

FIRST GENERATION F1 HYBRIDS FOR EXTERNAL FIELDS IN THE SOUTH OF UZBEKISTAN

Nadjiev J. N.

Doctor of Agricultural Sciences, Termez Institute of Agrotechnology and Innovative Development, Termez, Uzbekistan

Khojaev P. N.

Doctoral student, Tashkent State Agrarian University, Tashkent, Uzbekistan

Qulmuratov B. E.

Assistant, Termez Institute of Agrotechnology and Innovative Development, Termez, Uzbekistan

Aramova G. B.

Assistant, Termez State University, Termez, Uzbekistan

Abstract

The article presents the results of the study of new F1 hybrids of tomatoes selected by the Surkhandarya Research and Experimental Station in 2016-2017, high-yielding, transportable and resistant to root-knot nematode and cladoriosis, as a result, F1 Sample x L-46 hybrids with high total yield and F1Dystlik x L-46 hybrids with the highest heterosis effect in total and early yield were isolated. In addition, the hybrids F1 On the Moon Shackle, F1 Sample x L-59 and F1Dustlik x L-46 are considered resistant to the root-knot nematode.

Keywords: Tomato, hybrid, yield, fruit weight, bulging nematode, cladosporiosis, transportop, fruit shape, early ripening, hardness.

Introduction

Currently, the fastest growing of all industries is vegetable growing. In recent years, vegetables grown around the world amount to 50-60 million tons per year. One of such valuable vegetables is tomato.

Tomatoes contain 4.5-8.1% of dry matter, 3.5-8.5% of organic acids, 0.13-0.23% of pectin, 3-7% of sugar, as well as mineral salts, S, V, RR contains vitamins. Tomatoes not only have a sweet, delicious taste, but it also has a number of

useful, healing properties. It contains a large amount of different vitamins, which are: V1, V2, V3, V6, V9, E, but it contains the most vitamin E. Tomato not only has a positive effect on the human body, it also lifts the mood. It contains tyramine, an organic substance that is converted into serotonin in the body. That is why it lifts the mood and helps a person fight depression and sadness. Therefore, increasing the yield and quality of this crop and creating varieties and hybrids that are resistant to biotic and abiotic factors is an urgent task today. The only way to solve this problem is through selection.

World breeders claim that high yields from crops with a single disease resistance cannot be guaranteed. Therefore, it is necessary to add resistance to the main diseases in this region in one genotype and create complex resistant varieties to them. Therefore, since 1990, the Surkhandarya Scientific Experimental Station has been conducting research on the development of varieties and hybrids of tomato resistant to nematodes and cladosporiosis.

In 2016-2017, 4 hybrids were studied in the study of hybrids: $F_1N / 03 \times Zak / 06$, $F_1N / 03 \times MJ-46$, $F_1N / 03 \times MJ-59/14$, $F_1Dk / 04 \times MJ-46/14$ for early maturation and bulging nematode in the endurance direction, parental forms and comparative Surkhan 142 navigation were compared.

Researches

"Methodical instructions on the study and support of the world collection of vegetable and legume cultures (tomatoes, peppers, eggplant)" (L., 1977), "Methodological instructions on the selection of varieties and hybrids of tomatoes for the discovery and development of M." Implemented in accordance with OST 4671-78 (Phase II).

The Experience is Irreversible

Subdivision area is 6.3 m^2 , number of plants is 20, subdivision is 2 rows. Planting scheme 210: 2 x 30 cm. Seeds were sown under the film in the I-ten days of February. Seedlings were transplanted to the open field in the I-ten days of April. Phenological observations during the period of operation (the day of sowing the seeds, their germination (10%, 75%), the day of sowing in the field, flowering (10%, 75%), the emergence of the first flower twigs in the plant, fruit ripening (10%, 75%) and morphobiological characterization (leaf size, plant type, leaf and fruit color, plant height, fruit shape, etc.) were used to determine fertility.

The early ripening of the hybrids was determined by calculating the first three harvests. The degree of resistance of plants to bulging nematodes was assessed by the method of Kondakova, Kvasnikov, Ignatova (1976), when the root system was dug at the end of the application period. The heterozygous efficiency of hybrids was determined using a formula proposed by Alpatev (1981). Mathematical processing of the obtained data was carried out on the basis of Dospekhov's (1985) method. In 2016, the shelf life of tomato plants was extended by 5-10 days compared to previous years. This can be explained by the fact that the validity period of the early ripening variety of friendship lasted 113 days.

Table 1. Economic and morphobiological characteristics of tomato first generation (F1) hybrids, 2016-2017.

Hybrid and parent forms	Validity period, day	Plant		Fruit			
		type	height, cm	shape	colour	weight, g	hardness, points
Surxan-142, .k.n	117	shtamb	95	flat, round	dark red	125	2.5
L - sample	122	simple	75	round	dark red	130	2.5
Zakovat	121	simple	75	round	red	90	4.5
Dustlik	113	shtamb	50	round	red	95	2.5
L - 41	122	simple	65	round	red	135	4.5
L - 59	119	simple	80	round	red	130	4.5
F1 - sample x Zakovat	123	simple	70	round	red	120	4.5
F1 - Sample x L- 46	116	simple	120	round	red	135	4.0
F1 - Sample x L - 59	121	simple	120	round	red	110	4.0
F1- Dustlik x L-59	113	simple	110	round	red	110	4.0

The shortest validity period of the studied hybrids was observed in the F1 Friendship x L-46 combination and it was 113 days, and the early maturity maternity form was equal to the validity period of the Friendship variety, and it is considered early, Table 1.

Plant height was 110–120 cm in F1 Sample x L-46, F1 Sample x L-59, and F1 Friendship x L-46 hybrids, and these hybrids are considered tall hybrids. In hybrids, the shape of the fruit was round to red in color. This indicates that these characters are dominant in the first generation. Fruit weight was large in all hybrids, they were 110-135 g.



The hardness mark of the fruit confirmed that it was the dominant mark and appeared in all first-generation hybrids, and it was observed that it reached a score of 4.0-4.5. As can be seen from Table 2, the highest yield was observed in the F1Namuna x L-46 hybrid and it was 55.5 t and 28.0 t higher than the comparative variety. In other hybrids, the total yield was high, reaching 50.0-54.5 tons, which is 23.1-27.0 tons higher than the comparative variety.

Table 2. Total and early yield of tomato F1 hybrids and the effect of heterosis, 2016-2017.

Hybrid and parent forms	Total yield	The effect of heterosis, %	Commodity, %	Early harvest t/he	The effect of heterosis, %
Surhan- 142, k. n	35.4		85.6	22.3	
L — Sample	38.6		87.0	20.8	
Zakovat	30.8		92.5	10.5	
Dustlik	21.4		74.0	12.3	
L- 46	32.0		90.5	15.7	
L- 59	38.0		94.6	19.2	
F1 Sample x Zakovat	54.4	41.0	94.5	22.5	8.2
F1Sample x L-46	55.5	43.8	94.0	26.3	26.4
F1 Sample x L-59	50.6	31.1	93.3	20.6	—
F1 Dustlik x L-46	54.5	70.3	96.0	32.6	107.6

Commodity yield was observed in all hybrids to be 6.0–8.7% higher than in the comparable variety, and it reached 93.3–96.0%. In the comparative variety, it was observed that the yield reached 87.3%. This feature of hybrids allows them to be stored for a long time in the field.

The highest rate of heterozygosity was observed in the F1 Friendship x L-46 hybrid, and it was noted to be 70.3%. The remaining hybrids F1Namuna x Zakovat, F1Namuna x L-46, F1Namuna x L-59 also showed heterozygous effect and it was 31.1-43.8%, all hybrids studied are heterozygous.

In the first generation hybrids, the highest early yield was shown in the F1 Friendship x L-46 combination and it was noted that it was 32.6 t / ha. The heterosis effect on the early crop was also observed in the F1 Friendship x L-46 combination according to the highest early yield rate, which was 107.6%. A



slightly lower heterozygous effect on the early crop was also observed in the F1Namuna x L-46 hybrid, which reached 26.4%.

At the end of the application period, the hybrids were dug up and their resistance to bulging nematodes was assessed. As a result, 100% of the plants in the hybrids F1Namuna x Zakovat, F1Namuna x L-59 and F1Dostlik x L-46 showed high durability. These hybrids are resistant to bulging nematodes Table 3. In the F1Namuna x L-46 hybrid, 83.3% of plants showed resistance to the bulging nematode, in which disease progression was 6.25%, prevalence was 15.0%, and resistance was 93.7%, and this hybrid is considered practically resistant.

Table 3. Infection of tomato F1 hybrids with bulging nematode (in points) 2016-2017.

Hybrid and parent forms	Number of plants, pcs	Points					Average damage, points	S,%	R, %
		0	1	2	3	4			
Surhan- 142, k. n	20	85.0	5.0	5.0	5.0	0	0.3	7,5	15.0
L — Sample	20	100	0	0	0	0	0	0	0
Zakovat	20	80	20.0	0	0	0	0.2	5.0	20
Dustlik	20	0	0	0	15	85	3.85	96.2	100
L- 46	20	95.0	0	5.0	0	0	0.1	2.5	5.0
L- 59	20	100	0	0	0	0	0	0	0
F1 Sample x Zakovat	20	100	0	0	0	0	0	0	0
F1Sample x L- 46	18	83.3	5.5	11.1	0	0	0.3	6.25	15.0
F1 Sample x L- 59	12	100	0	0	0	0	0	0	0
F1 Dustlik x L - 46	20	100	0	0	0	0	0	0	0

In 2016-2017, in the process of assessing the incidence of tomato F1 hybrids with cladosporiosis (brown spot) disease, strong hybridization of all hybrids with this fungal disease was observed. According to the data, the average damage in hybrids reached 0.85-1.35 points, the development of the disease was 17.0-23.0%, and the prevalence of the disease was 85.0-100% Table 4.

Table 4. Infection of tomato F1 hybrids with cladosporiosis (percentage of points) 2016-2017.

Hybrid and parent forms	Number of plants, pcs	Percentage of points					Average damage, points	S, %	R, %
		0	1	2	3	4			
Surhan- 142., k. n	20	0	45	55	0	0	1.55	31	100
L — Sample	20	0	40	60	0	0	1.60	32	100
Zakovat	20	10	80	10	0	0	1.0	20	90
Dustlik	20	30	70	0	0	0	0.7	14	70
L- 46	20	0	50	50	0	0	1.5	30	100
L- 59	20	10	70	20	0	0	1.1	22	90
F1 Sample x Zakovat	20	5	75	20	0	0	1.15	23	95
F1Sample x L- 46	12	5	80	15	0	0	1.1	22	95
F1 Sample x L- 59	18	0	65	35	0	0	1.35	27	100
F1 Dustlik x L - 46	20	15	85	0	0	0	0.85	17	85

Studies have shown that the reason for the low rate of development and spread of the disease in the Dustlik variety is that in the third decade of July and the first decade of August, ie during the development of the causative agent of cladosporiosis, the Dustlik variety was severely damaged by yellowing nematodes. It turned out that such a leaf does not have favorable conditions for the development of cladosporiosis.

Thus, the F1 Sample x L-46 hybrid with the highest total yield was isolated from the studied hybrids. The F1 Sample x L-46 hybrids with the highest overall and early yield and and heterozygosity were separated. F1Sample x Zakovat, F1Sample x L-59 and F1Dustlik x L-46 hybrids were distinguished for their resistance to bulging nematodes.

Literatures

1. Алпатьев А.В. Помидоры. М., 1981.- 302 с.
2. “Методические указания по изучению и поддержанию мировой коллекции овощных пасленовых культур (томаты, перцы, баклажаны)” Л.,1977.-23 с.
3. “Методические указания по селекции сортов и гибридов томата для открытого и защищенного грунта”. М., 1986.-86 с.
4. ОСТ 4671-78 (II-босқич). Делянки схемы посева в селекции, сортоиспытании и первичном семеноводстве овощных культур. // Параметры. М., ВНИИССОК, 1997.