

SELECTION OF PROMISING VARIETIES AND LINES OF VEGETABLE BEANS SUITABLE FOR SUMMER CULTIVATION IN THE CONDITIONS OF TASHKENT REGION.

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Abstract. This article presents the results of experiments conducted under the soil and climatic conditions of Tashkent region to study the collection of vegetable bean varieties for repeated summer planting and cultivation. Among the 23 varieties studied, eight showed lower yields compared to the standard. The varieties Shaxika (24.9 t), Tomatnaya (19.24 t), Zolushka (16.62 t), and Korolevskiy (15.96 t) demonstrated higher yields than the other varieties studied.

Keywords: vegetable bean, seed, flower, pod, technical maturity, biological maturity, phenophase.

Introduction. In order to implement the Resolution of the President of the Republic of Uzbekistan dated June 1, 2017, No. PQ-3027, “On the Placement of Repeated Crops on Areas Vacated after Cereal Crops in 2017 and Timely Supply of the Necessary Material and Technical Resources for Planting,” 401.1 thousand hectares of land were sown with leguminous crops in the country that year. Therefore, one of the most pressing issues today is the cultivation of leguminous crops to obtain high yields and to meet the population’s demand for food. The collection samples of vegetable beans were soaked and sown during the summer period (June 10–15). During the summer, the air temperature was high, and soil moisture was maintained at 75–80% of field capacity. Depending on seed size, full germination occurred within 5–11 days after sowing (Table 1).

Table 1

Growth stages of vegetable bean collection samples cultivated during the summer period (2020–2022)

| Varieties and samples | Sowing – Full germination of seeds | Full germination of seeds – Flowering of the plant | Full germination of seeds - Pod technical maturity | Beginning of flowering – beginning of seed biological maturity, days | Seed germination – biological maturity |
|-----------------------|------------------------------------|----------------------------------------------------|----------------------------------------------------|----------------------------------------------------------------------|----------------------------------------|
| Mahsuldor (st). | 7 | 32 | 44 | 63 | 95 |
| Ravot | 7 | 30 | 42 | 44 | 74 |
| Korolevskiy | 7 | 29 | 40 | 44 | 73 |
| Qora shaxzoda 0,1 | 5 | 28 | 42 | 46 | 74 |
| Nigerityanka | 5 | 28 | 42 | 46 | 74 |
| Qizil shapkacha | 7 | 28 | 43 | 51 | 79 |
| Jigar rang targ'il | 7 | 28 | 42 | 55 | 83 |



| | | | | | |
|---------------------|----|----|-----|------------------------|-----|
| Qora gigant | 10 | 35 | 52 | 100 | 135 |
| Qirg'iziston qora | 7 | 31 | 45 | 69 | 100 |
| Qirg'iz.qizil | 7 | 30 | 45 | 69 | 99 |
| Jigar rang | 7 | 29 | 44 | 55 | 84 |
| Zolushka | 5 | 25 | 40 | 49 | 74 |
| Sezar | 5 | 27 | 42 | 51 | 78 |
| Oq gigant | 11 | 45 | 100 | Did not reach maturity | |
| Shaxika | 5 | 25 | 40 | 43 | 68 |
| Olmos | 7 | 27 | 44 | 60 | 95 |
| Qaldirg'och | 6 | 28 | 43 | 57 | 85 |
| Priusadebnoy | 5 | 23 | 40 | 42 | 65 |
| Tomatnaya | 7 | 23 | 38 | 38 | 61 |
| Chig'anoq | 7 | 29 | 45 | 67 | 96 |
| Qora shaxzoda 0,2 | 7 | 25 | 44 | 56 | 81 |
| Turkiya qizil mayda | 7 | 25 | 45 | 76 | 101 |
| Tablitka | 8 | 32 | 50 | 93 | 125 |

In the control Mahsuldor variety, the period from seed germination to full flowering ranged from 25 to 45 days, pod technical maturity was reached in 38 to 100 days, and seed biological maturity occurred from 61 days onward, with some not reaching maturity. Biological maturity of seeds was observed in Tomatnaya (61 days), Priusadebnoy (65 days), Korolevskiy (73 days), Ravot, Qora shaxzoda 0.1, Nigerityanka, and Zolushka (74 days), maturing 22–34 days earlier than the control. Sezar (78 days), Qora shaxzoda 0.2 (81 days), Jigar rang targ'il (83 days), and Jigar rang (84 days) matured 11–17 days earlier.

Turkiya qizil mayda (101 days), Tablitka (125 days), and Qora gigant (135 days) matured 6–40 days later than the control, while Oq gigant, when sown as a repeated crop, did not reach biological maturity (Figure 1).



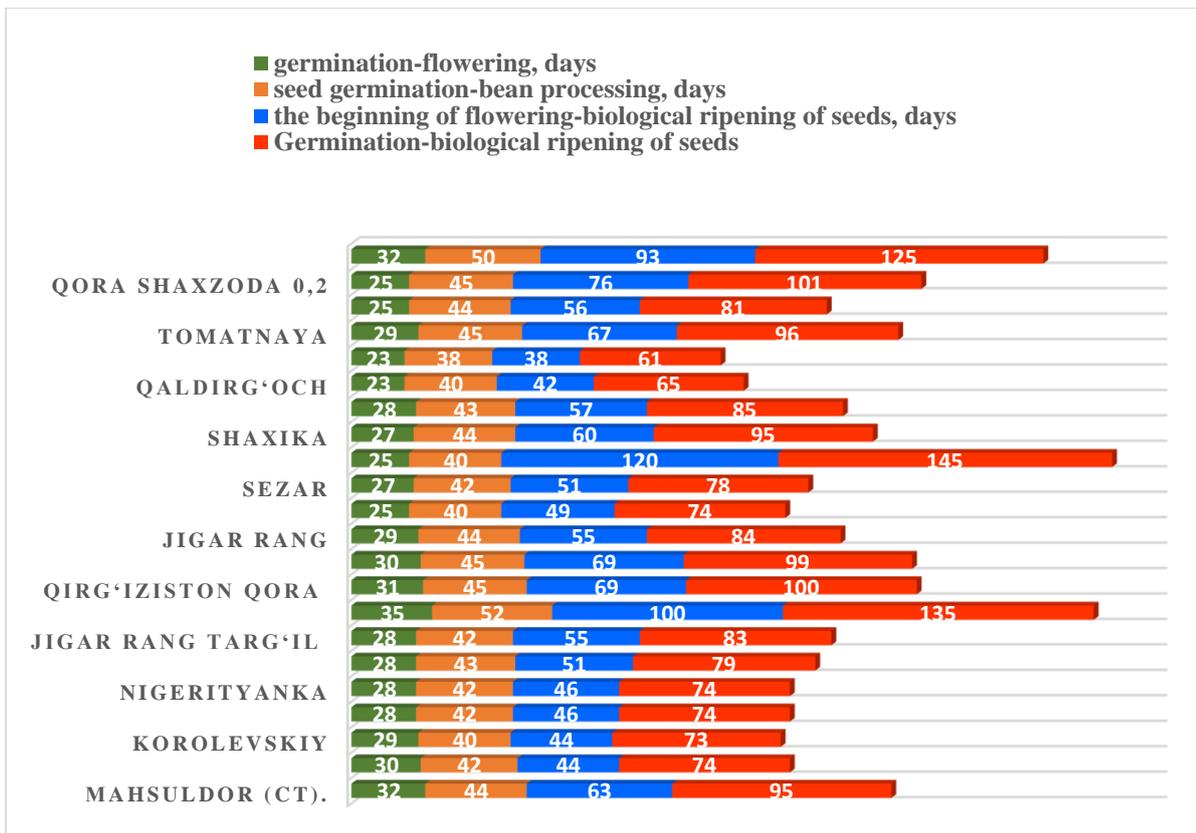


Figure 1. Duration of phenophases of vegetable bean collection samples sown as a repeated crop.

When vegetable bean variety samples were sown in the summer period, in addition to passing relatively quickly to the flowering phase, this also had a positive effect on the yield per plant, as can be seen in the following table (Table 2).

Table 2

Yield indicators of vegetable bean collection variety samples at technical maturity when sown as a repeated crop (2020–2022).

| No | Variety name | Number of pods per plant (pcs) | Weight of one pod (g) | Yield of per plant (g) | Yield (t/ha) |
|----|--------------------|--------------------------------|-----------------------|------------------------|--------------|
| 1 | Mahsuldor (st) | 20 | 4,3 | 86 | 8,2 |
| 2 | Ravot | 17 | 3,9 | 66,3 | 6,3 |
| 3 | Korolevskiy | 41 | 4,1 | 168,1 | 15,96 |
| 4 | Qora shaxzoda 0,1 | 23 | 6,3 | 144,9 | 13,8 |
| 5 | Negrityanka | 33 | 4,6 | 151,8 | 14,4 |
| 6 | Qizil shapkacha | 31 | 4,2 | 130,2 | 12,4 |
| 7 | Jigar rang targ'il | 30 | 3,8 | 114 | 10,8 |
| 8 | Qora gigant | 5 | 6,6 | 33 | 3,13 |
| 9 | Qirg'iziston qora | 8 | 3,1 | 24,8 | 2,4 |
| 10 | Qirg'iziston qizil | 9 | 3,1 | 27,9 | 2,56 |
| 11 | Jigar rang | 14 | 5,8 | 81,2 | 7,7 |
| 12 | Zolushka | 35 | 5 | 175 | 16,62 |
| 13 | Sezar | 32 | 3,7 | 118,4 | 11,25 |



| | | | | | |
|----|---------------------|----|-----|-------|-------|
| 14 | Oq gigant | 7 | 5,1 | 35,7 | 3,39 |
| 15 | Shaxika | 61 | 4,3 | 262,3 | 24,9 |
| 16 | Olmos | 23 | 3,7 | 85,1 | 8,08 |
| 17 | Qaldirg'och | 29 | 4,1 | 130,5 | 11,3 |
| 18 | Prosadibni | 29 | 3,4 | 98,6 | 9,37 |
| 19 | Tomatnaya | 45 | 4,5 | 202 | 19,24 |
| 20 | Chig'anoq | 16 | 5,3 | 84,8 | 8,06 |
| 21 | Qora shaxzoda 0,2 | 14 | 6,5 | 91 | 8,65 |
| 22 | Turkiya qizil mayda | 15 | 3,6 | 54 | 5,13 |
| 23 | Tablitka | 17 | 7,1 | 120,7 | 11,47 |

When vegetable bean variety samples were grown as a repeated crop, the number of pods per plant was determined by selecting ten plants from each plot in the experiment, counting their pods, calculating the average, and then dividing the sum by the number of replications. According to the calculations, the average number of pods per variety sample was 24, with the lowest pod formation observed in Qora gigant (5), Oq gigant (7), Qirg'iziston qora (8), and Qirg'iziston qizil (9). Above-average pod formation was recorded in Negrityanka (33), Qizil shapkacha (31), Jigar rang targ'il (30), Zolushka (35), Sezar (32), Qaldirg'och, and Prosadibni (29), while Korolevskiy (41), Tomatnaya (45), and Shaxika (61) showed the best results.

In terms of yield per hectare when cultivated as a repeated crop, compared to the control variety, 6 samples showed lower yields (24.9–6.3 t/ha), 3 samples produced slightly less (7.7–8.08 t/ha), 3 samples had slightly higher yields (8.65–10.8 t/ha), and 13 samples demonstrated high yields. The highest-yielding samples are highlighted below.



The variety samples Korolevskiy (15.96 t/ha), Qora shaxzoda 0.1 (13.8 t/ha), Negrityanka (14.4 t/ha), Qizil shapkacha (12.4 t/ha), Zolushka (16.62 t/ha), Shaxika (24.9 t/ha), and Tomatnaya (19.24 t/ha) were identified. It was noted that the yields of these samples were 151% to 303% higher compared to the control variety.

Conclusion

1. When vegetable bean variety samples were sown in the summer period, the gradual moderation of temperatures during the growing season led to earlier harvesting compared to spring planting, while also creating favorable conditions for 90–95% of flowers to be pollinated.



2. Under the climatic conditions of Tashkent region, it was scientifically substantiated that high yields can be obtained by cultivating the varieties Korolevskiy, Qora shaxzoda 0.1, Negrityanka, Qizil shapkacha, Jigar rang targ'il, Zolushka, Shaxika, Qaldirg'och, and Tomatnaya as repeated crops.

However, when studying vegetable bean collection samples in both main and repeated planting periods, it was found that some varieties, despite having high pod yields, were highly susceptible to diseases. Such samples include Sezar and Qirg'iziston.

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