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Research Article

STUDY OF PLANTING PERIODS IN THE CULTIVATION OF EARLY, MEDIUM AND LATE VARIETIES OF KHOREZM MELONS

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ABSTRACT

In the article: study of optimal planting, germination, flowering and fruit ripening for the cultivation of varieties of "Tarnak", "Khandalak", "Gurvak", medium-sized sardine. Aq novvot, Karikiz, late Amudarya, Sakhavat, Gulobi Khorazmi grown in Vokhada. Based on the obtained results, varieties with high productivity were shown.

KEYWORDS

Determining the optimal sowing period for growing early, medium and late ripening melon varieties in Khorezm region.

INTRODUCTION

The experiments were conducted in the Khorezm oasis, in (2020-2023) to determine the optimal sowing period for the cultivation of early, middle and late ripening melon varieties. The seeds of early ripening Tarnak, Khandalik, Gurvak varieties were sown on April 15, April 20, April 25 and May 1. The variant planted on April 20 was taken as a control variant and studied in comparison with other varieties.

The seeds of medium-ripening Ak novvot, Qari qiz, Zargulobi varieties were sown on May 5, May 10, May 15 and May 20. In this case, the variant planted on May 15 was compared as a control variant to others.

Late ripening Amudarya, Sahovat, Gulobi-Khorezmi varieties were studied on May 20, May 25, June 1 and June 5. In this case, the variant planted on May 25 was

taken as a control variant and studied in comparison with other terms.

The seeds of varietal samples were sown at the specified sowing times and maintained on the basis of generally accepted agro-technical measures in the experiment. According to the results of phenological observation, after sowing the seeds, it was determined that they germinate (by 10 and 75 percent), flowering (paternal and maternal flowers by 10 and 75 percent) and fruit ripening (Table 1).

The experiment showed that the period of germination is 12-15 days in 75% of the seeds of early-maturing varieties of melons, and the figure of germination is later in varieties sown on April 15 and May 1, due to the relatively low soil temperature.

In the middle-maturing varieties, the figure is 8-10 days, for instance, it was 9-10 days in the Zargulobi and Ak novvot varieties, and it was 8-9 days in the Kari-kiz variety

Due to the high soil temperature for sowing the seeds on May 20 the late varieties germinated massively (75%) in 6-8 days, ie faster. Especially Gulobi Khorezmi variety was the fastest among others which germinated in 6-7 days.

The observation of the blooming period of the melon showed that the appearance of the paternal flowers were earlier than the maternal flowers. According to the results, the paternal flowers appeared in 32-34 days in the earliest-maturing varieties sown on May 1, and 37-38 days in varieties sown on April 15. The paternal flowers bloomed in 34-37 days in medium ripening varieties of Ak- Novvot and Zargulobi, while it was 40-45 days in Kari-kiz variety planted on May 15-20, which was very late.

In the late ripening Amudarya varieties, in the variant sown on May 20, the paternal flowers appeared in 39 days, in the remaining varieties and in the sown variants, the paternal flowers bloomed in 34-37 days.

The appearance of maternal flowers was 38-43 days in early varieties in experimental variants. In the medium-ripening varieties, the maternal flowers appeared in 44-45 days in Ak Novvot and Zargulobi varieties, and in 50-55 days in the Kari kiz variety sown in May 15-20. In late varieties it appears in 44-46 days, and 75% of the maternal flowers bloom earlier in 42 days in the variant Gulobi Khorezmi sown on June 5.

When the ripening period of the fruit was determined in the experiment, the early ripening varieties were ripened in 70-82 days of all vegetation periods. The fruit ripen in 75-90 days in all medium-ripening varieties of all sowing periods. The fruit ripen 110-120 days in all late-ripening varieties in all sowing periods.

The results of the experiment indicate that among the varieties sown on May 1, the variety Tarnak is the earliest in ripening matured in 76 days, the variety Khandalak in 75 days and Gurovak in 70 days. In the remaining sowing periods, it ripens later.

The Zargulobi variety planted on May 5 and May 10 ripened in 75 days which is the earliest of the medium-ripening group of the varieties. The remaining varieties ripen later in other sowing periods or in 80-90 days.

Of the late varieties, the varieties, as Amudarya sown on May 20, Sakhovat sown on May 25, and Guloyabi Khorezmi sown on June 1 and 5 ripened earliest in 110 days. The control variant of the late Amudarya variety, sown on May 25, was the latest, with a ripening period of 120 days.

Biometric measurements were performed during the study. In this case, the length of the main stem of the

melon plant, the number and the length of the side branches were determined (See Table 2)

According to the results of biometric measurements, the main stem length of early maturing varieties of melon was 152-155 cm in Tarnak variety sown on April 25 and May 1, and 170 cm in Gurvak variety sown on May 1 which was relatively long. The length of the main stem was relatively short, ie 87-106 cm in Khandalak variety at all planting periods.

This figure was 132-133 cm i.e. the lowest figure, in the middle-maturing varieties, respectively in the variants of Zargulobi and Kari kiz varieties sown on May 5 and in the other sowing periods it was 140-160 cm.

The length of the main stem in late varieties, was 138 cm, the lowest in the Sakhovat variety sown on May 20.

It was found that the remaining varieties grew in the range of 144-170 cm at all planting periods. Obviously, while analyzing the length of the main stem, we can see that the early ripening varieties of melons have relatively short stems and the late varieties have relatively long stems.

In the biometric scale, the highest indicator of the number of lateral branches was 4.0 units in the control Kari kiz variety sown on May 15 and 20 of the medium ripening group, the highest value was 4.9 in the control Amudarya variety sown on May 25 of the late ripening group and 4.1-4.2 pieces in the control variants sown on June 1 and 5. It was 4.0-4.2 branches in the Sakhovat variety sown on May 25 and June 1, 5.

Table 1.

The Results of biometric monitoring in determining the optimal sowing period of early, medium and late melon varieties (2020-2023)

| Varieties | Sowing, Date | Main stem length cm | Number of lateral branches, pieces | Length of lateral branches cm | Powdery mildew infestation, % |
|-------------------------------|-----------------------|---------------------|------------------------------------|-------------------------------|-------------------------------|
| Tarnak (early ripening) | April 15 | 130 | 3,6 | 395 | 12,0 |
| | April 20 (control) | 145 | 3,7 | 487 | 2,5 |
| | April 25 | 152 | 3,7 | 494 | 5,0 |
| | May 1 | 155 | 3,8 | 505 | 0 |
| Khandalak (early ripening) | 15 April | 87 | 3,6 | 588 | 7,0 |
| | April 20 (control) | 100 | 3,7 | 615 | 15,5 |
| | April 25 | 103 | 3,7 | 624 | 0 |

| | | | | | |
|----------------------------------|-----------------------|-----|-----|-----|------|
| | May1 | 106 | 3,8 | 633 | 0 |
| Gurvak | April15 | 125 | 3,2 | 385 | 5,0 |
| | April 20 (control) | 132 | 3,3 | 471 | 5,0 |
| | April 25 | 135 | 3,4 | 484 | 0 |
| | May1 | 170 | 3,8 | 495 | 0 |
| Zargulobi (middle-aged) | May5 | 133 | 3,1 | 420 | 0 |
| | May10 | 140 | 3,2 | 467 | 2,5 |
| | May 15 (control) | 153 | 3,3 | 515 | 3,5 |
| | May20 | 160 | 3,3 | 520 | 0 |
| Ak Novvot (middle-aged) | May5 | 140 | 3,6 | 548 | 2,5 |
| | May10 | 147 | 3,7 | 595 | 5,0 |
| | May 15 (control) | 157 | 3,7 | 636 | 0 |
| | May 20 | 165 | 3,8 | 644 | 0 |
| Kari kiz (medium ripening) | May 5 | 132 | 3,8 | 487 | 15,0 |
| | May10 | 142 | 3,9 | 541 | 2,5 |
| | May 15 (control) | 148 | 4,0 | 543 | 12,5 |
| | 20 May | 148 | 4,0 | 543 | 0 |
| Amudarya (late ripening) | May20 | 144 | 3,9 | 489 | 10,0 |
| | May 25 (control) | 153 | 4,9 | 564 | 12,0 |
| | June 1 | 159 | 4,1 | 580 | 0 |
| | June 5 | 166 | 4,2 | 595 | 0 |
| Sakhovat | May20 | 138 | 3,8 | 495 | 0 |
| | May 25 (control) | 146 | 4,0 | 540 | 5,0 |

| | | | | | |
|--------------------------|------------------|-----|-----|-----|------|
| | June 1 | 156 | 4,1 | 555 | 2,5 |
| | June 5 | 165 | 4,2 | 570 | 0 |
| Gulobi | May20 | 144 | 3,6 | 495 | 0 |
| Khorezmi (late ripening) | May 25 (control) | 157 | 3,7 | 580 | 12,0 |
| | June 1 | 164 | 3,7 | 590 | 7,5 |
| | June 5 | 170 | 3,8 | 610 | 5,0 |

It was relatively 3.1-3.2 10 low-branched medium-sized Zargulobi cultivar.in the varieties sown on May 5 and It was found that the number of side branches ranged from 3.3 to 3.9 in all other varieties and in all planting periods.

When the length of the lateral branches are measured in the experiment, the length of the lateral branches was the lowest i.e. 385-395 cm in the varieties of Tarnak and Gurvak sown in April 15.



Gurvak

The highest rate or 615-633 cm was found in the control varieties of Handalak variety sown on April 20, April 25 and May 1. In the remaining variants, it was found that this figure indicated 487-588 cm.

In the medium ripening varieties, the length of the lowest lateral branches was 420-467 cm in the

Zargulobi variety sown on May 5 and 10, and 487 cm in the Kari kizl variety sown on May 5. The high rate showed that the control Ak novvot variety grew 636-644 cm in the varieties sown on May 15 and May 20. In the remaining varieties, it was found to have grown in the range of 515–595 cm.



Zargulobi (middle-aged)

It was determined that the side branches grew shorter(489-495cm) in late ripening branches as Amudarya, Sakhovat, and Gulobi Khorezmi varieties sown on May 20. And it was observed that the side branches are long and strong (590-610 cm) in Amudarya variety sown on June 5 and Gulobi Khorazmi variety sown on June 1 and June 5. This feature is low(489-495 cm) in late ripening varieties of Amudarya, Sakhovat, and Gulobi Khorazmi sown on May 20. The length of the side branches were 590-610 cm of strong and fast grown Amudarya variety sown on June 5 and Gulobi Khorazmi variety sown on June 1 and June 5.



Kari kiz
(medium ripening)

The optimal sowing dates for melons was determined in the experiment, accordingly, the medium-ripening Ak novvot variety sown on May 20 (644 cm) and late Amudarya variety sown on May 25 (610 cm) are detected as the strongly developed plants with the high length of above-ground part i.e. the main stem length, and number of side branches. It was found that most of the early ripening varieties are relatively with short stalks (487-588 cm).

The incidence of melon powdery mildew (oidium) disease was determined during the experiment. In this case, the plant was identified twice during the growing season, that is 42 and 90 days after germination of seeds (visually) on a normal background visually. According to the results of the experiment, we can see that in all early varieties of melons planted in April 25 and May 1 variants are less susceptible to powdery mildew disease. The disease affected 5.0–15.5% of all varieties planted on April 15 and control April 20. The varieties of the early Gurvak variety planted on April 25 and May 1 were resistant to this disease.



Tarnak
(early ripening)

The disease powdery mildew was observed in the variants planted on May 5, 10 and 15 in the middle-ripe varieties of melons, especially in the variety Kari kiz, which was affected by 12.5-15.5%, and in the other varieties by 2.5-5.0%. We can see that all medium-ripe varieties planted on May 20 are not affected by powdery mildew disease.

There were no sharp differences in sowing dates between late varieties in Amudarya variety on June 1 and 5, Sakhovat variety on May 20 and June 5, and Gulobi Khorezmi variety on May 20 which are not affected by the disease. The remaining variants had damage of 2.5–12.0 per cent.

The impact of the optimal planting times on the melon yield was studied and calculated in accordance with the climate conditions in the Khorezm oasis. The crop was weighed on a separate scale for each crop and divided into commodity and non-commodity fractions (see Table 3).

The average number of fruits per plant and fruit weight was determined in the experiment. It is found that both early and late varieties produced 4-5 fruits per plant. There is a difference in the weight of the fruit among the varieties and planting dates. Of the early varieties, in Tarnak, the average fruit weight is 2.0-2.4 kg, while in Khandalak it is less, i.e. 1.0-1.4 kg, and both varieties planted on May 1 has higher fruit weight than the ones. The fruit weight was 2.3-2.6 kg, and the fruit weight was relatively higher in the Gurvak variety planted on April 25 and May 1.

When the fruits of medium-ripening varieties were weighed, the variety of Zargulobi planted on 5 and 10 May (3.5-3.6 kg) were higher than the others'. The weight of the fruit of the variety Ak Navvot sown in May 5 and May 20 was 4.2 kg, while in other varieties it is - 3.6-3.8 kg. In the variety of Kari kiz, this figure was 3.9-4.5 kg, which is higher than the fruit of the varieties sown in May 5 and 15, i.e. 4.5 kg.

The difference is observed in the weight of fruits of late varieties also, that is, they were found to be large fruits. This figure was 5.2-6.6 kg in the Amudarya variety, and in the variant sown in June 1 and 5, the fruit weight was higher 6.2-6.6 kg. In the control variety Sakhovat, i.e. the variety sown in May 25, has the highest fruit weight of 7.0 kg. In other varieties it was 6.2-6.6 kg. The fruits weighed from 6.3 kg to 7.2 kg in Gulobi Khorezmi variety. The weight of the fruit of the varieties sown in June 1 and 5 was 7.0–7.2 kg in which is relatively larger than the others.

The experiments have presented that the weight of early-ripening varieties of melons is smaller (1.0-2.6 kg) and the weight of late-ripening varieties is larger (7.0-7.2 kg).

The yields were analyzed over the years to determine the optimal sowing time for the melons. The average marketable yield of early ripening Tarnak variety was 6.0-18.1 t/ha at all sowing periods, and it was found that all variants had a higher yield than the control variety. In particular, the varieties sown in April 25 and May 1 (17.5-18.1 t/ha) yielded 9-13% higher yields. This figure was 16.6-18.7 t/ha among the varieties of Khandalak. We can see that the varieties sown in April 15 and 25 yielded much lower (16.6–17.0 t/ha) than the control variant (18.4 t/ha). The variety sown in May 1 yielded the same commodity as the control variety.

The yield of the early ripening Gurvak variety is higher (25.0-28.2 t / ha) than the yield in the varieties Tarnak and Handalak. The commodity yield was higher in other variants than the control variant of the variety Gurvak. In particular, it yielded 13% (28.2 t / ha) more than the control variant sown in May 1, and 10% (27.5 t / ha) more than the variant sown on April 15.

The experiment showed that the total commodity yield in medium ripening varieties is 33.0-35.7 t / ha. The

highest tradable yield is observed in Zargulobi, Ak novvot and Qari qiz varieties sown in May 20, which have yielded 9-11% more than the control varieties. The variety Zargulobi sown in May 20 has yielded 35.7 t/ha, the variety Ak novvot 34.7 t/ha and the variety Kari qiz 35.3 tons per hectare. It has been found that the yield is 3–8% more than the control options in the remaining varieties of sowing periods. Only the variety Zargulobi sown in May 5 has yielded 33.0 t/ha, which is 8% less than in the control variant.

The total yield also varied from 30.1 tons to 35.8 tons in late ripening varieties., all varieties except for the control option (30.1 t/ha), have yielded a good harvest in the Amudarya variety. Especially the variant planted on June 5 (34.4 t/ha) showed a high indication of yield of 14%.

The commodity yield of the variety Sakhovat ranged from 31.0 tons to 35.4 tons, and the highest rate was observed in the variant sown on 5 June at 35.4 t / a in comparison to the control variety. It has yielded 14 percent more than the control option. The Gulobi Khorezmi variety, like the Amudarya Sakhovat variety, has had a lot of commodity yields in all other variants except the control variety. The highest rate was found in the variant planted on June 5, which yielded 35.8 t / ha, which is 15% more than the control variety. In late-ripening varieties of melons the highest yields are observed in the variants planted on 5 June.

The share of commodity yield in the total yield is 87-98% among the varieties and variants in the experiment. This figure depends more on the timing and technique of harvesting. Timely harvesting and sorting of early, medium and late ripening varieties of melons leads to an increase in the share of marketable yield. The share of marketable yield does not differ significantly by the varieties and variant of them in the experiment. The share of marketable fruits and quality crops is relatively

high (94-98%) in early ripening varieties as Tarnak, Handalak and Gurvak.

It can be concluded that it is expedient to sow early-ripening varieties of melon in Khorezm oasis on May 1, medium-ripening varieties on May 20 and late-ripening varieties on June 5.

The biochemical composition of melon varieties has been analyzed in the laboratory of Urgench State University, which determines mainly the amount of dry matter, sugar, ascorbic acid and nitrates in it. (See Table 4).

According to the results, the content of dry matter in the fruit of melon varieties is 10.2-11.9% in early ripening varieties, and does not differ significantly over different planting periods. The dry matter content in the middle and late ripening varieties is 12.1-14.1% at most.

The sugar content of melons was 9.8-15.0% of all variants of early ripening varieties. Gurvak variety in all sowing periods, which has the highest sugar content among early maturing varieties, has 14.2-15.0%. In medium-ripening varieties, the sugar content does not differ much between the variants, i.e. 12.1-13.2 percent. In late varieties, we can see that this indicator of the sugar content is relatively high (2.9-13.4%) in Sakhovat variety in all sowing periods. In the Amudarya and Gulobi Khorezmi varieties, the sugar content is relatively low (10.1-11.2%).

The content of ascorbic acid in the fruit is 12.1-13.8% in early ripening varieties and 13.4-15.0% in medium ripening varieties., however, we can see that ascorbic acid rose to 18.4 percent in late varieties. The content of nitrates in the fruit ranged from 18.2 to 26.1 mg / kg in the experiment. This figure, of course, means that it

is much lower than the allowable norm for melons (PDK-150 mg \ kg).

In determining the tasting value, samples of each variety were evaluated on the shape, color, texture, taste, odor and other parameters of ripe fruit.

It was found that the tasting value of all varieties of melons planted at different times is higher than 9 points. As a result of an experiment, it was found that the tasting value of early ripening varieties is relatively high in terms of shape, color, texture, taste, smell and other characteristics of the fruit.

CONCLUSION

It was found that the growth rate of the aboveground part of melon plant is relatively short in most early varieties (487-588 cm), high in the medium-ripe Ak novvot variety planted on May 20 (644 cm) and late Amudarya variety planted on May 25 (610 cm). When the degree of infestation of melon with powdery mildew disease has been observed, the variants of early ripening Gurvak planted on April 25 and May 1, as well as variants of all medium-ripe varieties planted on May 20, turned out to be resistant to this disease. It has been found that the fruit of early ripening varieties is small and weighs 1.0-2.6 kg and the fruit of late varieties is larger than the others and weighs 7.0-7.2 kg. The highest marketable yield is observed in the variants sown on 1 May of early ripening varieties. Gurvak variety has higher yields than Tarnak and Handalak varieties. In particular, the variant sown on May 1 yields 13% (28.2 t / ha) more, and the variant sown on April 15 yields 10% (27.5 t / ha) more than the control. The highest marketable yield in medium-ripening varieties is observed in the varieties sown in May 20. The varieties Zargulobi has yielded 35.7 t / ha, the variety Ak novvot - 34.7 t / ha and Kari kiz - 35.3 tons per hectare,



which have yielded 9-11% more than the control options.

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