111.1±0.7	8.5
5	UzFA-709	140	64.3±0.9	5.2	117.4±0.7	5.7	125.5±1.2	11.8

The shortest growing season was observed in varieties Kelajak (117.2 days), UzFA-709 (117.8 days) and UzFA-705 (118.8 days), while variety Narpay has the longest growing season - 121.5 days. The average phase from sowing to ripening was observed in the UzFA-703 variety - 119.8 days.

The data of the variation series indicate that according to this trait, the populations of the varieties UzFA-703 - σ - 3.2 and Kelajak - σ - 3.7 turned out to be the most genetically homogeneous, which can be recommended for further reproduction according to this trait. The σ value for the other varieties is higher, which requires further refinement to genetic homogeneity for this trait.

In the field, cotton varieties turned out to be the tallest were UzFA-709-125.5 cm and UzFA-703-119.6 cm.In the rest of the studied varieties, the plant height varied from 90.2 to 112.3 cm. The self-pinching variety turned out to be the smallest. Kelajak-78.3 cm. The indicators show that the most genetically homogeneous populations were of Kelajak, UzFA-705 and UzFA-703 varieties. In other varieties, the indicators are higher and requires further refinement of the plant height trait to genetic homogeneity.

Our studies have shown that the development of such traits as the number of days from sowing to flowering and from sowing to ripening, the height of the main stem, the total number of bolls and the number of ripened bolls per plant depends on the level of water availability in the phases of plant development (table4). The data obtained, indicate that all varieties for these traits (with the exception of sowing-flowering period and sowing-ripening period) in the I-irrigation option show better results than in other irrigation options. It should be noted that the best indicators of sowing-flowering and sowing-ripening period in most of the studied varieties are observed in the II-option of irrigation. The indices of these traits in the I- and II-options of irrigation in most cases turned out to be similar and the varieties had longer periods of flowering and ripening of bolls.

The effect of delayed irrigation(III-option) on the flowering time and the maturation of bolls is probably related to a genetic response to water supply conditions. The difference in the number of days from sowing to flowering and from sowing to ripening in I-and III-irrigation options is probably explained by an excess of moisture in the soil in the first option and the fall of the first ovaries due to a lack of moisture in the soil in the II-option of irrigation.From the data shown in Table 4, it can be seen that on the variance of traits the number of days from sowing to flowering

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and from sowing to ripening in the studied varieties have a significant influence on the timing and number of irrigation.

Table 4.Indicators of economically valuable traits of cotton varieties under different conditions of irrigation (in a lysimeter)

Irrigation option	Irrigationpattern	Days from sowing				Plants height, cm	
		till flowering		till ripening			
		$X \pm S_x$	σ	$X \pm S_x$	σ	$X \pm S_x$	σ
1.UzFA-703							
I	1x2x1x1	62.2±1.5	2.4	107.0±1.9	4.5	86.4±2.1	4.7
II	1x1x1x0	59.6±0.6	1.3	100.2±0.5	1.1	78.0±1.9	4.5
III	0x1x1x0	60.6±1.2	2.7	101.8±1.6	3.6	75.0±1.6	3.6
2. Kelajak							
I	1x2x1x1	63.4±1.7	3,8	109.6±3.5	7.9	89.0±3.7	8.3
II	1x1x1x0	57.2±0.7	1.6	102.0±2.0	4.6	90.2±1.4	3.2
III	0x1x1x0	58.0±0.6	1.4	103.2±1.7	3.9	79.0±2.9	6.5
3. UzFA-705							
I	1x2x1x1	60.0±0.5	1.1	102.6±0.9	2.2	82.2±4.6	10.4
II	1x1x1x0	59.0±0.3	0.7	101.6±0.7	1.6	79.0±1.9	4.2
III	0x1x1x0	60.2±0.7	1.6	105.2±0.2	0.5	94.0±2.9	6.5
4. Narpay							
I	1x2x1x1	61.0±1.2	2.7	104.2±1.4	3.1	95.8±5.0	11.3
II	1x1x1x0	58.4±0.4	0.9	102.4±0.9	2.0	83.0±1.2	2.7
III	0x1x1x0	60.4±0.7	1.3	103.2±1.2	2.7	90.0±2.2	5.0
5. UzFA-709							
I	1x2x1x1	66.2±2.1	4.8	111.6±4.0	9.0	81.4±6.5	14.7
II	1x1x1x0	59.6±2.5	5.5	102.8±2.6	5.7	97.0±4.3	9.6
III	0x1x1x0	61.4±0.6	1.4	103.6±2.4	5.4	90.0±6.7	15.4

Thus, the highest standard deviation values for flowering time are observed in Kelajak varieties in I-irrigation option (σ-3.8), UzFA-709 in I- and II-irrigation options (σ-4.8 and -5.5, respectively). The smallest - in varieties UzFA-705 in I- and II-irrigation options (σ-1.1 and -0.7, respectively), UzFA-703 in II-irrigation option (σ-1.3), Narpay in II- and III -option of irrigation (σ-0.9 and -1.3, respectively), which is due to the normal reaction of genotypes to the provision of soil moisture.

The studied cotton varieties, depending on the irrigation regime, had an ambiguous character of "plant height" trait development. Thus, the highest plants turned out to be cultivars UzFA-703 and Narpay in the I-irrigation option (86.4 cm and 95.8 cm, respectively), in the varieties Kelazhak and UzFA-709 in II-irrigation option (86.4 cm and 95, 8 cm, respectively), and

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for UzFA-705 variety in III-irrigation option - 94.0 cm. The most variable in terms of this trait were the varieties UzFA-709 in I- and III-irrigation options (σ-14.7 and -15.4, respectively), UzFA-705 and Narpay in I-irrigation option (σ-10.4 and -11.3 respectively).

Table5.Indicators of economically valuable traits of cotton varieties in the field

№	Variety	Number of plants	Number of sympodial branches, pcs		Number of bolls per one plant (pcs)	
			X ± Sx	σ	X ± Sx	Σ
1	UzFA-703	292	17.6±0.2	2.6	17.9±0.3	3.1
2	Kelajak	280	15.7±0.3	3.0	18.1±0.5	3.4
3	UzFA-705	250	14.6±0.2	3.1	17.5±0.3	3.6
4	Narpay	288	18.4±0.1	2.3	16.6±0.4	4.2
5	UzFA-709	140	17.4±0.7	1.4	17.0±1.2	4.5

Under field conditions, the best indicators in terms of the number of sympodial branches per plant had the varieties UzFA-703 (17.6 pieces) and Narpay (18.4 pieces). In the rest of the studied varieties, the indicator of this trait varied from 14.6 pieces to 17.4 pieces (table 5). σ – 1.4-3.1, which indicates a more stable genetic structure of studied varieties populations for this trait.

Analysis of the data showed that the number of capsules per plant in the population of varieties Kelajak and UzFA-703 is 18.1 pcs and 17.9 pcs. correspondingly more than the rest of the studied varieties. The smallest number of capsules per plant was observed in the Narpay cultivar, 16.6 pieces. Other varieties had 17.0-17.5 bolls per plant. The data given in table 6 indicate that the populations of the varieties UzFA-709 and Narpay are genetically heterogeneous in terms of this trait than other studied varieties. The data obtained show the need for further refinement of the population of these varieties for this cotton trait.

Table 6.Indicators of economically valuable traits of cotton varieties in different conditions of irrigation regime (in a lysimeter)

Irrigation option	Irrigation pattern	Number of sympodial branches, pcs		Number of bolls per one plant (pcs)			
				Total		Ripe	
		$X \pm S_x$	σ	$X \pm S_x$	σ	$X \pm S_x$	σ
1.UzFA-703							
I	1x2x1x1	86.4±2.1	4.7	16.4±0.9	2.1	12.6±0.7	1.6
II	1x1x1x0	78.0±1.9	4.5	14.4±1.0	2.3	12.3±0.8	1.9
III	0x1x1x0	75.0±1.6	3.6	9.4±1.0	2.3	8.7±0.7	1.6
2. Kelajak							
I	1x2x1x1	89.0±3.7	8.3	13.0±1.4	3.2	9.2±1.2	2.7
II	1x1x1x0	90.2±1.4	3.2	11.2±1.7	3.7	8.9±1.9	4.5

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III	0x1x1x0	79.0±2.9	6.5	6.2±0.6	1.3	5.7±0.9	2.2
3. UzFA-705							
I	1x2x1x1	82.2±4.6	10.4	13.2±1.2	2.8	9.8±0.5	1.1
II	1x1x1x0	79.0±1.9	4.2	10.0±0.6	1.4	7.6±1.0	2.9
III	0x1x1x0	94.0±2.9	6.5	12.4±0.8	1.8	9.2±0.6	1.3
4. Narpay							
I	1x2x1x1	95.8±5.0	11.3	19.8±1.3	3.0	17.2±1.1	2.5
II	1x1x1x0	83.0±1.2	2.7	8.8±0.8	1.8	6.9±0.6	1.4
III	0x1x1x0	90.0±2.2	5.0	8.8±0.9	2.2	6.7±0.9	2.2
5. UzFA-709							
I	1x2x1x1	81.4±6.5	14.7	13.2±2.5	5.7	10.3±1.7	3.7
II	1x1x1x0	97.0±4.3	9.6	14.4±0.2	0.5	11.8±0.7	1.6
III	0x1x1x0	90.0±6.7	15.4	10.2±1.0	2.2	8.3±1.4	3.2

Interesting data were obtained on the basis of the number of bolls per plant (table 6) in a lysimeter. In all studied varieties, except UzFA-709, the largest number of bolls per plant was observed in the I-irrigation option and the largest number of ripe bolls per plant in I- and II-irrigation options.

Indicators of economically valuable traits of cotton varieties in the field

№	Variety	Number of plants	Raw cotton weight in one boll, g		Fiber output, %		Fiber length, mm	
			X ± Sx	σ	X ± Sx	σ	X ± Sx	σ
1	UzFA-703	292	6.3±0.2	3.1	37.8±0.5	3.2	35.4±0.5	5.1
2	Kelajak	280	6.5±0.2	3.9	38.3±0.4	3.7	35.5±0.4	3.9
3	UzFA-705	250	6.0±0.2	3.0	37.6±0.5	4.1	35.0±0.5	4.8
4	Narpay	288	5.8±0.3	5.1	39.1±0.7	6,0	34.7±0.7	8.5
5	UzFA-709	140	5.9±0.9	5.2	37.5±1.2	5.7	35.3±1.2	11.8

Table7.Indicators of economically valuable traits of cotton varieties under different conditions of irrigation (in a lysimeter)

Irrigation option	Irrigation pattern	Raw cotton weight in one boll, g		Fiber output, %		Fiber length, mm	
		$X \pm S_x$	σ	$X \pm S_x$	σ	$X \pm S_x$	σ
1.UzFA-703							
I	1x2x1x1	6.2±0.5	1.0	37.0±0.9	1.4	36.4±0.7	1.4
II	1x1x1x0	5.8±0.6	1.3	38.2±0.5	1.1	36.1±0.9	1.5
III	0x1x1x0	5.5±1.2	2.7	40.8±1.6	3.6	35.0±1.2	3.6
2. Kelajak							
I	1x2x1x1	6.4±0.7	1.1	38.6±0.5	1.2	36.0±0.7	1.3

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II	1x1x1x0	6.0±0.8	1.6	38.0±0.8	1.6	35.4±0.7	1.2
III	0x1x1x0	5.8±1.6	3.4	39.2±1.7	3.9	35.1±0.9	2.5
3. UzFA-705							
I	1x2x1x1	6.0±0.5	1.1	37.6±0.9	1.2	35.2±0.6	1.4
II	1x1x1x0	5.6±0.6	1.7	38.6±0.8	1.5	35.0±0.9	1.3
III	0x1x1x0	5.2±1.3	2.6	40.2±1.2	2.9	34.7±1.4	2.8
4. Narpay							
I	1x2x1x1	5.9±0.6	0.9	39.2±0.4	1.1	35.4±0.7	1.3
II	1x1x1x0	5.4±0.9	1.4	40.4±0.9	1.0	35.0±0.8	1.7
III	0x1x1x0	5.0±1.7	3.3	43.2±1.2	3.7	34.0±1.7	3.2
5. UzFA-709							
I	1x2x1x1	5.8±0.3	0.7	37.6±0.6	1.4	35.4±0.5	1.7
II	1x1x1x0	5.4±0.7	1.5	38.8±0.9	1.7	35.0±0.8	1.6
III	0x1x1x0	4.8±1.7	3.4	41.6±1.4	4.1	34.5±1.9	5.2

Table8.Indicators of fiber quality in cotton varieties in field and artificial (lysimeter) growing conditions

№	Variety	Microneire		Tensilestrength, (gf/tex)		Upper average fiber length (inch)	
		In the field	In artificial conditions	In the field	In artificial conditions	In the field	In artificial conditions
1	UzFA-703	4.0 – 4.2	4.4 – 4.5	29.4	28.7	1.17	1.14
2	Kelajak	4.0 – 4.1	4.2 – 4.4	29.9	29.2	1.18	1.15
3	UzFA-705	4.1- 4.2	4.3- 4.5	29.0	28.3	1.21	1.17
4	Narpay	4.2- 4.3	4.4- 4.6	29.3	27.8	1.18	1.16
5	UzFA-709	4.0- 4.2	4.5- 4.7	30.3	28.9	1.16	1.13

From the data given in Table-8, it can be seen that relatively better indicators of the microneire trait in field and artificial growing conditions were observed in varieties Kelajak (4.0-4.1 and 4.2-4.4), UzFA-703 (4.0 -4.2 and 4.4-4.5) and UzFA-705 (4.1-4.2 and 4.3-4.5). In varieties Narpay and UzFA-709, microneire indicators in field conditions turned out to be better than when growing plants in lysimeters, they were 4.2-4.3 and 4.1-4.2 in field conditions and 4.4-4.6; 4.5-4.7 in artificial conditions. The indices of tensile strength and upper average fiber length in studied varieties were also better in the field than in artificial conditions (lysimeter) of cultivation.

In general, as a result of the studies, an ambiguous degree of influence of irrigation options on the development of economically valuable traits indicators in new varieties of cotton was revealed.

The closest indicators of the trait, the number of days from sowing to flowering in some varieties in the studied irrigation options, is probably associated with the genetic homogeneity of

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their populations, and the ambiguity of the indicators of this trait in other varieties is associated with the instability of the populations of these varieties. Of the three options for the irrigation regime, the plants of the studied varieties in the second option (1x1x1x0) turned out to be more early ripening than in the first (1x2x2x1) and third (0x1x1x0) irrigation options, which may be explained by the excess moisture in the first option and the dropping of the first ovaries on the bush in the third option. When studying the trait, the height of the main stem of plants in all three watering options was not found, which is associated with the genetically different quality of the varieties and their neutral rate of response to different water supply conditions for this trait. The total number of bolls per plant and the number of opened bolls per plant in the studied varieties in the first (1x2x2x1) and second (1x1x1x0) patterns were higher than in the third irrigation pattern (0x1x1x0), which is associated with the dropping of ovaries with a delay in irrigation and the favorable influence of the first two irrigation options for the formation of these characteristics of cotton.

As a result of the conducted studies, from the population of all studied cotton varieties, we isolated drought-resistant biotypes that had high indicators of economically valuable traits inherent in the original cotton varieties. Moreover, the largest number of them was isolated from the population of the self-pinching Kelajak variety. The selected drought-resistant biotypes were studied in subsequent generations for economically valuable traits of cotton, in combination with drought resistance, and it was found that the initial indicators of economically valuable traits in combination with drought resistance in populations of the isolated biotypes in subsequent generations are mostly preserved.

Thus, according to the data analysis results on the study of irrigations number on some economically valuable traits, we can come to the following conclusions:

- the influence of the number of irrigations in ontogenesis on such traits as seed germination, the number of days from sowing to flowering and from sowing to ripening, the height of the main stem, the number of bolls per plant, the weight of raw cotton in one boll and the fiber yield is significant;
- the initial indicators of economically valuable traits in combination with drought resistance in the populations of the selected biotypes in subsequent generations are mainly preserved;
- by creating conditions for artificial soil drought, drought-resistant biotypes can be distinguished from the populations of varieties - the ancestors of cotton varieties resistant to soil drought;
- to determine the resistance of new varieties of cotton to biotic and abiotic factors, soil and climatic conditions of the environment, as well as reproduction in a short time in unfavorable conditions of irrigation (agriculture), it is necessary to select resistant forms against a contaminated background and extreme environmental conditions.

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