Journal of Positive School Psychology http://journalppw.com
2022, Vol. 6, No. 11, 2847-2857

Heritage And Variability Of Speed Traits Of Hybrids Between American And Mexican Cotton Varieties

B.U. Aitzhanov[1], D.B. Ramazanov[1], and U.E. Aitzhanov[2,*]

[1]Karakalpakstan Institute of Agriculture and Agrotechnology, Nukus, Uzbekistan
[2]Karakalpakstan Agricultural Research Institute, Chimboy, Uzbekistan
[*]Correspondence: aytjanov1974@mail.ru

Abstract. Due to the salinity of the soil and the short growing season in the Republic of Karakalpakstan, low-yielding, intensive, well-constructed cotton varieties are still poorly developed. To solve this problem, using different hybridization methods from the U.S. and Mexican cotton collections allows us to change the negative correlation between fastness, fiber yield, length, and yield for the better.In order to create high-quality and high-yielding varieties, based on the study of collection samples from the centers of origin of cotton, as well as from the United States and Mexico, they were involved in mixing them with regional and promising new varieties in Karakalpakstan. As a result, in the F_3 plants with an intensive, optimal tuber design, there was an advantage over their parents in almost all combinations on the sign of early maturation, and it was possible to select early maturing genotypes. It was found that the sign of rapid maturation is also a polygenic sign and depends on the genotype of the sample involved in the crossbreeding.

Keywords: genotype, heredity, hybridological analysis, individual selection, rapid maturation, reciprocal crossbreeding, variability.

INTRODUCTION

Recently, the task of creating and introducing large-scale production of medium-fiber cotton varieties has become increasingly important. Simultaneously, the main issue is to increase the fiber yield of medium-fiber varieties. Simple hybridization has been widely used by breeders for many years. But most of this work, which is about simple hybridization, is more focused on creating medium-fiber varieties. Because there are special characters and features that belong to each variety. In these samples of medium-fiber cotton, the fiber quality corresponds to type B in the soil climate of Karakalpakstan, but the fiber yield does not exceed 35.0-36.0 %. This is due to the fact that in the

varieties belonging to the type Gossypium hirsutum L., most seeds are hairy, fiber yield, yield, ripeness and quality are not high. Therefore, to date, the fiber yield of medium-fiber varieties differs significantly from the cotton varieties grown in different soil and climatic conditions. The continuous development of agriculture and technology is increasing the demand for new varieties of agricultural crops. For example, the new crop, which has high yields, good fiber quality, and rapid maturation, requires a wide range of mechanized processing and harvesting fertilizers, as well as environmental factors. It is necessary to create an intensive, medium-fiber cotton variety with an optimal ball design, obtained with the participation of new samples.

According to Kochkarov et. al.[1], the study of the adaptability of plants to various adverse conditions, the mechanism of adaptation in determining their resistance to any adverse conditions and is of great importance in the principles of developing resilience to other inconveniences.

According to Aliev[2], early ripening is associated with the height of the location of the first crop branch, the onset of flowering and the rate of opening of the pods.

Acceleration is a complex polygenic sign, the length of the periods that define it varies to varying degrees. Acceleration is manifested by several hereditary traits, such as the location of the first crop stalk, the number of stalks and the weight of cotton in one stalk, the number of seeds and its weight, fiber length and the peak of cellulose accumulation in it (Straumal[3]).

The results of recent research show that the effectiveness of creating cotton and varieties suitable for soil-climatic conditions for a high and quality cotton crop depends on the correct choice of starting material. Study of collection samples from the United States and Mexico from cotton centers to create high-quality and high-yielding varieties, as well as the creation of a starting material for intensive, well-designed selection obtained by mixing them with new regional and promising varieties in Karakalpakstan is a topical issue.

In view of the above, it is necessary to study the new selection systems used in the soil, climatic conditions of Karakalpakstan in the natural soil-climatic conditions of Karakalpakstan. We aimed to use the starting materials in the practical selection work to create new varieties as a result of the selection of complex intensive, bottom-optimal design forms of cotton, determining the variability of traits.

MATERIALS AND METHODS

The research was conducted in the laboratory "Cotton selection and seed production" in the experimental farm of the Karakalpak Agricultural

Research Institute. Experiments in 2016-2017, 100 U.S. and Mexican cultivars were planted in the institute field in a general style in the order 60x25x1, in three rows, 15 cells. Periods of germination, combing, flowering and opening of buds during the growing season of plants were observed and recorded, and valuable economic traits were identified. During the germination period, every 2 days from the time the first cotton plant sprouted until the end of the germination period, the plant sprouted and was found to be 50 percent fertile. The results were evaluated on the basis of differences in quality compared to the new S-4727.

In 2018, along with the selected samples, varieties S-4727, Omad, Sultan, Chimboy-5018 and KK-3535, regionalized in the Republic of Karakalpakstan, were planted for use in mixing. Observations made during the growing season in previous years have been fully returned.

Reciprocal propagation was carried out during the flowering period of the plants. The observations made in previous years on the obtained F1 plants were fully returned. The expected goal is to study the formation of the main economic and morphological features in the hybrids obtained as a result of crossbreeding.

In the process of opening the coops, a selection and individual selection were made for each hybrid combination. Based on these collected items, the weight, fiber yield and length, as well as quality characteristics of one bale of cotton were determined. The quality of the fiber was determined in the HVI system of the regional laboratory "SIFAT" of the Republic of Karakalpakstan.

The obtained data were statistically processed in the style of Dospekhov.

$$X = \frac{\sum fX}{n} \quad (1)$$

$$S = \frac{\sqrt{\sum f(X_n - X)^2}}{n-1} \quad (2)$$

$$V = \frac{S \cdot 100}{X} \quad (3)$$

$$S_X = \frac{S}{\sqrt{n}} \quad (4)$$

Here:

f– variability index;
X-average grade point;
n- selection volume;
Sx-average arithmetic error;
V- coefficient of variability;
S-arithmetic mean deviation;

The degree of dominance was calculated according to the method of S. Wright in the style of Abdul Jalil Hassan Muhammad Al Harani (1995):

$$hp = \frac{F_1 - MP}{P - MP}$$

F_1 – the arithmetic mean of the hybrid;
MP –arithmetic mean of parents;
P–arithmetic index of the best parent;
hp - dominance factor.

RESULTS AND DISCUSSION

Acceleration, which has been studied in our experiments, is one of the most important biological features in agricultural crops. Acceleration is defined as the duration of the period from germination to budding, from budding to flowering and from flowering to ripening.

According to Abdullaev, Omelchenko[6], regardless of which form of acceleration is involved in the formation, the formation is accelerated by the parents.

According to Aitzhanov and Sagatdinov[7], cotton hybrids obtained with the participation of mutant varieties are 2.5-3.0 days earlier than the parent sample.

One of the most important properties of fast growing is the opening period of these pods. In the F_1 plants studied in our soil climate conditions of the Republic of Karakalpakstan, the period before the opening of cotton was in the range of 103.5-114.7 days (Table 1). In particular, in the hybrid F_1 (S-4727 x 011782), which achieved a positive result in this generation, the fast maturation was 104.7 days, and the difference from the parents – 5.0; -10.8 days. In the reciprocal form of this hybrid, the indicator was 106.9 days, which is -9,6 days earlier than the maternal item. In this case, of course, as a mother, we can see that the sample number 011782 matures early, that is, at a higher rate than the parent.

In the F_1 (S-4727 x 011843) hybrid combination involved in our study, the pre-opening period was 108,8 days, while in the maternal S-4727 variety, the pre-opening period was 110 days. In this case, the hybrid was 1.2 days earlier than the S-4727 grade and 10.9 days earlier than the U.S. sample number 011843, which participated as a father.

In the US hybrid combination F_1 (011843 x S-4727) with a mother sample, the hybrid maturity was 106.0

days, and 2.9 days and 4.9 days earlier than the parent sample. Also, the amplitude of the change in the sign in this combination was 1.6%.

In the studied hybrid combinations F_1 (011761 x Chimbay-5018) and F_1 (011656 x Chimbay-5018), the acceleration was 108.2, respectively; 109 days. The difference from the parental forms is -3.7 +4.3; and -5.4, +0.5 days.

From the analysis of the results of the experiment, it can be concluded that the following signs of rapidity in cotton have been proved during our research that a number of other signs are similar polygens.

The speed of the hybrids was found to depend on the maternal or paternal participation of the specimens involved in the interbreeding and their genotype.

In the case of F_2 hybrids, it was observed that the indicator changed slightly, that is, the indicators were significantly lower. In particular, in the hybrid combination F_2 (S-4727 x 011843), the fasting time was 108.1 days, and in the new S-4727 as a mother, the fastness was 107.4 days.

In other words, in this case, the hybrids opened 0.7 days later than the S-4727 grade, and 0.8 days earlier than the 011843 sample, which participated as a father (Table 2). In the 011843 US sample, the hybrid was found to be 104.6 days ahead of the parent sample, 0.5 and 0.9 days earlier than the parent sample.

The F_2 combination (S-4727 x 011782) had a period of 104.4 days before opening the bolls, while the mother form of the new S-4727 had 108.3 days according to the acceleration sign, which is 47 times longer more than in this case. This was 3.9 days earlier and -2.5 days earlier than sample 011782 from the USA, which participated as a father. Also, in the case of reciprocal motherhood, when the US and Mexican new specimens numbered 011782 participated, the hybrids matured at 105.1 days, 3.9 days earlier than the parent specimens. The period before the opening of the hybrid combination F_2 (Sultan x 011571), which participated in our study, was 111.0 days, and 112.3 days with the participation of the new Sultan as a mother. At the same time, the hybrid was -1.3 days earlier than the Sultan variety and 5.6 days earlier than the Mexican sample 011571, which participated as a father. In the case of reciprocal F_2 (011571 x Sultan) as a mother 011571 in the Mexican sample, the hybrid maturity was 108.5 days, and 5.5 days earlier than the parent sample, and the remaining hybrid combinations were the same.

Among the third-generation hybrids studied during our study, the F_3 (S-4727 x 011843) hybrid combination had a fast maturity of 102 days, while the S-4727 had a new maturity of 103 days. In this case, the S-4727 was registered 1 days earlier, while the 011843 model, which participated as a father, was 3.9 days earlier (Table 3). In the case of 011843 US mothers, the hybrid was found to be 104.5 days

ahead of the parent sample and 2.5 and 3.5 days earlier than the parent sample.

In the hybrid combination F_3 (S-4727 x 011782) studied in the study, the fasting time was 103.9 days, while in the mother S-4727 it was 104.8 days. In this case, the S-4727 was 0.9 days earlier than the 011782 US model, which participated as a father.

At the same time, in the study, when the maternal sample 011782 was involved, it was observed that the sign of rapid maturation in the hybrid was 104.9 days, and 0.9 days earlier than the parental sample.

The period before the opening of the hybrid combination F_3 (Sultan x 011571), which participated in our research, was 107.1 days, while the fasting time was 105.5 days with the participation of the new Sultan as a mother. In this case, according to the mark, Labor was 1.6 days later than the navigator, and 2.11 days earlier than the Mexican model 011571, which participated as a father.

In the reciprocal case, the F_3 (011571 x Sultan) hybrid combination, with the Mexican sample 011571, was 106.1 days faster than the parent sample, 0.3 days and 1.2 days earlier than the parent sample.

Also, in this combination, the amplitude of the oscillation of the indicator was 6.9%. Among the studied hybrids, F_3 (011761 x Chimbay-5018) and F_3 (011790 x Sultan) hybrids, which were considered late, had a fast ripeness of 107.2; 109.1 days. The difference from parents was 0.3 and 3.0, and 5.4 and 4.8 days, respectively. Almost the same patterns were observed in the remaining hybrid combinations.

CONCLUSIONS

Based on the above analysis, it can be concluded as follows:

In the studied F_1 plants, the state of heterosis was observed in most of the combinations according to the sign of early maturity. In the course of our research, it was proved that the quick ripening sign in cotton is polygenic, like a number of other signs, and it was found that the quick ripening of hybrids depends on the maternal or paternal participation of the samples involved in crossings and their genotype.

In the hybrid combination F_1 (C-4727 x 011843), which participated in our research, the period until the opening of the pods was 108.8 days, while the period until the opening was 110.0 days with the participation of C-4727 as a mother. In this case, it was observed that hybrid S-4727 was 1.2 days earlier than S-4727, and 10.9 days earlier than US sample No. 011843, which participated as a father. In the hybrid combination F_1 (011843 x C-4727) with the US sample as a parent, the hybrid's maturity was 106.0 days, and it was 2.9 days and 4.9 days earlier than the parent sample. Also, the amplitude of the sign change in this combination was 1.6%. In the studied F_1 (011761 x Chimboy-5018) and F1(011656 x Chimboy-5018) hybrid

combinations, the ripening rate is 108.2, respectively; It was 109.0 days. The difference from the parent forms is –3.7 +4.3; and it was found to be -5.4, +0.5 days.

In the F_2 (Sultan x 011571) hybrid combination, which participated in our research, the period until opening was 111.0 days, and when the Sultan variety participated as a mother, it was 112.3 days. In this case, it was observed that the hybrid was -1.3 days earlier than the Sultan, and 5.6 days earlier than the Mexican sample 011571, which participated as a father. In the reciprocal case, when F_2 (011571 x Sultan) and 011571 Mexican sample participated as the mother, the hybrid's maturity was 108.5 days, and it was determined that it was 5.5 days earlier than the parent sample. In the reciprocal case, when the 011571 Mexican sample was used as the mother belonging to the F_3 (011571 x Sultan) hybrid combination, the quick ripening of the hybrid was 106.1 days, and it was found that it was 0.3 days and 1.2 days earlier than the parent sample.

Table 1. Inheritance of fasting in F_1 hybrids of cotton

№	Combinations of hybrids	The ripening period in the hybrids, days			hp	Of parental forms ripening period, days		P_1- P_2 relatively differentiation	
		X ±Sx	G	V		P_1	P_2	P_1	P_2
1.	F_1 (C-4727 x 011843)	108.8±0.6	0.6	1.9	1.2	110±2.2	119.7±2.7	-1.2	-10.9
2.	F_1 (011843 x C-4727)	106.0±0.7	1.6	1.5	3.9	108.9±3.1	110.9±2.2	-2.9	-4.9
3.	F_1 (C-4727 x 011782)	104.7±1.5	3.7	3.5	2.8	109.7±1.6	115.5±3.8	-5.0	-10.8
4.	F_1 (011782 x C-4727)	106.9±1.0	3.1	2.9	0.7	116.5±2.6	115.8±0.6	-9.6	1.1
5.	F_1 (Chimboy-5018 x 011656)	110.3±1.4	4.2	3.8	0.5	106.6±1.4	120.8±2.4	3.7	-10.5
6.	F_1 (011656 x Chimboy-5018)	109.0±1.4	4.3	3.9	0.8	114.4±0.7	108.5±1.7	-5.4	0.5
7.	F_1 (Chimboy-5018 x 011761)	103.5±0.7	2.1	2.1	5.0	110.6±2.5	114.1±2.4	-7.1	-10.6
8.	F_1 (011761 x Chimboy-5018)	108.2±0.7	2.0	1.9	-0.07	111.9±1.1	103.9±1.2	-3.7	4.3
9.	F_1 (KK-3535 x 07291)	110.0±2.5	7.8	7.1	0.7	109.3±2.1	113.0±1.4	0.7	-3.0
10.	F_1 (07291 x KK-3535)	111.0±2.3	7.2	6.4	0.5	114.0±1.8	109.9±2.1	-3.0	1.1
11.	F_1 (KK-3535-2 x 011560)	109.7±3.0	9.0	8.2	0.5	109.1±1.6	111.6±1.4	0.6	1.9
12.	F_1 (011560 x KK-3535)	110.7±1.6	4.6	4.1	-5.3	108.5±1.1	109.2±1.8	2.2	1.5
13.	F (Sultan x 011790)	110.1±1.8	5.6	5.1	1.02	110.2±2.4	119.2±3.1	-0.1	-9.1
14.	F_1 (011790 x Sultan)	112.0±1.2	3.5	3.1	0.07	114.9±2.8	109.5±2.5	-2.9	2.5
15.	F_1 (Sultan x 011571)	110.8±1.2	3.7	3.3	0.5	108.2±2.3	119.1±3.7	2.6	-8.3
16.	F_1 (011571 x Sultan)	112.2±2.4	7.6	6.2	0.7	120.1±2.6	110.8±1.9	-7.9	1.4
17.	F_1 (Omad x 011787)	114.7±1.1	3.4	3.0	-0.06	109.1±1.5	119.7±3.3	5.6	-5.0
18.	F_1 (011787 x Omad)	111.6±0.9	2.9	2.6	-1.1	111.3±2.3	104.7±0.7	0.3	6.9
19.	F_1 (Omad x 06655)	113.3±1.7	5.1	4.5	-3.6	110.3±1.2	108.0±1.5	3.0	5.3
20.	F_1 (06655 x Omad)	111.0±1.2	3.9	3.5	-2.6	109.0±1.6	110.1±1.1	2.0	0.9

Table 2. Inheritance of cotton in F_2 hybrids

№	Combinations of hybrids	The ripening period in the hybrids, days			Of parental forms ripening period, days		P_1- P_2 relatively differentiation	
		X ±Sx	G	V	P_1	P_2	P_1	P_2
1.	F_2 (C-4727 x 011843)	108.1±2.4	7.6	7.0	107.4±1.0	108.9±0.8	0.7	-0.8
2.	F_2 (011843 x C-4727)	104.6±1.1	3.4	3.3	105.1±1.8	105.5±1.7	-0.5	-0.9
3.	F_2 (C-4727 x 011782)	104.4±1.3	4.0	3.9	108.3±2.0	106.9±0.9	-3.9	-2.5
4.	F_2 (011782 x C-4727)	105.1±1.0	3.2	3.0	109.0±1.8	106.3±1.0	-3.9	-1.2
5.	F_2 (Chimbay-5018 x 011656)	108.1±2.0	6.0	5.6	104.7±1.8	106.2±1.4	3.4	1.9
6.	F_2 (011656 x Chimbay-5018)	107.4±0.6	1.8	1.6	108.5±2.1	106.2±1.1	-1.5	1.2
7.	F_2 (Chimbay-5018 x 011761)	102.2±0.6	1.8	1.8	107.2±1.7	104.6±0.6	-5.0	-5.4
8.	F_2 (011761 x Chimbay-5018)	106.5±0.5	1.5	1.4	108.3±1.4	103.3±0.9	-1.8	3.2
9.	F_2 (KK-3535 x 07291)	106.5±2.8	8.4	7.9	102.6±2.0	112.9±0.5	3.9	-6.4
10.	F_2 (07291 x KK-3535)	103.9±1.9	5.7	5.5	108.6±1.4	112.3±1.9	-4.7	-8.4
11.	F_2 (KK-3535 x 011560)	103.9±1.5	4.3	4.2	108.1±1.4	105.1±1.0	-4.2	-1.2
12.	F_2 (011560 x KK-3535)	109.9±1.1	3.7	3.3	110.1±2.7	109.9±1.3	-0.2	0.0
13.	F_2 (Sultan x 011790)	109.0±1.8	5.4	5.0	108.3±0.9	107.3±1.3	0.7	1.7
14.	F_2 (011790 x Sultan)	106.2±1.5	4.3	4.1	111.0±1.7	103.3±1.6	-4.8	2.9
15.	F_2 (Mexnat x 011571)	111.0±4.5	10.9	9.8	112.3±2.6	116.6±2.6	-1.3	-5.6
16.	F_2 (011571 x Sultan)	108.5±2.0	5.7	5.2	114.0±2.6	106.8±2.0	-5.5	1.7
17.	F_2 (Omad x 011787)	109.1±1.6	4.7	4.3	104.4±1.9	112.8±1.1	4.7	-3.7
18.	F_2 (011787 x Omad)	105.9±1.7	4.9	4.7	116.4±2.5	102.1±1.7	-10.5	3.8
19.	F_2 (Omad x 06655)	108.6±2.1	5.7	5.3	106.8±1.9	112.4±2.8	1.8	-3.8
20.	F_2 (06655 x Omad)	106.4±1.5	4.7	4.4	109.0±2.1	107.2±1.4	-2.6	0.8

Table 3. Inheritance of fasting in F_3 hybrids of cotton

№	Combinations of hybrids	The ripening period in the hybrids, days			Of parental forms ripening period, days		P_1- P_2 relatively differentiation	
		X ±Sx	G	V	P_1	P_2	P_1	P_2
1.	F_3 (C-4727 x 011843)	102.0±0.7	2.2	2.2	103.0±1.2	105.9±1.1	-1.0	-3.9
2.	F_3 (011843 x C-4727)	104.5±0.6	6.0	1.9	107.0±0.9	108.0±1.2	-2.5	-3.5
3.	F_3 (C-4727 x 011782)	103.9±1.1	3.1	3.0	104.8±1.1	104.6±0.6	-0.9	-0.7
4.	F_3 (011782 x C-4727)	104.9±0.9	2.8	2.7	105.8±1.2	105.8±1.3	-0.9	-0.9
5.	F_3 (Chimbay-5018 x 011656)	103.6±1.0	3.3	3.2	103.3±0.9	106.0±0.9	0.3	-2.4
6.	F_3 (011656 x Chimbay-5018)	104.1±2.4	7.1	6.8	109.0±1.8	103.1±1.8	-4.9	1.0
7.	F_3 (Chimbay-5018 x 011761)	103.1±1.1	3.5	3.4	103.6±1.5	104.0±1.5	-0.5	-0.9
8.	F_3 (011761 x Chimbay-5018)	107.2±1.4	4.1	3.8	106.9±1.5	104.2±1.1	0.3	3.0
9.	F_3 (KK-3535 x 07291)	104.8±1.0	3.2	3.1	101.4±0.8	106.1±0.5	3.4	-1.3
10.	F_3 (07291 x KK-3535)	108.6±2.6	8.2	7.5	111.5±3.0	107.8±2.8	-2.9	0.8
11.	F_3 (KK-3535 x 011560)	106.8±1.6	5.1	4.7	104.0±1.2	107.3±1.0	2.8	-0.5
12.	F_3 (011560 x KK-3535)	105.2±0.3	1.1	1.1	101.6±0.8	105.0±0.8	3.6	0.2
13.	F_3 (Sultan x 011790)	105.1±1.6	5.2	4.9	107.7±2.7	105.2±1.1	-2.6	-0.1
14.	F_3 (011790 x Sultan)	109.1±2.5	7.9	7.2	103.7±1.4	104.3±0.9	5.4	4.8
15.	F_3 (Sultan x 011571)	107.1±2.2	5.8	5.4	105.5±1.1	109.2±1.5	1.6	-2.1
16.	F_3 (011571 x Sultan)	106.1±2.4	6.9	6.5	106.4±1.5	107.3±1.4	-0.3	-1.2
17.	F_3 (Omad x 011787)	104.8±0.7	2.1	2.0	105.6±0.9	107.8±1.2	-0.8	-3.0
18.	F_3 (011787 x Omad)	105.2±0.7	2.2	2.1	110.1±1.5	106.4±1.2	-4.9	-1.2
19.	F_3 (Omad x 06655)	107.8±0.2	0.6	0.6	106.0±0.7	105.3±0.7	1.8	2.5
20.	F_3 (06655 x Omad)	103.8±0.9	2.7	2.6	103.8±0.8	105.3±0.7	0.0	-1.5

REFERENCES

[1] Kuchkarov, O.E., Alikhujaeva, S.S., Usmanov, S.A., Abrarova, F.A., Madratov, B.K., "Influence of growing conditions (saline soil and water scarcity) on the appearance of valuable farm traits in the lists", Cotton, clover selection and seed production. A collection of scientific papers. Fan, Tashkent, 2009, pp. 287.

[2] Aliev, A.I., "Early maturity of varieties and hybrids of cotton, depending on the selection of pairs and growing conditions", In the book, Materials of the IX conference of young scientists of Uzbekistan on agriculture: Genetics, biochemistry, selection of seed production of agricultural crops, Tashkent, 1977, pp. 17-24.

[3] Straumal, B.P., "Varieties of cotton plant with the basics of selection", Tashkent, 1974. pp. 214.

[4] Armor, B.A., "Methods of field experience", M.: 'Agropromizdat', 1985, pp. 251.

[5] Abdul Jalil Hassan Mohammed Al Harani, "Efficiency of paired and complex hybridization in improving the breeding and valuable traits of cotton: Abstract of the thesis. dis. cand. agricultural Sciences", Tashkent, 1985, pp. 19.

[6] Abdullaev, A.A., Omelchenko, M.V., "Influence of growing conditions on the formation of cotton during interspecific hybridization", Cotton genetics, Tashkent, 1969, pp. 95.

[7] Aytjanov, U.E., Aytjanov, B.U., & Sagatdinov, I.J. "Study of mutant breaker varieties according to the basic economic-valuable signs under the conditions of Karakalpakstan", EPRA International journal of Research and Development (IJRD) Volume 5 Issue 5 May, 2020, pp. 135-137. DOI: 10.36713/epra2016

[8] Aytjanov, U.E., Aytjanov, B U., & Sagatdinov, I.J., "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", Journal of critical reviews, ISSN- 2394-5125. Vol 7, ISSUE 08. 2020, pp. 2121-2131. DOI: 10.31838/jcr.07.08.391