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PECULIARITIES OF CUCUMBER, ZUCCHINI AND NIGHTSHADE SEEDS SWELLING IN UZBEKISTAN

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Abstract:

The speed of seed swelling and its water absorption capacity is determined by the permeability and stretchability of the seed cover, the number and composition of spare substances, which are different in different cultures and varieties of the same crop, different. This determines its peculiarities in the process of seed swelling [1-3].

Keywords: Seeds, swelling, water absorbency, seed germination, samples, varieties, species, local and European.

INTRODUCTION.

Taking into account the fact that we have not studied the specifics of swelling of seeds of collectible and zoned varieties in Uzbekistan, we conducted studies on the duration of swelling and water absorption capacity of cucumber, zucchini and nightshade seeds.

RESEARCH METHODOLOGY.

The research was conducted in the laboratory of the Department of Vegetable, Melon and Potato Production of Tashkent State Agrarian University in the autumn of 2017-2018, at room temperature. The hinges of seeds of each variety were 50 g for zucchinis and 20 g for other crops. The seeds were placed in Petri dishes and soaked; the water level is 1 cm above the seeds. Every 2 hours, the remaining water was drained and the seeds were soaked with filter paper to remove water from the surface and weighed. Then the seeds were again placed in cups and poured with water, repeating this until the increase in their weight ceased.

Determining the rate of swelling of the amount of water absorbed by the seeds of pasty crops showed that the eggplant seeds swell faster and absorb less water (Table 1).

Eggplant seeds have swollen completely in 8 hours, absorbing 51-56% of water to their dry mass. In the first 2 hours, they absorbed 63-78% of the required water. There were no differences in swelling rate and water absorption capacity of seeds of local and inertial varieties.

Sweet pepper seeds swell slightly slower, and water absorbs more than eggplant seeds. Seeds of European varieties fully swell in 10 hours, while absorbing 69-84% of water to its dry mass, and local - for 14 hours 91-92% of water. During the first 2 hours of water from the total amount absorb the seeds of European varieties 78-79%, and local - 72-73%.

Seeds of tomatoes of a multicultural subspecies swell faster (8-10 h) and water absorb less (64-75%) than varieties of cultural subspecies. Of the varieties of cultural subspecies local varieties completely, swell in 10-12 hours and absorb water 73-83% to its dry mass, and European - for 12-14 hours 84-115%.

Table 1

Dynamics of water absorption by seeds of tomato, sweet pepper and eggplant when swelling, % of dry weight of seeds (average for 2017-2018).

Variety	Origin	An hour from the start of the soaking.						
		2	4	6	8	10	12	14
Eggplant								
Yerevan 3	Armenia	32	47	50	51			
Aurora	Uzbekistan	43	52	54	56			
Sweet pepper								
Bulgarian 79	Krasnodar	65	76	77	82	84		
Swallow	Moldova	54	60	66	69	69		
Tashkent gift	Uzbekistan	66	70	81	87	88	89	91
Zumrad	Uzbekistan	72	88	94	97	98	98	99
Tomato of the cultural subspecies								
Talalihin 186	Belarus	62	86	101	106	108	114	
Peremoga	Belarus	52	62	69	75	80	83	84
Podarok	Krasnodar	44	63	73	77	78	79	

Volgograd 5/95	Volgograd	44	68	80	84	85	87	
Dark red 2072	Uzbekistan	63	88	104	108	112	115	
TMK-22	Kuban	43	52	57	71	72	73	
East -36	Uzbekistan	55	77	80	81	83	84	
Progressive	Uzbekistan	55	66.	70	74	78	79	82
Uzbekistan	Uzbekistan	51	70	77	80	82	83	
October	Uzbekistan	37	67	70	71	73	74	76

In the experience with seeds of collection and zoning varieties of cucumbers and zucchini it was found out that cucumber seeds swell faster and water absorbs less than seeds of zucchini (Table 2).

Seeds of local salad cucumber varieties completely swell up in 10 hours, absorbing 57-60% of water to its dry mass, European salted cucumber and Uzbek Firstborn 265 variety, bred by crossing the local Uzbek variety with European salted cucumber Borschagovsky - for 8 hours, absorbing 47-53% of water. Seeds of salted varieties, absorbing less water, have greater suction power, for the first 2 hours they absorbed 63-67% of the required water, while the local salad - 58-60%.

The seeds of the zucchini fully swell in 10-12 hours, absorbing 59-79% of water to their dry mass. Seeds of the local variety Greek 110 water absorb more than seeds of the European variety White.

In practice, the following duration of pre-sowing soaking seeds: cucumber - 12-20 hours, tomato 24-40 hours. Taking into account that excessively long soaking reduces germination and, as our studies have shown, the swelling of seeds ends in a shorter time, the duration of soaking can be significantly reduced, namely: eggplant - up to 6 hours, cucumber and semi-cultural tomatoes - 8-10 hours, zucchini, tomatoes of cultural subspecies, sweet pepper - 10-12 hours.

Table 2

Dynamics of water absorption by cucumber and zucchini seeds when swelling, % from dry weight of seeds (average for 2017-2018).

Variety	Origin	An hour from the start of the soaking.						
		2	4	6	8	10	12	14
1	2	3	4	5	6	7	8	9
Cucumber								
Konkurent	Krasnodar	32	40	43	46	47		
Parad	Krasnodar	36	46	50	52	53		
Uzbek Firstborn	Uzbekistan	30	41	44	48	49		
Early 645	Uzbekistan	34	45	50	54	58		
Uzbek 740	Uzbekistan	36	45	52	57	60		
Margilansky 822	Uzbekistan	30	44	53	54	57		
Zucchini								
Whitefruit	Krasnodar	42	48	52	54	57	59	
Greek 110	Uzbekistan	49	60	66	72	77	79	

So, cucumbers, zucchini and nightshade cultures cultivated in Uzbekistan can be divided into 2 groups according to the speed of seed swelling: with a short duration of swelling (4-8h) - eggplant; medium (8-10h) - tomato of semi-cultural subspecies, pepper sweet, zucchini.

In terms of water absorption capacity of seeds can be divided into 3 groups: with low water absorption capacity (50-70% of water to dry mass) - eggplant, cucumber, multiculture subtype tomato, zucchini; medium (70-90%) - pepper sweet; high (90-110%) - tomato cultural subtype.

Swelling of seeds of local and foreign varieties in many crops is not the same. Seeds of European varieties of sweet pepper, cucumber, zucchini swell faster and water embody less than seeds of local varieties. Varieties of tomato half of the cultural subspecies swell faster than the cultural ones and require more water. Among cultivated species, local varieties swell faster and require less water than European ones.

The duration of pre-sowing soaking of seeds of main crops recommended by agricultural regulations can be reduced twice.

CONCLUSIONS.

By the duration of swelling and water absorption capacity of seeds of these crops can be divided into 3 groups:

- with a small (4-8 hours) - eggplant; medium (8-10 hours) - tomato half of the cultural subspecies, cucumber; large (10-14 hours) - tomato cultural subspecies, peppers sweet, zucchini;
- with small (absorb water 50-70% of dry mass) - eggplant, cucumber, tomato of semi-cultural subspecies, zucchini; medium (70-90%) - sweet pepper; high (90-110%) - tomato of cultural subspecies..

Seeds of European varieties of sweet pepper, cucumber, zucchini, swell faster and water embody less than the seeds of local varieties. Tomato varieties of semi-cultural subspecies swell faster than cultural ones and require more water. Among cultivated species, local varieties swell faster and require less water than European ones. The duration of pre-sowing soaking of seeds in these crops can be reduced by half.

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