# Study and Evaluation of a Set of Samples of Purple Promising Basil (*Ocimum Basilicum L.*) Cultivars According to Important Economic Characteristics

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**Abstract:** The article presents the results of the assessment of 22 varieties of basil with anthocyanin color according to the yield of leaves, green mass and dry mass. The most promising specimens are proposed for use in breeding work as a source material, as well as for cultivation in household plots and vegetable farms.

**Keywords:** basil, anthocyanin color, leaf yield, green and dry mass yield, promising varieties.

Basil, one of the valuable vegetable crops, belongs to the group of rare and newly studied plants in our republic. The ground part of basil is distinguished by its pleasant smell and mild taste, and therefore it is widely used in food.

Basil is used as a raw material in the food industry (meat processing, canning and soft drink production), as a spice, folk medicine, medicine, pharmaceuticals, and perfumery, and as an ornamental plant in landscaping.

Basil is notable not only for its beauty, but also for its medicinal properties and its rich content of vitamins and minerals necessary for humans. Many local varieties of basil are cultivated and consumed in different regions of our country.

Based on this, we set ourselves the goal of studying 22 samples of purple basil from different regions (Table 2) in terms of economic characteristics and creating a starting source for basil selection at the SPE and KITI Surkhandarya Scientific Experiment Station in 2020-2021.

Seedlings were transplanted to the open field on April 6. The experiment was carried out without return. The area of the account is 3.5 m2. The number of plants in the compartment is 20. Planting scheme 70x25 cm. Rosie variety was taken as standard and it was placed after every 10 varieties. During the vegetation period, phenological observations, morphobiological description of plants, determination of productivity were carried out. Productivity determination was carried out with two objectives in mind. For the first purpose, that is, the determination of the yield for consumption of fresh basil was carried out at the beginning of the appearance of flower buds on the plants.

For the second purpose, that is, determination of productivity by drying basil leaves was carried out in the phase of flowering of plants. It is during this period that essential oils are most concentrated in basil leaves and inflorescences (5). In this case, the yield was determined by measuring the harvested blue mass after drying it at home. During the growing season, mowing was done 5 times. The plants were harvested 10 cm above the root neck.

**Research results.** When determining the blue mass yield of basil variety samples, leaf yield and stem mass are determined separately. Samples of the variety with a low mass of stems and branches are considered promising. Because basil leaves are mainly eaten for food purposes (1, 2, 3).

Table 1. Blue mass yield of purple basil variety samples (kg/m$^2$), 2020-2021.

| № | Varieties | Leaf productivity, kg/m$^2$ | Mass of stems and branches, kg/m$^2$ | Blue mass productivity, kg/m$^2$ | Compared to control,% |
|---|---|---|---|---|---|
| 1 | Rozi (control) | 1,8 | 1,4 | 3,2 | 100 |
| 2 | Black basil | 1,5 | 0,7 | 2,2 | 68,7 |
| 3 | Fioletoviy blesk | 1,9 | 1,4 | 3,3 | 103,1 |
| 4 | Fioletoviy krupnolistniy | 2,5 | 1,6 | 4,1 | 128,1 |
| 5 | Erevanskiy | 1,3 | 0,9 | 2,2 | 68,7 |
| 6 | Овощпоу Fioletoviy№1 | 1,5 | 0,9 | 2,4 | 75,0 |
| 7 | Fioletoviy №2 | 1,4 | 0,8 | 2,2 | 68,7 |
| 8 | Filosof №1 | 1,5 | 0,9 | 2,4 | 75,0 |
| 9 | Purpurniy korol №1 | 2,3 | 1,6 | 3,9 | 121,8 |
| 10 | Purpurniy korol №2 | 1,8 | 1,1 | 2,9 | 90,6 |
| 11 | Purpurniy korol №3 | 1,7 | 1,1 | 2,8 | 87,5 |
| 12 | Purpurniy korol №4 | 2,3 | 1,8 | 4,1 | 128,1 |
| 13 | Karakash | 1,8 | 1,7 | 3,5 | 109,3 |
| 14 | Vostorg | 2,4 | 1,9 | 4,3 | 134,3 |
| 15 | Fioletoviy gigant | 3,3 | 2,1 | 5,4 | 168,7 |
| 16 | Jon rayhon | 1,8 | 0,8 | 2,6 | 81,2 |
| 17 | Sada rayhon №2 | 1,1 | 0,6 | 1,7 | 53,1 |
| 18 | Vz 001 | 1,8 | 1,1 | 2,9 | 90,6 |
| 19 | Gulchaman | 1,3 | 0,8 | 2,1 | 65,6 |
| 20 | Bazilik fioletoviy №1 | 1,7 | 0,9 | 2,6 | 81,2 |
| 21 | Pyat aromatov (smes) | 3,3 | 1,9 | 5,2 | 162,5 |
| 22 | Bakinskiy dvorik | 2,3 | 1,2 | 3,5 | 109,3 |
| | $\sum X$ | 42,3 | 27,2 | 69,5 | |
| | $\overline{x}$ | 1,9 | 1,2 | 3,1 | |

Among the samples of purple-leaved basil varieties studied, only Qoraqosh**,** Fioletoviy blesk **,** Purpurniy korol №1, Purpurniy korol №4, Fioletoviy gigant, Pyat aromatov smes, Bakinskiy dvorik varieties had a leaf yield of 1.9-3.3 kg/m$^2$, and this standard 31.0-37.9% more than the variety, Table 3. Fioletoviy blesk yield is close to Nazora Rozi variety and it was 1.8 kg/m2 or 96.5% compared to the standard. In other studied variety samples, the leaf yield was low compared to the standard and was 1.4 (Овощпоу Fioletoviy №1) – 1.7 (Bazilik fioletoviy №1) kg/m$^2$.

In general, the mass of stems and branches was 37.7-46.2% of the blue mass. The highest mass of stems and branches was observed in the samples of Sitrusoviy fresh, Pyat aromatov smes, Fioletoviy gigant**,** Purpurniy korol №4**,** Jon basil varieties, and the blue mass was 64.0-75.0%. Such varieties cannot be a promising starting source for selection work. Purpurniy korol №1**,** Vostorg cultivars with the highest leaf yield, stem and branch mass was 60.5-62.5% compared to leaf yield.

The highest yield of blueberry mass was observed in Fioletoviy gigant **,** Qoraqosh**,** Fioletoviy blesk**,** Purpurniy korol №1, Purpurniy korol №4, Pyat aromatov smes, Bakinskiy dvorik varieties and it was 5.4-3.5 kg/m$^2$. This means 39.7-48.2% higher than the standard variety.

Table 2. Dried yield of purple basil variety samples, 2020-2021.

| № | Varieties | Blue mass productivity, kg/m$^2$ | Productivity of dried mass, kg/m$^2$ | In relation to the blue mass, % | In relation to the comparative variety,% |
|---|---|---|---|---|---|
| 1 | Rozi (control) | 3,4 | 0,5 | 14,7 | 100 |
| 2 | Qora rayhon | 2,3 | 0,2 | 8,6 | 67,6 |
| 3 | Fioletoviy blesk | 4,9 | 0,4 | 12,2 | 144,1 |
| 4 | Fioletoviy krupnoliseny | 4,0 | 0,6 | 15,4 | 117,6 |
| 5 | Erevanskiy | 2,9 | 0,3 | 11,2 | 85,2 |
| 6 | Овощnoy Fioletoviy№1 | 3,3 | 0,4 | 12,1 | 97,1 |
| 7 | Fioletoviy №2 | 2,6 | 0,3 | 11,5 | 76,4 |
| 8 | Filosof №1 | 2,7 | 0,3 | 11,1 | 79,4 |
| 9 | Purpurniy korol №1 | 3,9 | 0,5 | 12,8 | 114,7 |
| 10 | Purpurniy korol №2 | 2,9 | 0,3 | 11,2 | 85,2 |
| 11 | Purpurniy korol №3 | 3,4 | 0,4 | 12,6 | 100 |
| 12 | Purpurniy korol №4 | 4,2 | 0,6 | 14,2 | 123,5 |
| 13 | Karakash | 3,8 | 0,5 | 13,2 | 111,7 |
| 14 | Vostorg | 4,6 | 0,6 | 13,1 | 135,2 |
| 15 | Fioletoviy gigant | 5,7 | 0,8 | 14,1 | 167,6 |
| 16 | Jon rayhon | 2,6 | 0,3 | 11,5 | 76,4 |
| 17 | Sada rayhon №2 | 2,4 | 0,2 | 8,3 | 71,4 |
| 18 | Vz 001 | 2,9 | 0,3 | 10,3 | 85,2 |
| 19 | Gulchaman | 2,0 | 0,2 | 10,0 | 58,8 |
| 20 | Bazilik fioletoviy№1 | 2,9 | 0,3 | 10,3 | 85,2 |
| 21 | Pyat aromatov smes | 5,8 | 0,7 | 12,1 | 171,4 |
| 22 | Bakinskiy dvorik | 3,4 | 0,4 | 11,7 | 100 |
| | $\sum X$ | 79,8 | 9,1 | | |
| | $\overline{x}$ | 3,6 | 0,41 | | |

The productivity of basil variety samples was also determined after drying. For this purpose, in the conducted experiments, the highest yield of blue mass was observed in samples of Fioletoviy gigant, Pyat aromatov smes variety and it was 5.7-4.6 kg/m$^2$. This means 23.6-25.4% more than the standard variety Rozi.

The yield after drying was also high in these varieties and was 0.8-0.7 kg/m$^2$. In the control Rozi variety, this index was 0.5 kg/m$^2$, Table 3. The dried mass was 8.6-15.4% of the blue mass depending on the variety. According to this indicator, the best variety samples are Rozi, Fioletoviy gigant , Karakash, Fioletoviy blesk , Purpurniy korol №1, Purpurniy korol №4, Pyat aromatov smes, Bakinskiy dvorik, which have a dry mass yield of 0.7-1.1 kg/m$^2$ organized. This, in turn, makes up 12.7-19.9% of the yield of blue mass.

Thus, among the samples of the studied green basil varieties, the samples of the highest yield of blue mass were separated Fioletoviy gigant, Karakash, Fioletoviy blesk , Purpurniy korol №1, Purpurniy korol №4, Pyat aromatov smes, Bakinskiy dvorik.

**Gulchaman variety of basil**

**(Figure 1)-** The height of the bush is 23-25 cm, the number of branches of basil is 80-88 pieces, the number of leaves in basil is 3500-5000 pieces, the length of the leaf plate is 1.2-2.1 cm, the width is 0.9-1.8 cm, this variety is small-leaved is considered 1000 seeds weight 1.37 g. It is purple in color and can be seen in stems, bands, leaves and flowers. The flowers are white, pink or purple in color and form a panicle at the end of the stem. It is recommended for growing in pots at home, and for growing as an ornamental crop in courtyards.



**Karakash variety of basil**

**(Figure 2)-** The height of the bush is 40-45 cm, the number of branches of basil is 30-38 pieces, the number of leaves in basil is 450-550 pieces, the length of the leaf plate is 8.0-11.0 cm, the width is 4.2-6.6 cm, this variety is considered large-leaved . 1000 seeds weight 1.17 g. It is purple in color and has a good smell and taste, that's why. Fresh or dried leaves and upper side branches are used in various foods, preserves, pickles. The field is recommended for growing as an ornamental crop in backyards

**Conclusion.**

Thus, for the first time, as a result of studying the morphological characteristics of 22 purple basil varieties of different ecological-geographic origin in the south of Uzbekistan, 7 varieties with high promising main economic characteristics were selected for the selection of basil in our republic.

Among them, Fioletoviy gigant**,** Karakash**,** Fioletoviy blesk**,** Purpurniy korol №1, Purpurniy korol №4, Pyat aromatov smes, Bakinskiy dvorik variety samples are recommended as a starting source for selection work and to be grown in vegetable farms and private plots.

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