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Gulshoda Anvar qizi Saidova
Tashkent State Agrarian University
Master's degree in department «Vegetable, horticulture and potato growing»
+99899-707-99-70

Saloxiddinjon Adxamovich Yunusov
Tashkent State Agrarian University
Doctor of Agricultural Sciences, Associate Professor
Associate Professor of «Vegetable, horticulture and potato growing»
+99890-127-17-09
salohiddin.yunusov@yandex.ru

RESTORATION OF DISAPPOINTED SEEDS OF TOMATO VARIETIES

***Abstract**: Relevance of the topic. Today, it is necessary to fully pass on to future generations the varieties created by our people and preserved to this day, to preserve the gene pool and to select varieties suitable for export, which are in demand, to allocate primary sources for selection.*

Problem statement. Recently, there has been a disappearance of high-quality, disease-resistant local varieties of tomatoes in the country. However, the preservation of the assortment, gene pool, seed and production of such tomato varieties, as well as their delivery to local consumers is a problem of the industry. Today there is a problem of studying endangered, high-yielding, disease-resistant varieties of tomatoes adapted to local conditions, the creation of local varietal samples and the establishment of primary seed production.

The purpose of the study. To study the disappearing, high-yielding, disease-resistant varieties of tomatoes adapted to local conditions and to establish primary seed production.

Methods. Research work was carried out at the Department of "Vegetable, horticulture and potato growing" of Tashkent State Agrarian University, farm "Khamroev Khalil Bozorovich" Jondor district of Bukhara region for 2019-2020. At the same time, the main task was to sow the seeds of tomato varieties Volgograd 5/95 and Yusupovsky, which have been planted relatively little in the country in recent years, to obtain new seeds of pure variety and to renew their storage.. Of course, seed quality, moisture and storage conditions are important factors in increasing the germination of tomato seeds. The research was carried out in accordance with generally accepted requirements for phenological observations, biometric measurements, determination of disease resistance, yield and seed quality. Study of tomato varieties "Methodology of state sortoispytaniya selskokhozyaystvennykh kultur". Issue IV Kartofel, baxchevye i ovoshchnye kultury (M. Kolos. 1975), «Metodika polevogo opyta» (Dospexov B.A., 1985), «Metodika opytnogo dela v ovoshchevodstve i baxchevodstve» (Belik V.F., 1992), based on the methodologies.

Results of the work. In the cultivation of tomatoes of Volgograd 5/95 and Yusupovsky varieties, the average weight of fruit (128.6 - 269.5 g) is highest in seedlings planted on May 5-10, and relatively low (105.8 - 233.5) when seeds are planted in the ground on April 10-15. g) was found to have weight. The fruit of the Yusupovsky variety of tomato proved to be much larger in weight than the Volgograd 5/95 variety. In the experiment, the seed yield and seed yield of both varieties showed the highest results in the variant planted from seedlings on April 20-25, in Volgograd 5/95 variety seed yield was 19.5 t / ha and seed yield was 55.0 kg / ha and in Yusupovsky variety. seed yield was 22.1 t / ha and seed yield was 28.3 kg / ha. When analyzing the quality of tomato seeds, when the Volgograd 5/95 variety was planted from seedlings on April 20-25, the maximum weight of 1000 seeds was 3.44 grams, and the number of seeds per 1 gram, on the contrary, was 354.7. The results obtained on these indicators in the Yusupovsky navigator were much lower than in the Volgograd 5/95 navigator. The highest rate of this variety was 2.98 grams per 1000 seeds in the variant sown from seedlings on April 20-25, and the number of seeds per 1 gram, on the contrary, was 277.5. The highest rate of germination energy and germination of the obtained seeds was observed

when both varieties were sown from 5-10 May seedlings. In the Volgograd 5/95 variety it was 81.8-97.6%, and in the Yusupovsky variety it was 79.5-96.9%.

Scope of the results. It is recommended to use the technology of sowing and cultivation of these varieties in agriculture, farms and horticultural farms specializing in vegetables and melons.

Conclusions. Seed yield and seed quality of Volgograd 5/95 and Yusupovsky varieties were determined for cultivation of tomatoes in private farms and farms. We hope that the restoration of endangered varieties of tomatoes in our country, increasing the volume of seeds and the establishment of seed production will bring high economic benefits.

***Key words**: tomato, variety samples, seeds, cultivation, yield, forgetfulness.*

***Language**: English*

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Introduction

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Today, it is necessary to fully pass on to future generations the varieties created by our people and preserved to this day, to preserve the gene pool and to select varieties suitable for export, which are in demand, to allocate primary sources for selection. Recently, there has been a disappearance of high-quality, disease-resistant local varieties of tomatoes in the country. However, the preservation of the assortment, gene pool, seed and production of such tomato varieties, as well as their delivery to local consumers is a problem of the industry. Therefore, there is a problem of studying the disappearing, high-yielding, disease-resistant varieties of tomatoes adapted to local conditions, the creation of local varietal samples and the establishment of primary seed production. No matter how high the hybrids are, they will need varieties as the primary source to create them. Therefore, the creation and widespread introduction of hybrids is important to maintain the existing gene pool and to restore seed germination from time to time collection specimens.

Restoration of seed germination of tomato collection samples is carried out by replanting them and obtaining new generation seeds. The duration between re-sowing of seeds depends on the viability of the seeds and storage conditions.

The basis for a consistently high yield is the selection of varieties that are adapted to local conditions, resistant to dangerous diseases [1, 3, 7, 8]. Each variety is created for specific soil climatic conditions and requires the use of specific growing technology. The efficiency of selection in production depends on the correct selection and zoning of varieties. [12, 5].

The longevity of seeds, their ability to germinate is determined by the number of years. The main reason for the loss of germination ability of seeds is their exposure to high humidity, especially high temperatures [11]. During the period of morphological maturation, the seeds have the highest germination capacity if there is no weakness of the ovary. Seed viability decreases over time. As a result, germination time is prolonged and germination is reduced. The decrease in forgetfulness is related to storage properties. It can last from a few weeks to 100 years, regardless of the crop and storage conditions. Seeds should be relatively dry and stored in a low humidity environment [9]. For normal germination, the seeds must have a certain level of moisture. The older the seeds, the slower the germination process. Seeds lose their ability to germinate when stored for too long. The process of germination of seeds is affected by temperature, oxygen, light, soil conditions [4].

Methodology.

The research was conducted at the Department of "Vegetable, horticulture and potato growing" of Tashkent State Agrarian University, the farm "Khamroev Khalil Bozorovich" Jondor district of Bukhara region for 2019-2020. At the same time, the main task was to sow the seeds of tomato varieties Volgograd 5/95 and Yusupovsky, which have been planted relatively little in the country in recent years, to obtain new seeds of pure variety and to renew their storage. Of course, seed quality, moisture and storage conditions are important factors in increasing the germination of tomato seeds. In the studies, phenological observations, biometric measurements, determination of disease resistance, observation and calculation of yield and seed quality were carried out in accordance with generally accepted requirements. Study of tomato variety samples “Методика государственного сортоиспытания сельскохозяйственных культур”. Выпуск IV Картофель, бахчевые и овощные культуры (М. Колос. 1975) [10], «Методика полевого опыта» (Доспехов Б.А., 1985) [6], «Методика опытного дела в овощеводстве и бахчеводстве» (Белик В.Ф., 1992) [2], based on the methodologies.

During the experiment, the seeds of these varieties obtained in 2014 were sown in the open field in accordance with the recommended methodological methods. During the growing season, varietal plants were selected and pure seeds were obtained from

them. During the study, before flowering of each variety, the plants in the plots were protected with gauze and labels were hung by mixing the variety itself - intsuxt. Once the tomato fruits were biologically ripe, seeds were once again extracted from the variety-specific seeds.

In the experiment, the effect of sowing and cultivation of tomato cultivar samples from seeds and seedlings at different sowing times on seed quality was studied. At the same time, the options for sowing seeds of both varieties in the ground on April 10-15 and 40-day seedlings on April 20-25, May 5-10 and May 15-20 were compared.

The experiment determined the yield of seeds, their seed yield, seed yield and suitability for sowing, as well as crop quality. It is accepted to get quality seeds from 60% of the seeds, and seeds are obtained from the fruits obtained from the second to fourth flower sets of tomato stems. Seed yield was determined by taking the seeds of 10 fruits (3-4 fruits per bunch) from each variant. The fruits obtained were weighed, the seeds were separated from them, dried and weighed. By comparing the weights of the fruits and seeds, the amount of seeds obtained from the fruits was determined as a percentage. The experiments were performed in four repetitions. Seed yield was calculated by multiplying the weight of seeds obtained from seed fruits per square meter. According to the physical properties of the seeds, the weight of 1000 seeds was determined by determining the number of seeds per 1 g; and the quality of sowing was determined by determining the germination of seeds and germination energy.

Research results.

In determining the quality of seed yield, the effect of seed cultivation methods on the growth, development and productivity of the variety was determined. It is known that seed yield largely depends on the yield of fruits and the emergence of seeds from them. In the experiment, the weight of the seed, seed yield, number and quantity of seeds per fruit, and yield indicators were determined (Table 1).

Table 1. Seed fruit weight, seed yield, number and quantity of seeds per fruit and yield indicators (2019-2020).

Timing of sowing seeds and seedlings	Average weight of fruit, g	Weight of seeds in one fruit, g	Number of seeds per fruit, pcs	Seed content in fruit,%	Seed yield, t / ha	Seed yield, kg / ha
Volgogradskiy 5/95						
Sowing the seeds in the ground on April 10–15	105,8	0,28	103,0	0,26	14,7	38,4
Planting of seedlings on April 20–25	121,7	0,42	118,4	0,34	19,5	55,0
Planting seedlings 5–10 May	128,6	0,37	120,1	0,29	17,0	48,6
Planting seedlings 15–20 May	118,1	0,31	110,3	0,26	12,6	33,7
EKMF05	3,2	0,02	2,6			
Sx,%	2,5	2,0	0,7			
Yusupovskiy						
Sowing the seeds in the ground on April 10–15	233,5	0,25	78,8	0,11	15,8	21,1
Planting of seedlings on April 20–25	256,7	0,49	110,5	0,19	22,1	28,3
Planting seedlings 5–10 May	269,5	0,48	107,2	0,18	20,5	26,6
Planting seedlings 15–20 May	254,4	0,33	98,5	0,13	16,0	20,4
EKMF05	3,6	0,02	4,4			
Sx,%	0,5	1,4	0,8			

In the experiment, the average weight of tomato fruit differed from each other in terms of cultivation methods. At the same time, the options planted with seedlings were higher than those planted directly from seed to the ground. In the variant planted on 5–10 May from seedlings of the Volgograd 5/95 variety, the average weight of the fruit (128.6 g) was highest, and when the seeds were planted in the ground on 10–15 April, the weight was relatively low (105.8 g). It was found that the fruit of the Yusupovsky variety of tomato is much larger in weight than the Volgograd 5/95 variety. Fruits of Yusupovsky variety also had a higher result in terms of weight than in the variant sown from seed (233.5 g), in the variant sown from seedlings 5-10 May (269.5 g). In the remaining options, the figures were low. Of course, the seedlings of both varieties had a positive effect on the average weight of fruits when planted on 5–10 May.

When determining the weight of seeds in one fruit, the variant of tomato planted on April 20–25 from the same seedling in the Volgograd 5/95 and Yusupovsky varieties also showed good results. In this case, the maximum weight of seeds in a single fruit of the Volgograd 5/95 variety is 0.42 g. and Yusupovsky variety 0.49 g. formed. Even on this indicator, the options of tomatoes planted directly from seed were the lowest. It was also found that the greater the weight of the fruit, the greater the weight of the seeds in their composition.

In the experiment, when calculating the average number of seeds per tomato, the highest performance was observed in the Volgograd 5/95 variety in the variant planted on 5-10 May (120.1 pieces). In Yusupovsky variety, when the seedlings were planted on April 20-25 (110.5 pieces), the number of seeds was high. Variations of both varieties planted in the ground from seed showed relatively low levels (103.0–78.8).

When analyzing the percentage of seeds in the fruit, the yield of seedlings of both varieties was highest when planted on April 20-25, ie in the Volgograd 5/95 variety - 0.34%, in the Yusupovsky variety - 0.19%. However, the amount of seeds in the fruit of the Volgograd 5/95 variant of the variant sown from seed and the variant sown from seedling 15–20 May was the same 0.26 percent. The lowest rate in the Yusupovsky variety was 0.11% in the variant planted in the ground from seed.

For all planting methods tested, higher results were obtained from the EKMF values in the seedlings planted than in the options planted directly from seed to the ground.

According to the results of the study, seed yield and seed yield were determined. Depending on the method of sowing and time of planting, the yield of seeds from fruits varied. The highest yield was 19.5 t / ha and 55.0 kg / ha of seeds from Volgograd 5/95 seedlings planted on April 20-25. Also, the variant sown in the ground from seed showed a better result (14.7 t / ha - 38.4 kg / ha) than the variant sown on May 15-20 from seedlings. This, of course, had a positive effect on the yield of the Volgograd 5/95 variety when the seeds were sown with a large number of seed fruits. The variant planted on May 15-20 from seedlings showed a low level (12.6 t / ha - 33.7 kg / ha).

In the variant of seedlings of Yusupovsky variety planted on April 20-25, seed yield and seed yield were the highest (22.1 t / ha - 28.3 kg / ha). However, the lowest seed yield was 15.8 t / ha in the variant sown in the ground on April 10-15, and 20.4 kg / ha in the variant sown in the seedlings on May 15-20, while the remaining variants had a relatively high rate.

In the experiment, seeds from tomato cultivar samples were sorted, weight of 1000 seeds, number of seeds per 1 gram, germination energy of seeds and germination indicators were determined (Table 2).

Table 2. Weight of 1000 seeds, number of seeds per 1 g, germination energy of seeds and germination indicators (2019-2020).

Timing of sowing seeds and seedlings	Weight of 1000 seeds, g	Number of seeds per 1 g, pcs	Seed germination energy,%	Seed germination,%
Volgogradskiy 5/95				
Sowing the seeds in the ground on April 10–15	2,75	398,0	74,5	93,8
Planting of seedlings on April 20–25	3,44	354,7	77,5	94,8
Planting seedlings 5–10 May	3,06	363,6	81,8	97,6
Planting seedlings 15–20 May	2,80	374,6	72,8	93,2
NSR05	0,3			
R%	3,1			

Yusupovskiy				
Sowing the seeds in the ground on April 10–15	2,55	310,5	69,1	92,3
Planting of seedlings on April 20–25	2,98	277,5	74,8	95,5
Planting seedlings 5–10 May	2,81	280,4	79,5	96,9
Planting seedlings 15–20 May	2,73	301,8	71,1	94,6
NSR05	0,1			
R%	1,7			

According to the results obtained, 1000 dry seeds of tomato cultivar samples were counted separately according to the options and their weight was determined. According to the results, the highest rate was 3.44 grams in the variant of seedlings of Volgograd 5/95 variety planted on April 20–25. The lowest figure was 2.75 grams of seeds sown on April 10-15. The remaining options were in the range of these numbers. In the experiment, when counting the number of seeds of tomatoes per 1 gram, the opposite results were obtained. At the same time, the highest result was observed in the variant of Volgograd 5/95 variety sown from seeds on April 10-15, ie 398.0 pieces, and in the variant sown from seedlings on April 20-25, 354.7 pieces. The remaining options were in the range of these numbers.

In the Yusupovsky variety, the results obtained on these indicators were different, ie the weight of 1000 seeds and the number of seeds per 1 gram was much lower than in the Volgograd 5/95 variety. The highest rate in this variety was 2.98 grams in the variant planted from seedlings on April 20–25. The lowest figure was 2.55 grams in the variant sown on April 10-15 from seeds, and the remaining variants were in the range of these figures. When counting and counting the number of seeds per 1 gram of tomatoes, on the contrary, the highest result was obtained in the variant sown from seeds on April 10-15, ie 310.5 pieces, and in the variant sown on April 20-25 from seedlings 277.5 pieces. The remaining options were higher than the option planted during this period.

During the study, laboratory experiments were performed to determine the germination energy and germination of tomato seeds. Laboratory experiments were performed by extracting tomato seeds in a thermostat at a temperature of 22-23 0C. At the same time, 100 seeds of tomatoes grown in different ways and during the growing season were grown in petri dishes, on filter paper soaked in distilled water. The experiment was performed in 4 repetitions. The germination energy of tomato seeds was determined after 5 days, and the germination capacity, i.e. germination, was determined after 15 days (Picture. 1). According to the results, the tomato with the highest germination energy of seeds was 81.8% in the seeds obtained from the variant sown from 5-10 May seedlings of Volgograd 5/95 variety. The relatively low rate was 72.8% in the variant planted on May 15-20. In the seeds obtained from the remaining variants, it was 74.5-77.5%.

In terms of seed germination rates, these sowing methods and timing also yielded relatively high results in the seeds grown. At the same time, 97.6% of the seeds were obtained from the variant of Volgograd 5/95 sown from seedlings on May 5-10. The relatively low rate was 93.2% in the variant planted on May 15-20. In the seeds obtained from the remaining variants, it was 93.8-94.8%.

In the Yusupovsky variety of tomato, these figures showed a different result than in the Volgograd 5/95 variety.

Picture 1. Determination of germination energy and germination of seeds of tomato varieties.

According to laboratory experiments, the highest rate of germination of seeds in the Yusupovsky variety was 79.5% in the variant planted from 5 to 10 May seedlings. However, a relatively low figure was 69.1% of the seeds obtained from the variant sown in the ground on April 10-15. Seeds obtained from the remaining variants were 71.1–74.8%.

The Yusupovsky variety also gave relatively high results in terms of seed germination in the seeds grown in these sowing methods and terms. At the same time, 96.9% of the seeds were obtained from the variant sown from seedlings on May 5-10, and 92.3% from the variant sown from 10-15 May. In the seeds obtained from the remaining variants, it was 94.6-95.5%.

Determining the best method and timing of growing tomato seeds, along with the yield and quality of the seeds, has a high impact on increasing their economic efficiency.

Conclusions.

1. In the cultivation of tomatoes of Volgograd 5/95 and Yusupovsky varieties, the average weight of fruit (128.6 - 269.5 g) is highest in seedlings planted on May 5-10, and relatively low (105.8 - 233) when seeds are planted in the ground on April 10-15. , 5 g) were found to have weight. The fruit of the Yusupovsky variety of tomato proved to be much larger in weight than the Volgograd 5/95 variety.

2. In the experiment, the seeds of the same fruit in both varieties of tomatoes showed better results than other options when sown from seedlings on April 20–25 at the same time in terms of weight and quantity. Bunda Volgograd 5/95 navi 0.42 g. (0.34%) and 0.49 g in Yusupovsky variety. (0.19%).

3. Seed yield and seed yield in both varieties showed the highest results in the variant planted from seedlings on April 20-25, Volgograd 5/95 seed yield was 19.5 t / ha and seed yield was 55.0 kg / ha and Yusupovsky seed yield was 55.0 kg / ha. fruit yield was 22.1 t / ha and seed yield was 28.3 kg / ha.

4. When tomatoes were grown from seedlings of Volgograd 5/95 variety on April 20-25, the maximum weight of 1000 seeds was 3.44 grams, and the number of seeds per 1 gram, on the contrary, was 354.7. The results obtained on these indicators in the Yusupovsky navigator were much lower than in the Volgograd 5/95 navigator. The highest rate of this variety was

2.98 grams per 1000 seeds in the variant sown from seedlings on April 20-25, and the number of seeds per 1 gram, on the contrary, was 277.5.

5. The highest rate of germination energy and germination of the obtained seeds was observed when both varieties were sown from 5-10 May seedlings. In the Volgograd 5/95 variety it was 81.8-97.6%, and in the Yusupovsky variety it was 79.5-96.9%.

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