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BREEDING WORK WITH MELON CROP IN THE REPUBLIC OF UZBEKISTAN

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ABSTRACT

Melon (*Cucumis melo* L.) is the most spread melon crop in Uzbekistan. More than 130 local varieties of melon are cultivated in various regions of the republic. Every year melons and gourds are cultivated on the area of 150 thousand hectares. The most harmful diseases of the melon are powdery mildew and Fusarium wilt. All local varieties of melon are susceptible to these diseases. Annually from these diseases, the yield of melon is reduced by 20-25%. The most effective way to combat these diseases is to develop resistant varieties. The Research Institute of Vegetable, Melon Crops and Potato has carried out long-term selection work to create melon varieties resistant to powdery mildew and Fusarium wilt. Breeding local varieties of melon with economically valuable traits and high test quality with genes for resistance to these diseases have been created and included in the State Registe of Uzbekistan.

KEYWORDS

Breeding, melons, hybrid, variety, resistance, quality, sectional material, productivity.

INTRODUCTION

The crop of melon in Uzbekistan goes deep into the past. Uzbek melons, as a delicacy, were exported to China, and in the 9th-10th centuries. - to Iraq. In the medical work Skara-Azyam, written in Farsi and dating back to the 4th century BC, the healing properties of

melons are indicated, recipes are given for using it against various diseases.

The healing properties of melon were used in folk medicine for the treatment of bronchitis, rheumatism and diseases of the liver and kidneys. The medicinal value of melons is also confirmed by medical science.

Consumption of melons contributes to the regulation of many physiological processes in the human body and therefore recommended in the treatment of diabetes and liver diseases. The folic acid contained in melons has an anti-sclerotic effect and plays an important role in blood formation.

Melon has dietary value. The fruits also contain substances necessary for the body, such as antiscorbutic vitamin C, provitamin A (carotene) and pectins. Melon seeds contain 23-35% fat, the oil obtained from them competes with Provence. Their nutritional value is determined by the high content of various sugars. According to V.F. Bel-Kuznetsova and N.S. Zhitzenova (1937), the sugar content of fruits of the best melon varieties can reach 20%.

Among Uzbek melons there are ultra-early, small-fruited (300-600g),

mid-ripening and late varieties with medium, large and very large fruits (up to

10 kg and above). The pulp of some varieties is tender, melting or juicy, crispy, very sweet with a pleasant specific melon aroma. The shape of the fruit is round, rounded, oval, elliptical, elongated; fruit color - dark green, light green, beige, yellow, brown, light brown, the surface is smooth, even, ribbed, mesh.

Thus, there are a big list of varieties of the melons of Uzbekistan.

The harvest from ultra-early varieties like “Khandalak” comes from the beginning of under temporary envelope shelters, followed by mid-maturing varieties from July and late varieties from September to October. Experienced farmers store winter late melons by the folk method until April.

However, in recent years, with the deterioration of environmental conditions around the world, including in Uzbekistan, melons have become significantly affected by diseases. The most harmful types of diseases: fusarium wilt of plants and powdery mildew.

Breeding work on resistance of valuable local varieties to fungal diseases powdery mildew and fusarium is carried out by the Research Institute of Vegetable and Melon Crops.

The aim is to give varieties the property of resistance to diseases, while maintaining the high taste and appearance of local melons.

It is known that the most effective and environmentally safe method of controlling fungal and other diseases is to create resistant varieties

Materials and methods

To obtain disease resistant varieties of local varieties, semi-cultivated forms resistant to powdery mildew and fusarium, Kurume and Kutana, as well as disease resistant local varieties Ak uruk 1137, Ich kyzyl large-fruited, Shakar palak 557, Shakar palak 2580, Kokcha 588, Kuysh 476, Umir vaki 3748 were used in breeding work. In hybridization, local varieties were used as mother form and varieties Kurume and Kutana were used as father form.

In F₂, resistant plants were selected by individual selection and backcrossed with them repeatedly during 2-3 generations with the original parental form – a local melon variety. In each generation, breeding lines resistant to powdery mildew and fusarium were selected individually, with the features of the original form in terms of fruit taste and appearance. Backcrosses and individual selections continued until a full analogue of the original variety, but with the resistance gene.

In the second stage of breeding, new varieties of melon resistant to powdery mildew Tuoyona, Oltin Tapa, Oltin Vodii and local varieties Kok tinny 1087, Obi navvat, Kizil gulabi, Olmurty gulabi were used as a donor of resistance. In hybridization, the powdery mildew resistant varieties Tuyona, Oltin tepa, Oltin vodii were used as the mother form and the varieties Kok tinny 1087, Obi navvat, Kizil gulabi, Olmurty gulabi were used as the father form.

In F₂, resistant plants were selected by individual selection. In each generation, breeding lines, yielding with high taste qualities, resistant to powdery mildew and fusarium were individually selected.

RESULTS OF RESEARCH

Breeding work of melon for resistance to diseases was carried out in

2 directions:

- creation of melon analogue varieties resistant to powdery mildew and fusarium, with signs of the original form in taste and appearance of fruits.
- creation of new varieties of melon resistant to powdery mildew and fusarium, with high yield and taste qualities suitable for local consumption and for export.

As a result of breeding work, 6 varieties of melon analogues, resistant to powdery mildew, with signs of initial form in taste and appearance of fruits were created and included in the State Register of Agricultural Crops of Uzbekistan (Table 1).

Lazzatli – an analogue of the variety Ak uruk 1037. Variety medium maturing, growing season 80-87 days. The plant is medium-fruited,

kidney-shaped leaf. The fruit is cylindrical in shape, weight 4.0-5.0 kg,

the surface of the fruit is smooth, the hardness of the bark average. The flesh is white, tender, dense, aromatic. The content of soluble solids 14-15%. Yields

25-30 tons per hectare. Transportability of fruit medium.

Oltin Tapa – analogue of sort Ich kyzyl large fruit. Quality medium maturing, growing season 85-90 days. The fruit is large, the mass of the fruit

3,4-4,0 kg, the surface of the fruit is smooth, the color background gray-green, medium hardness of the bark. The flesh is red, juicy, sweet. The content of soluble solids 14-16%. The yield is 25-30 tons per hectare. The transportability of the fruit is good.

Suyunchi-2 – is an analogue of the variety Shakar palak 2580. Variety medium maturity, growing season 83-87 days. The plant is rambling, kidney-shaped leaf. The fruit is elongated-ovoid shape, weight 2.5-3 kg, the surface of the fruit is smooth, the background coloring is light lemon, the grid is fine,

the hardness of the bark is medium. The flesh is red, dense, sweet. The content of soluble solids 14-15%. The yield is 20-22 tons per hectare. Transportability of fruits is good..

Dilkhush – is an analogue of variety Kokcha 588. Quality medium maturing, growing season 85-90 days. Plant plethora, kidney-shaped leaf. The fruit ovoid shape, weight of 3.0-4.0 kg, the surface of the fruit is slightly ribbed, the background coloration is green, the grid is complete, the hardness of the bark average. The flesh is white, tender, dense, sweet. The content of soluble solids 14-15%. Yields 30-32 tons per hectare. Transportability of fruits is average.



Table 1

Results of breeding to create varieties of melon analogues that are resistant to powdery mildew

Varieties	Vegetation period, days	Harvest yield, t/ha	Average fruit weight, kg	Content of soluble solids, %	Resistance to powdery mildew, %	Transportability
Ak uruk 1037	88-92	25-28	5-6	12-14	0	medium
Lazzatli	80-87	25-30	4-5	14-15	100	medium
Ich kyzyll large fetal	85-90	22-25	3-3,5	12-13	0	medium
Oltin tepa	85-90	25-30	3,4-4	14-16	100	good
Shakar palak 2580	85-90	20-22	2,5-3	12-13	0	medium
Suyunchi 2	83-87	20-22	2,5-3	14-15	100	good
Shakar palaq 554	85-90	22-25	2,5-4	13-14	0	medium
Oltin vodiyy	85-90	22-25	2,5-4	14-15	100	medium
Kokcha 588	90-95	25-30	3-4	12-13	0	medium
Dilkhush	85-90	30-32	3-4	14-15	100	medium
Koy bash 476	105-115	30-35	4-5	11-12	0	good
Tuyona	105-115	35-40	5-6	12-13	100	good

Oltin vodiyy – is an analogue of the variety Shakar palak 554. Variety medium maturity, growing season 85-90 days The fruit is elongated-ovoid shape, fruit weight 2.0-4.0 kg, the surface of the fruit is smooth, the background color is light green, the bark is hard. The flesh is white, sweet. The content of soluble solids 14-15%. The yield is 22-25 tons per hectare. Transportability of fruits medium.

Tuyona – is an analogue of the variety Koy bash 476. Variety late maturing, the growing season 105-115 days. Fruit ovoid shape, fruit weight 4-6 kg, the surface of the fruit is smooth, the color of the background gray-brown. The flesh is white, dense at harvest, soft and sweet after storing, the content of soluble solids 12-13%. Yield 35-40 t / ha. Transportability and storability of the fruit is good.



On the basis of created resistant to powdery mildew melon varieties, selection work was carried out and 7 varieties of melon resistant to powdery mildew were created and included in the State Register of Agricultural Crops of Uzbekistan (Table 2).

Kichkintoy – is a medium-early maturing variety with a growing season of 75-80 days. The plant is powerful,

branched. Leaf dense, dark green, dissected. The fruit is globular in shape, weighing 0.8-1.2 kg, the surface of the fruit is smooth, the background coloration is yellow, the mesh is partial, coarse-meshed, the hardness of the bark is medium. The flesh is white, tender, dense, aromatic, has a taste of honey. The content of soluble solids 12-13%. Yield 20-22 tons per hectare. Transportability of the fruit is good.

Table 2

Results of breeding to create melon varieties based on local powdery mildew-resistant donors

Varieties	Vegetation period, days	Harvest yield, t/ha	Average fruit weight, kg	Content of soluble solids, %	Resistance to powdery mildew, %	Transportability
Kichkintoy	75-80	20-22	0,8-1,2	12-13	100	good
Kuk magiz	80-85	20-26	2-2,5	14-15	100	good
Zar Gulobi	100-105	28-32	4-5	15-16	100	good
Gurlan	115-120	40- 45	4-5	12-13	100	good
Amudaryo	125-130	45- 50	4-6	14-15	100	good
Gulabi Khorazmiy	125-130	50-55	5-10	14-15	100	good
Sahovat	120-125	35-40	4-5	15-16	100	good

Kuk magiz – is a medium-ripening variety with a growing season of

80-85 days. The plant is powerful, branched, the leaf is dense, dark green, dissected. Fruit has elongated-oval shape, weight 2-2,5 kg, surface of the fruit is smooth, background coloring is green, netting is full, coarse-

meshed, bark hardness is medium. The flesh is white, tender, juicy, sweet, crunchy, the content of soluble solids 14-15%, yield 20-22 t / ha.

Gurlan – is a late-ripening variety with a growing season of 115-120 days. Fruit ovoid shape, fruit weight 4-5 kg, the surface of the fruit is smooth, the color of the

background yellow. The flesh is white, tender, juicy, sweet, crisp, the content of soluble solids 12-13%. Yield of 45-50 tons per hectare. Transportability and storability of the fruit is good.

Amudaryo – sort late maturing, growing season 125-130 days. The plant is rambler. The fruit cylindrical shape, fruit weight 4-6 kg, surface lumpy, color background brown. The flesh is white, dense, sweet. soluble solids 14-15%. Yield 45-50 tons per hectare. Transportability and storability of fruits is good.

Gulabi Horazmiy – is a late maturing variety with a growing season of 125-130 days. The plant is rambunctious. The fruit is elongated-cylindrical shape, fruit weight 5-10 kg, surface lumpy, background color dark green. soluble solids content of 14-15%. Yield 50-55 t/ha. Transportability and storability of the fruit is good.

Zar Gulabi – sort of medium-late maturing, growing season 100-105 days. Plant plethora, kidney-shaped leaves. Fruit ovoid shape, fruit weight 4-5 kg, the fruit surface is smooth, background coloring is bright yellow, the hardness of the bark dense. The flesh is white, juicy, sweet, the content of soluble solids 15-16%. The yield is 28-32 t / ha.

Sahovat – is late maturing, vegetation period 120-125 days. The plant is rambling. The fruit ovoid shape, weight 4-5 kg, the surface is smooth, color background dark brown. The flesh is green-white, juicy, sweet, the content of soluble solids 15-16%. The yield is 35-40 tons per hectare. Transportability and storability of fruits is good.

CONCLUSIONS

In Uzbekistan, as a result of breeding work on creation of melon varieties for resistance to powdery mildew, two methods have been used:

Creation of melon counterpart varieties resistant to powdery mildew and fusarium, with traits of the original form in taste and appearance of fruits;

- Creation of new varieties of melon resistant to powdery mildew and fusarium, with high yield and taste qualities suitable for local consumption and for export.

As a result, 6 varieties of melon analogues resistant to powdery mildew, with signs of original form in taste and appearance of fruits and original 7 varieties of melon resistant to powdery mildew were created and included in the State Register of Agricultural Crops of Uzbekistan.

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