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CREATION OF NEW SALTS, DRY AND VILTONE-RESISTANT MUTANT VARIETIES OF MEDIUM FIBERGEN COTTON WITH OUTPUT OF FIBER MORE THAN 40% WITH QUALITY OF FIBER IV TYPE AND TRANSFER FOR STUDY INTO THE PRIMER

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ABSTRACT: This article reflects the production of relatively promising varieties of cotton through artificial mutagenesis compared with the control variant in the conditions of Karakalpakstan. In the competitive varietal feeding of the Institute's cotton for the study of basic economic values, the relatively promising varieties were the mutant varieties KK-3560 KK-3550 and KK-3565 in the control variant, the comparatively significant increase in economically valuable characteristics against the standard was varieties KK-3543 and KK3544.

KEY WORDS: hybrid combination, maturation, medium saline background, soil, arid background, cotton seeds, productivity, mutant hybrids, productivity, fork tolerance, fiber length and yield.

I. INTRODUCTION

To obtain a variety of source material in the selection work, the biological, physical and chemical methods of influence on the heredity of plants are widely used. Moreover, hybridization, polyploid forms, and experimental induction of mutations are the main sources of hereditary variability of cotton. Experimental mutagenesis often provides an opportunity to overcome some of the above difficulties. For example, acting on plants with ionizing radiation, it is possible to solve such special problems as breaking traction of characters by transferring the part of the chromosome responsible for a particular trait during hybridization and overcoming non-crossbreeding during distant hybridization (Dubinin, 1967) [4]. A very valuable quality of this method is the ability to induce in a highly cultivated variety that has a complex set of valuable properties, individual mutations that allow you to change a small number or even only one trait, and the main complex of economically valuable traits in most cases remains untouched.

For production, the most valuable are varieties that are capable of producing a stable crop in a given area. At present, breeders have been given the task of creating and introducing into production early-ripening, fork-tolerant, drought-resistant, high-yielding varieties of cotton with a complex of economically valuable traits.

Due to the increase in drying out of the Aral Sea, in the southern zones of the Aral Sea region in recent years, the negative impacts of extreme conditions have intensified. Therefore, the study and testing of breeding materials, and the creation of new varieties of cotton adapted to this zone is relevant. Therefore, new varieties with the

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shortest possible ripening period, high-yielding fibers with good technological qualities and resistant to drought, diseases and pests are needed for this zone.

The decisive factor in overcoming the above difficulties for intensive agriculture is the creation and implementation of new environments resistant to adverse conditions, highly productive varieties of agricultural crops with improved quality indicators of production, which still remains an extremely important and urgent problem. To obtain a variety of source material in the selection work, the biological, physical and chemical methods of influence on the heredity of plants are widely used. Moreover, hybridization, polyploid forms and experimental induction of mutations are the main sources of hereditary variation. Continuous progress in slowing technology is increasing demands for new varieties of crops. For example, in addition to high yield, good quality fiber and early maturity, a modern cotton variety should be adapted for widespread use, mechanization in cultivation and harvesting, responsive to fertilizers, and resistant to adverse environmental factors, including common diseases, pests, and many other qualities. It is difficult to achieve a complex combination of such genetically complex quantitative traits only by hybridization and selection.

The practical value of many valuable varieties could increase dramatically if certain deficiencies that limit the widespread use of these varieties with production are eliminated.

The Republic of Karakalpakstan belongs to the zones of risky agriculture for cultivating crops and, above all, due to the reduced amount of effective temperatures, which ultimately determines the length of the growing season, the length of the possible cultivation of one or another variety of cotton. Therefore, for this zone it is necessary to create varieties with the shortest possible ripening period, high-yielding fibers with good technological qualities, and resistant to diseases and pests. It should be noted that the solution of the breeding problem by obtaining a mutation with a "narrow" effect, due to which one economic trait can be improved, is not always possible. Mutational changes are often characterized by a pleiotropic effect, i.e. act on a number of signs. In this complex action, along with useful ones, undesirable symptoms can also arise. Nevertheless, a relatively high incidence of mutations determining the resistance to the disease has been established. High-yielding, early-ripening, having good quality products, well adapted to the conditions for growing mutants of wheat, barley, corn, legumes, cotton, tobacco, sunflower, and other crops are highlighted.

In cotton breeding, it remains an urgent problem to cultivate varieties highly resistant to the disease by verticillosis wilt, since the wide spread of this disease in the main areas of cottonseeding poses a serious threat to cotton growing. Cotton breeding for immunity is considered one of the radical means of combating this disease. In the offspring of hybrids obtained as a result of distant crosses, complex cleavage also occurs in hybrid plants, while undesirable traits of the wild parental form often dominate. Identification of a new form combining a complex of valuable properties with disease resistance is possible only in subsequent generations as a result of careful multiple selection. In his works Qaxxarov I.T. et al. [5] studied the effect of γ- and β-irradiation in M_1 and M_2 on the length of the growing season and the productivity of the line and varieties of cotton. The authors emphasize that different types of γ- and β-irradiation affect seeds differently. The effect of gamma rays on seeds in the M_1 and M_2 populations of lines and varieties leads to wide hereditary variability of genotypes. Moreover, the selection efficiency of hereditary precocious and fruitful biotypes of cotton is high. When irradiated with β-rays in populations M_1 and M_2, a stimulating effect is manifested to reduce the growing season and increase yield.

Janikulov F. et al. [7] believe that using methods of experimental mutagenesis, breeders manage to accelerate the processes of differentiation and stabilization of traits in the offspring of hybrids, which allows the creation of new forms and varieties of intensive-type cotton. Hybridization of mutants leads to faster stabilization of offspring according to most morphological and economically valuable traits, thereby reducing the breeding process, accelerating the creation of intensive varieties of cotton. In addition, as a result of the irradiation of dry cotton seeds with an electromagnetic field, photoperiodism mutations and the Marie-galante form with a long fiber (45 - 50 mm) in M_1 were obtained, which is preserved in the offspring of M_6-M_8, which indicates a high degree of purity of the original genotype.

The influence of radiation on heredity can accelerate the processes of differentiation and stabilization of characters in the offspring of irradiated hybrids obtained as a result of distant, intraspecific hybridization, and create new forms of cotton that are of interest as starting material for selection.

From this point of view, given the importance of this problem, it is necessary to continue research work on selection and seed production of cotton for stress factors, as well as to develop a scientifically acceptable technology for their cultivation.

II. MATERIALS AND RESEARCH METHOD

The research was carried out for 3 years on an experimental basis, the laboratory of cotton breeding and seed production, the Karakalpak agricultural research research, located in the north-western part of Uzbekistan. According to the breeding technique, the following nurseries were laid:

1 Station variety for testing cotton.

2 Competitive cotton trial grade.

The experiments were laid on a normal background. The following varieties and lines of medium fiber cotton were studied as an object of research on the project: KK-3532, mutant KK-3549, mutant KK-3551, KK-3535, KK-3536, KK-3537, mutant KK-3552, KK-3546, mutant KK-3547, mutant KK-3548, KK-3530 and KK-3531.

The test was conducted on a healthy, medium-saline, artificially infected area with a verticillus wilt and artificially arid (2 irrigation) backgrounds. The layout of the plant in nurseries 60 x 25 - 1, row 50 wells, the repetition of options in the nurseries of the station variety testing 4 x multiple.

During the growing season of cotton in all nurseries, the following phenological observations and counts were carried out:

- the period from sowing to 50% of seedlings.
- the period from 50% seedlings to 50% ripening.
- accounting of varietal purity of mutant varieties.
- registration of lesions with a verticillus wilt with a cut of the root neck of plants.
- determination of salinization of the soil before sowing and the growing season 3 times in the experimental plot.
- accounting for the cotton crop of raw (before frosty and from open boxes)

During the mass ripening of cotton, 50 and 100 box test samples were collected from the marked rows for laboratory analysis to determine the raw mass of one box, the length and fiber yield of the cotton varieties studied.

From the collected individual preliminaries, the propagation of mutant varieties of breeding and seed materials after laboratory analysis carried out the rejection of materials.

HCP-S_d*t, where S_d - the error of the difference, t - the standard criterion (determined by the number of degrees of freedom)

$\delta^2 = \delta \times \delta$ m= $\delta/\sqrt{n}$ v = δ x100% /m

n - the number of plants, M - average hybrids, δ_2 – variance,

m - average experimental error, V - coefficient of variation.

The data obtained were processed by analysis of variance. Soil moisture was determined by the gravimetric method in laboratory conditions, and the salinization of soils and groundwater was determined by an electro conductivity meter. Numerous studies in this area show that the territory of the land in question belongs to the zones of salt accumulation. Usually, after leaching, the soil is desalinated to certain limits and after a certain time the accumulation of salts begins and at the end of the growing season, salt reserves are completely restored.

In the majority of irrigated lands of the Republic of Karakalpakstan, with a close occurrence of the groundwater level, the component of the vertical movement of salts reaches up to 65-75%, which contributes to the secondary salinization of soils. Usually, after washing, the soil is desalinated to the permissible limit necessary for plant growth, and after 2 to 3 months salinity on the top soil layer is restored. Therefore, annually inflated irrigation irrigation rates (up to 4.0 - 5.0 thousand m^3/ha) are served, which in turn lead to an increase in the groundwater level. The ratio of B + O/ΣI in the annual context is maintained by a ratio of 2.0 - 2.5, where B - the water supply (net), O - the atmospheric precipitation, and ΣI - the total evaporation.

In the practice of the domestic methodology, soil salinity was assessed according to numerous criteria: as a solid residue, by type and degree of salinity (Cl/SO_4 ratio), Na/Cl, by the content of toxic salts, etc.). Below in Table 1 the classification of soils by degree of salinity is given.

Table 1. Classification of soils by salinity

Salinity degree	According to Minashina, Egorov Cl% to mass	According to V.V.Egorov	E.I. Pankova (according to the sum of the toxicity of salts)		Conductivity
			chloride	chloride-sulfate	ECe, μS/cm
not salted	< 0.01	-	< 0.03	< 0.05	0 - 2
slightly salted	0.01 – 0.035	0.01-0.03	0.03-0.10	0.05-0.12	2 - 4
mid-saline	0.035-0.07	0.03-0.10	0.1-0.3	0.12-0.35	4 - 8
strong saline	0.07-0.14	0.1-0.23	0.3-0.6	0.35-0.2	8 - 16
very salted	>0.14	>0.23	>0.6	>0.7	more than 16

As can be seen from the data on Table 1 for all authors, the indicator of chlorine ion corresponds to non-saline categories and even slightly saline categories of soils corresponds to 0.01 and 0.03% of the mass of soils. Due to the increased salinity of Amudarya water on irrigated lands, such a gradation of soil salinization is practically absent. Therefore, in the conditions of the Republic of Karakalpakstan, the upper limit of soil salinization, related to slightly saline soils, must be taken equal to 0.04% for chlorine ion, which corresponds to 4 μS /cm in electrical conductivity.

In world practice, when assessing the degree of salinization of soils, the electroconductometry method is widely used, based on the electrical conductivity of solutions in water and in soil (soil-water suspension). Electrical conductivity (EC) is measured in decimax per meter (dS / m), microsiemens per cm (μS / cm). To measure the electrical conductivity, an A. K. Chernyshev electroconductometer was used. During field work, the suspension was prepared in the ratio of soil: water - 1: 1, i.e. 30 ml of distilled water and 30 grams of soil. The readings of the device (EC 1:1) were multiplied by a factor of 3.5, and as a result, the calculated electrical conductivity of the soil extract ECE was obtained. According to the available data on electrical conductivity, the degree of salinization of soils is determined by the following table (Table. 2.).

Table 2. FAO soil salinization classification

ECe, μS/cm	Soil salinity	EC 1 : 1, μS/cm
0 – 2	Non saline	0 – 0.6
2 – 4	Lightly salted	0.61 – 1.15
4 – 8	Saline	1.16 – 2.30
8 – 16	Highly saline	2.31 – 4.7
More than 16	Salt marshes	> 4.7

The change in salt content in the soil of the KKNIIZ experimental demonstration site is shown in Table 3. At the beginning of the growing season, at almost all sampling points on the upper layer, the salt content was significantly higher and ranged from 3.0 to 10 μS /cm, which exceeds the permissible limit 2.0 - 2.2 times. At the end of the growing season, the salt content increased significantly. In most cases, desalination of the soil is observed in the lower layers, starting from 1.0 to 1.2 m, which is associated with the influx of fresh water from the irrigation canal, which runs 100 - 150 m from the site. The concentration of salts in the main one is observed on the upper 20 cm layer.

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Table 3. Salinization dynamics of soil in the pilot production site "against a medium saline background" according to the FAO classification for 2019

Date ECe	Depth of selection, cm	ECe	Degree of salinity according to FAO
Point №1, 2, 3, 4, 5			
14.04.2019	0-5	2.21	slightly saline
	5-20	3.14	slightly saline
	20-40	3.79	slightly saline
	40-60	3.59	slightly saline
	60-80	3.04	slightly saline
	80-100	2.49	slightly saline
	Ср. 100 см	3.02	slightly saline
07.05.2019	0-5	3.72	slightly saline
	5-20	4.21	saline
	20-40	4.97	saline
	40-60	4.13	saline
	60-80	3.84	slightly saline
	80-100	3.37	slightly saline
	Ср. 100 см	4.04	saline
05.07.2019	0-5	2.34	slightly saline
	5-20	3.60	slightly saline
	20-40	5.57	saline
	40-60	4.35	saline
	60-80	4.30	saline
	80-100	3.10	slightly saline
	Ср. 100 см	3.69	slightly saline
17.09.2019	0-5	2.60	slightly saline
	5-20	3.97	slightly saline
	20-40	5.65	saline
	40-60	8.58	highly saline
	60-80	5.14	saline
	80-100	3.69	slightly saline
	Av. 100 cm	4.93	saline

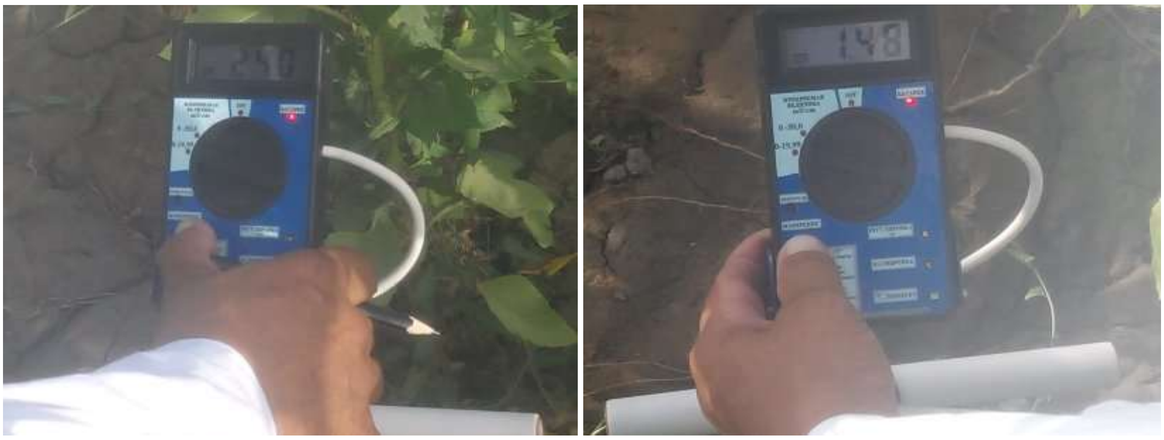

Figure 1. Determination of salt soil by an electroconductometer.

III. RESEARCH RESULTS ON A USUAL BACKGROUND

Cotton breeding, as you know, is based on knowledge of the genetic patterns of inheritance of characters, so the development of selection and genetic science is functionally related to the selection of crops. Modern breeding and genetic science is developing in two ways. One way is the development of theoretical aspects and the improvement of traditional selection methods - hybridization and selection, the other - the development of the latest methods of genetic cell engineering and biotechnology (V.A. Avtonomov 2009; [2] R.R. Egamberdiev 2000) [8]. The leading place in breeding continues to be held by traditional methods of creating varieties that have a huge historical prescription and, presumably, they will never lose their significance when developing in parallel with new directions at the cellular and molecular level (N. G. Simongulyan, 1971,) [3].

It is difficult to achieve a complex combination of such genetically complex quantitative traits only by hybridization and selection.

Experimental mutagenesis often provides an opportunity to overcome some of the above difficulties. For example, acting on plants with ionizing radiation, it is possible to solve such special problems as breaking traction of characters by transferring the part of the chromosome responsible for a particular trait during hybridization and overcoming non-crossbreeding during distant hybridization (Dubinin, 1967) [4]. A very valuable quality of this method is the ability to induce in a highly cultivated variety that has a complex set of valuable properties, individual mutations that allow you to change a small number or even only one trait, and the main complex of economically valuable traits in most cases remains untouched.

Cotton selection by experimental mutagenesis study was performed. In works on the artificial generation of mutations in distant wheat hybrids, they emphasize the exceptional effectiveness of the joint use of two sources of hereditary variability: distant hybridization and experimental mutagenesis in order to obtain new plant forms that are rarely found in nature and culture, as well as to solve complex problems facing selection, including and immune selection.

According to cotton U.E. Aytjanov et al. (2005) [1] A.R. Tyaminov (2000) [6], studied the effect of gamma radiation on seeds and other generative organs, and isolated mutant forms in cotton.

Based on the aforementioned breeding work, as well as the results obtained on the basis of previously created breeding materials by our breeders in the cotton breeding laboratory for 2019, the following breeding nurseries were laid down below: Against the usual background, a stationary cotton variety test was studied.

Cotton Station Variety Test Results on a Normal Background

In a station cotton variety trial, 12 varieties of cotton with standards were studied with mutant varieties with a standard background. In this nursery, varieties were tested in 4-fold repetition. The results of a test in a station cotton variety trial show different results. A study on the growing season, when the standard variety S-4727, this period from seedling to ripening was 120 days, and among the studied varieties of the irradiated variant, the KK-3560 mutant and the KK-3523 mutant were early ripening from 2-4 days against the standard S-4727 . The remaining early ripening varieties without irradiated varieties had maturity from -2 to -5 days against the standard. (Table 4.).

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By the weight of the raw material of one box, comparatively large-boxed varieties compared to the standards were without irradiated grade KK-3547. This variety had a mass of boxes of 7.4 grams when the standard variety had a mass of boxes of 6.6 grams. Of the irradiated varieties, the KK-3523 mutant, the KK-3560 mutant, and the KK-3548 mutant turned out to be relatively large-boxed varieties. They had a mass of boxes from +0.2 to +0.7 rm, against grade S-4727. In the non-irradiated variants from the studied varieties in this nursery, in addition to the KK-3536 variety, they turned out to be relatively large-boxed from +0.2 to +0.8 grams. According to the domorose crop from the irradiated varieties, the mutant KK-3523 turned out to be a relatively high-yielding variety. This variety against the standard was 37.2% high-yielding versus the standard S-4727. The remaining mutant varieties exceeded + 2.6% to + 10.2%. It should be noted that without irradiated varieties, comparatively in this nursery, they turned out to be highly productive against the standard KK-3532, KK-3537, KK-3552 and KK-3531. These varieties also had higher yields against the standard from +10.3 to +26.4%. According to the Israeli box, the mutant KK-3560 and the mutant KK-3523 were relatively high-yielding varieties in the irradiated varieties. They had an excess of + 2.0% to +20.7% yield against the closely-standing C-4727 standard. Without irradiated varieties, comparatively high-yielding varieties against the standard were KK-3546 and KK-3552. They had an excess in Israeli boxes from +10.1 to +14.2%. According to the fiber yield, the high-yield mutant varieties in the irradiated varieties were mainly the KK-3523 mutant and the KK-3560 mutant. They had a fiber yield of 36.9 to 40.2%. When the standard variety had a fiber yield of 36.8%. In the case of non-irradiated varieties, according to this criterion, most varieties were at the standard level or had +0.1 to +1.7%.

In terms of fiber length, compared with the standard, in the irradiated varieties, the mutant varieties KK-3560 mutant and KK-3523 mutant turned out to be relatively long-fiber varieties. They had fiber lengths from +0.1 mm to +0.8 mm against the standard. In the case of non-irradiated varieties, relatively long-fiber varieties had the majority of varieties; they had fiber lengths from +0.2 mm to +1.0 mm. In the reporting year, for this nursery from irradiated varieties, the mutant KK-3549 without the irradiated cultivar KK-3552 turned out to be relatively better varieties against the standard. These varieties had advantages against the standard for the main economically valuable traits, therefore it is advisable to study these varieties in the appropriate nursery for testing for 2020.

Table 4. Data on economically valuable traits of station variety testing on a normal background

№	Varieties	Vegetation period		Mass of raw 1 box/g		Production of raw, c/ha				Fiber yield, %		Fiber length, mm	
						Domorious		Disclosed box					
		Daily	Off	Yearly	Off	c/ha	Off	c/ha	Off	%	Off	mm	Off
1	C-4727	120		6.6		22.3		29.6		36.8		32.6	
2	KK-3532	115	-5.0	6.8	+0.2	24.6	110.3	29.8	100.6	36.8	±0	32.4	-0.2
3	KK-3548	116	-4.0	7.3	0.7	22.9	102.6	28.6	96.6	37.6	0.8	32.6	±0
4	M KK - 3560	118	-2.0	6.9	+0.3	24.6	110.3	30.2	102.0	40.2	3.4	32.7	0.1
5	KK –3535	121	+2.0	6.8	0.2	19.9	89.2	26.3	88.8	38.5	1.7	33.0	0.4
6	KK –3536	118	-2.0	6.5	-0.1	20.4	91.4	29.6	100.0	37.2	0.4	33.0	0.4

7	KK –3537	116	-4.0	6.9	0.3	26.4	118.3	30.9	104.3	37.0	0.4	33.2	0.6
8	KK –3552	117	-3.0	7.2	0.6	28.2	126.4	33.8	114.2	37.4	0.6	33.6	+1.0
9	KK –3546	120	±0	6.8	0.2	22.8	102.2	32.6	110.1	36.8	±0	33.1	0.5
10	KK –3547	120	±0	7.4	0.8	20.0	89.6	30.3	102.3	37.0	0.2	32.9	0.3
11	M KK –3523	118	-2.0	6.8	+0.2	30.6	137.2	35.6	120.7	36.9	+0.1	33.4	0.8
12	KK-3530	120	±0	6.6	±0	19.6	87.8	26.0	87.8	37.3	0.7	32.8	0.2
13	KK-3531	118	-2.0	6.9	0.3	25.4	113.9	30.1	101.6	37.0	0.2	32.6	±0

NSR-1.21. Experience error -0.28%.

According to a two-year study of the cotton plant variety testing, we did not find a sharp difference in early maturity of the studied varieties, since they were 1-3 days earlier than the standard variety.

According to two-year data, the mass of raw one box compared to the standard had an excess of +0.3 to +0.7 g. In irradiated and unirradiated cotton varieties. By the harvest of raw cotton before the frosty harvest against the standard, the varieties of the irradiated varieties KK-3523 and KK-3560 had a significant excess. They had an excess of 17.7% to 28.0%. These indicators were retained for the harvest from the open boxes in the irradiated cultivar mutant KK-3560. In the non-irradiated varieties KK-3552 and KK-3531, they exceeded the standard from 11.1% to 21.8%. Therefore, the above listed varieties in yield to frosty and from open boxes, against the standard had a significant excess. According to the fiber yield, the offspring of the irradiated cultivar mutant KK-3560 had a significant excess. This indicator equaled higher against the standard +2.4%, when the other varieties were at the level of the standard grade S-4727. In comparison with the standard, the fiber length had an excess of +0.8 mm against the standard for the irradiated grade KK-3560, when without the irradiated varieties this attribute ranged from +0.5 mm to +0.6 mm against the standard.

IV. RESULTS OF A COMPETITIVE COTTON VARIETY TRIAL ON A REGULAR BACKGROUND

In 2019, according to the results of competitive cotton variety testing, the institutes showed that the tested varieties for irradiated and without irradiated varieties have a different reaction to the formation of the main economically valuable traits. In the nursery of competitive variety testing, only 12 varieties of offspring of irradiated and without irradiated variants with standards were studied. Of these, 6 varieties from irradiated mutant forms. In the studied varieties by vegetation period, no significant differences in table data were found. Since they on this basis turned out to be from 1.0 to 3.0 days earlier than the standard for irradiated and control varieties. Of these, the irradiated varieties were precocious against the standard for 3.0 days. Without irradiated varieties, early ripening varieties were KK-3545, KK-3541, KK-3543, and KK-3544; they were earlier than the standard for 2-3 days.

The table data shows the mass of raw one box most of the studied varieties were large-boxed varieties against the standard S-4727. The size of the boxes between the varieties varied from +1.0 grams to + 6.0 grams. The irradiated varieties were large-boxed against the standard +0.1 to +0.6 grams. In this nursery, the mutant KK-3565 and KK-3549, and the control variant KK-3541 and KK-3545, were relatively large-box varieties in the irradiated variant.

In the reporting year for the pre-frosty harvest of raw cotton, the majority of the studied varieties were high-yielding, except for the irradiated variant mutant KK-3549. The irradiated varieties KK-3565, KK-3552 and KK-3560 compared to the standard had an excess of 12.1% to 28.0%. On this basis, KK-3550 in the irradiated variant turned out to be relatively high-yielding varieties. The control variant of high-yielding varieties were KK-3544. This variety exceeded the standard S-4727 by 21.4%.

When analyzing the harvest of raw cotton from the opened bolls, most varieties were high-yielding, except for the mutant KK-3549, and the control variant KK-3541. Comparatively high-yielding varieties against the standard in the irradiated varieties were the KK-3550 mutant. This variety had a yield of 25.0% against the standard. In this nursery, the irradiated varieties KK-3560 and KK-3565 had a yield of 30.0 and 31.2 c / ha, when the standard grade was 25.6 c / ha.

In the nursery of the studied varieties, the high-yield varieties turned out to have the mutant KK-3560, mutant KK-3565 and mutant KK-3550 in the irradiated variants. These varieties had a fiber yield of 38.0 to 40.0%. Of the non-irradiated varieties, the best varieties on this basis were KK-3541 and KK-3545. They had a fiber yield of 38.4-38.6%. They had an excess of 1.2-1.4% against the standard. When the standard grade S-4727 was 37.2% fiber yield.

In terms of the fiber length, the studied varieties were generally relatively long-fiber varieties compared to the standard for irradiated varieties. Therefore, the KK-3560 mutant, the KK-3565 mutant, and the KK-3550 mutant were found to be mainly against the standard as linoleum varieties. They had an excess of +0.3 to +1.0 mm. It should be noted that without the irradiated cultivar, according to this criterion, the KK-3543, KK-3544, and KK-3542 varieties were relatively long-fiber varieties against the standard. They had an excess against the standard along the length of the fiber from +0.5 to 1.0 mm.

In the competitive variety testing of cotton in the reporting year, the following preliminary conclusions can be made: of the studied varieties in the reporting year on a regular agricultural background, according to a set of economically valuable traits, the best varieties were irradiated varieties KK-3560 mutant, KK-3550 mutant and KK- mutant 3565.

In the case of non-irradiated varieties, the comparatively significant excess of the main economically valuable traits against the standard was exceeded by the varieties KK-3543 and KK-3544.

Table 5. The main data of the competitive cotton variety testing for 2019.

№	Varieties	Vegetation period		Mass of raw 1 box/g		Production of raw, c/ha				Fiber yield, %		Fiber length, mm	
						Domorious		Disclosed box					
		Daily	Off	Yearly	Off	c/ha	Off	c/ha	Off	%	Off	mm	Off
1.	C-4727	118		6.4		21.4		25.6		37.2		32.7	
2.	M KK-3560	116	-2	6.6	0.2	24.0	112.1	31.2	121.9	39.2	2.0	33.8	1.1
3.	M KK-3552	115	-3	6.5	0.1	25.2	117.1	26.4	103.1	37.5	0.3	32.4	-0.3
4.	M KK-3565	115	-3	6.9	0.5	28.2	113.1	30.0	117.1	38.0	0.8	33.0	0.3
5.	M KK-3549	118	±0	6.7	0.3	19.4	90.6	22.4	87.5	37.6	0.4	32.4	-0.3

6.	M KK-3550	117	-1	6.3	-0.1	27.4	128.0	32.0	125.0	40.0	+2.8	33.7	1.0
7.	M KK-3551	119	+1	6.4	±0	22.6	105.6	26.6	103.9	36.7	-0.5	34.0	0.3
8.	KK-3541	116	-2	6.9	0.5	21.8	101.8	23.0	89.8	38.4	1.2	32.8	0.1
9.	KK-3545	115	-3	7.0	0.6	24.2	113.0	30.0	117.1	38.6	1.4	32.5	-0.2
10.	KK-3543.	116	-2	6.6	0.2	25.2	117.7	31.2	121.8	37.1	-0.1	33.2	+0.5
11.	KK-3544	116	-2	6.5	0.1	26.0	121.4	28.0	109.3	37.4	0.2	33.5	+0.8
12.	KK-3542	117	-1	6.7	0.3	26.0	121.4	30.0	117.0	37.5	-0.3	33.7	1.0

NSR-1.24. Experience error -0.42%

V. CONCLUSIONS

Based on the result of the study, the following prejudicial conclusions can be drawn.

The study of varieties based on the main economic valuable features of the plant cotton variety testing against the usual background, relatively promising varieties were against the standard mutant KK-3549 and without the irradiated variety KK-3552.

The study on a normal background competitive cotton variety testing showed comparatively better varieties against the nearest standard were from the irradiated varieties KK-3560 mutant, KK3550 mutant and KK3565 mutant. For non-irradiated varieties, reliable profits according to the main economic valuable attributes against the standard were varieties KK-3543 and KK-3544.

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