УДК 635.132:631.563

Alimkhanov Y.M., Petrov E.P.

Kazakh national agrarian university

PRODUCTIVITY OF INTRODUCED VARIETIES BEETS IN THE SOUTHEAST KAZAKHSTAN

Abstract

This article provides information on the productivity of introduced varieties of beets dining room. Established the most productive varieties.

Key words: beet, variety, productivity, economic efficiency.

Introduction

The beet is one of the most common vegetable crops. Roots beet are well preserved to the next harvest In the food they consume boiled and canned. Beetroot contains 8% sugar.The most valuable beetroots, the base parenchyma, and leaves which are painted in a reddish-purple color found in the cell sap anthocyanin (betaine). Betaine contained in young root vegetables to 2.5 g, and in the old - 1.4 g per 1 kg of dry matter.Beet Betaine is a source of choline, which lowers the blood levels of cholesterol. It improves metabolism, accelerates the growth of a young organism. In the food consumed beetroots and leaves. Used in borscht, salad, side dishes and a variety of fillings. Dishes from beetroot improves intestinal function, stimulate heart activity and are useful in vascular sclerosis.

Beet – abiennialplant. Material for sowing – stem (glomeruli) with several fruits – nuts. Shoots appear in bundles, which require thinning. When require thinning leave more developed plants. The roots have numerous ramifications extending into the ground and broadwise 2-3 m [1].

Productivity increase beet yield it's an important task at cultivation. One way to increase yields can be a breeding varieties adapted to local soil and climatic conditions.

Materials and methods

Research work for the variety beet was held in the educational-industrial economy "Agrouniverstitet" in Almaty region. The precursor - cabbage. Agrotechnics the commonly accepted in the area. Soil preparation consisted in the harvesting of crop residues, incorporation of 20 t/ha of compost, plowing, early spring harrowing, in two tracks, cultivation, cutting of the temporary irrigation network.Experience tab conducted according to the procedure of field experience in vegetable production[2].

Studied varieties beetroot: Bordo 237 (control), Detroit, Krasnyy shar, Nesravnennaya A-463, Chernaya vdova, Russkaya odnosemyannaya, Smuglyanka, Egypetskaya ploskaya, Mulatka, Havskaya. Sowing the seeds in open ground carried out by an ordinary circuit with a distance between rows of 45 cm between plants in a series of 7 cm.During the growing season held by two cultivations, one of which combined with top dressing fertilizer, two weeding and six times watering.

Phenological observations were conducted out in the form adopted by the state variety trial.From the moment seeding and harvest to the marked terms of approach and passage phenophases - phase appearance of single and mass germination, an emergence of the first true leaf, the beginning of a thickening of the root, date of harvest.Definition of power plant development was carried out in the phase of technical ripeness of beets.Determines the height and diameter of the rosette of leaves, number of leaves and area of the reference method.

For the analysis of the biological value of roots of the studied varieties of beet were taken average samples.Determined the content of ascorbic acid according to GOST2456-89 [3], sugar

by micro-modification the method of Bertrand[4], total acidity[5].Determination of nitrate carried by ionometric method[6].Accounting harvest by plot land.

Results and discussion

Conducting phenological observations for the studied varieties of beets allowed to establish differences in the timing of entry into the next phase of development.When sowing in the open ground April 22, the latest sprout was the varieties Detroit, Smuglyanka, Egypetskaya ploskaya and Mulatka (table 1).

The earliest appearance of the first true leaf – in the varieties Krasnyy shar, Nesravnennaya A-463, Chernaya vdova, Russkaya odnosemyannaya, Havskaya, The earliest appearance of the first true leaf - in the varieties Krasnyy shar, Nesravnennaya A-463, Chernaya vdova, Russkaya odnosemyannaya, Havskaya, but the most late cultivars is Smuglyanka and Mulatka. A similar pattern for the studied varieties is noted in the early phase of thickening of the root.

The holding of biometrics beet plants showed (table 2) that the highest elevation rosette of leaves is plant varieties Havskaya (35.5 cm), a few fewer varieties of Nesravnennaya A-463 Krasnyy shar, Chernaya vdova. Low rosette of leaves in the variety Smuglyanka (25.7 cm). Max diameter rosette of leaves has the variety Havskaya (40,6 cm), least for the variety Smuglyanka (29,8 cm). The highest leaf area has a variety Havskaya (1389 cm^2), then Nesravnennaya A-463, Krasnyy shar, Chernaya vdova. The smallest leaf area in plant variety Smuglyanka (437cm^2).

Table 1 – Influence of varietal characteristics on the phenology of beet

Variety	Sowing	Seedling emergence, %		The appearance of the first true leaf, %		Start thickening the root, %		Harvesting
		10	75	10	75	10	75	
Bordo	22.04	28.04	30.04	15.05	18.05	23.05	26.05	25.08
Detroit	22.04	29.04	1.05	16.05	19.05	24.05	25.05	25.08
Krasnyy shar	22.04	28.04	30.04	15.05	18.05	23.05	26.05	25.08
Nesravnennaya A-463	22.04	28.04	30.04	15.05	18.05	23.05	26.05	25.08
Chernaya vdova	22.04	28.04	30.04	15.05	18.05	23.05	26.05	25.08
Russkaya odnosemyannaya	22.04	28.04	30.04	15.05	18.05	23.05	26.05	25.08
Smuglyanka	22.04	29.04	1.05	17.05	21.05	26.05	29.05	25.08
Egypetskaya ploskaya	22.04	29.04	1.05	16.05	20.05	25.05	28.05	25.08
Mulatka	22.04	29.04	1.05	17.05	21.05	26.05	29.05	25.08
Havskaya	22.04	28.04	30.04	15.05	18.05	23.05	26.05	25.08

Table 2 – Biometrics of different varieties of table beet before harvesting

Variety	The height of the rosette of leaves, cm	The diameter of the rosette of leaves, cm	the number of leaves, pcs			Plant leaf area, cm^2
			large	medium	small	
1	2	3	4	5	6	7
Bordo	26,8	30,7	3,6	4,2	2,4	618
Detroit	28,5	33,6	3,9	4,6	2,7	744
Krasnyy shar	31,5	37,8	4,3	6,2	3,0	1193
Nesravnennaya A-463-	34,8	39,6	4,4	6,0	3,2	1220
Chernaya vdova	31,3	37,0	4,1	5,5	2,8	1057
Russkaya odnosemyannaya	29,4	34,3	4,1	5,5	2,6	958

Smuglyanka	25,7	29,8	3,4	3,7	2,1	437
Egypetskaya ploskaya	28,0	32,1	3,7	4,4	2,5	774
Mulatka	26,4	30,0	3,5	4,0	2,2	653
Havskaya	35,5	40,6	4,6	6,3	3,3	1386

Biological value grocery bodies of the beets determine the content of dry matter, sugars, ascorbic acid, total acidity, nitrates.Higher dry matter content in the roots was beet varieties Krasnyy shar and Nesravnennaya A-463 – 16,4%; the lowestof the variety Havskaya – 8,4% (table 3).

Table 3 – The contents of dry matter, sugars, acids, nitrates in productive organs of beet

Variety	Dry matter, %	Sugar in raw material, %	Ascorbic acid,mg%	Total acidity malic acid, %	Nitrates, mg/kg
Bordo	9,2	8,2	9,56	0,09	269
Detroit	13,6	11,4	10,42	0,08	267
Krasnyy shar	16,4	14,5	10,55	0,08	146
Nesravnennaya A-463	16,4	14,3	10,80	0,08	199
Chernaya vdova	14,0	12,2	10,23	0,08	141
Russkaya odnosemyannaya	16,0	13,9	10,54	0,08	210
Smuglyanka	9,6	8,4	9,70	0,10	243
Egypetskaya ploskaya	12,4	10,7	10,18	0,09	269
Mulatka	11,2	9,6	10,02	0,09	277
Havskaya	8,4	7,1	8,97	0,10	149

The highest content of sugars in beet varieties Krasnyy shar (14,5%), the lowestof the variety Havskaya (7,1%). More vitamin C is accumulated in the roots of beet varieties Nesravnennaya A-463 (10,80 mg%). The content of total acidity for the studied varieties is approximately a little more than it varieties Smuglyanka и Havskaya.

Permissible levels of nitrates, according to SanPiN – 42-123-4619 andSanPiN 4.01.71.03 [7] in root crops of beet – 1400 mg/kg. Less nitrate-accumulating varieties of beets Chernaya vdova, Krasnyy shar, Havskaya; more of them had varieties Mulatka, Egypetskaya ploskaya, Bordo 237 and Detroit. Thus, the nitrate content in the roots of different varieties of beet in the 5.0-9.9 times below the maximum allowable concentration (MAC).

Table 4 presents the yield and average weight of roots of the studied varieties of beet. The reliable yield increase obtained on the variety Detroit, Krasnyy shar, Nesravnennaya A-463, Chernaya vdova, Russkaya odnosemyannaya, Havskaya. But variety Smuglyanka, Egypetskaya ploskaya, Mulatka the yield increase was not given. The highest yield increase obtained on varieties Havskaya, Nesravnennaya A-463, Krasnyy shar, Chernaya vdova.

Table 4 – Harvest weight of root of different varieties of table beet

Variety	The harvest of root crops from 1 ha		The increase of a crop,cwt /ha	Weight of root vege-table, g
	cwt	%		
Bordo	613	100	-	197
Detroit	640	104,4	27	204
Krasnyy shar	675	110,1	62	216
Nesravnennaya A-463	685	11,7	72	218
Chernaya vdova	670	109,3	57	214
Russkaya odnosemyannaya	643	104,9	30	206
Smuglyanka	593	96,7	-	192
Egypetskaya ploskaya	621	101,3	8	199
Mulatka	604	98,5	-	195
Havskaya	687	112,1	74	220
$НСР_{0,5}$	19,1			
Sx, %	3,1			

The highest revenue received for variety Havskaya (2061000 tg/ha), then Nesravnennaya A-463 (2055000 tg/ha), Krasnyy shar (2025000 tg/ha), Chernaya vdova (2010000 tg/ha), Russkaya odnosemyannaya (1929000 tg/ha), Detroit (1920000 tg/ha). The smallest profit obtained in the cultivation of beet varieties Smuglyanka 1779000 tg/ha (table 5).

Table 5 –Economic efficiency of the beet cultivation

Variety	Productivity, cwt /ha	Revenue, tg/ha	Expenses, tg/ha	Net profit, tg/ha	Cost price cwt, tg	Profitability, %
Bordo	613	1839000	1099768	739232	1794	67,2
Detroit	640	1920000	1110809	809191	1736	72,8
Krasnyy shar	675	2025000	1125121	899879	1666	80,0
Nesravnen-naya A-463	685	2055000	1123211	925789	1648	82,0
Chernaya vdova	670	2010000	1123075	886924	1676	78,9
Russkaya odno-semyan-naya	643	1929000	1112035	816965	1729	73,5
Smuglyanka	593	1779000	1091590	687410	1841	63,0
Egypetskaya ploskaya	621	1863000	1103039	759961	1776	68,9
Mulatka	604	1812000	1096085	715915	1815	65,3
Havskaya	687	2061000	1130028	930972	1645	82,4

The highest income brought the cultivation of beet varieties Havskaya (930972 tg/ha), and the lowest variety Mulatka 715915 tg/ha.

The lowest production cost has varieties of beets Havskaya (1645 tg/cwt), Nesravnennaya A-463 (1648 tg/cwt), Krasnyy shar (1666 tg/cwt), and the greatest – smuglyankaa (1841 tg/cwt).

The greatest profitability gave growing beet varieties Havskaya (82,4 %), Nesravnennaya A-463 (82,0%), Krasnyy shar (80,0%). The least profitability was the cultivation of beet varieties Smuglyanka (63,0%).

Conclusion

1. It is established that a significant increase of beet yield gave varietiesHavskaya, Nesravnennaya A-463, Krasnyy shar, Chernaya vdova, Russkaya odnosemyannaya and Detroit.

2. For increasing the productivity of table beet in Almaty region should grow varieties Havskaya, Nesravnennaya A-463, Krasnyy shar, Chernaya vdova, Russkaya odnosemyannaya and Detroit.

References

1. *Markov V.M.* Vegetable. – M .: Kolos, 1974. – P. – 370-383.

2. *Belik V.F., Bondarenko G.L.* Methods of field experience in the Vegetables and Melons. – M.: NIIOH, 1979. – 210 p.

3. GOST 24556-89. Processed fruits and vegetables (Quantitative determination of ascorbic acid). 1.01.1990.

4. *Belozersky A.N., Proskuryakov N.I.* A practical guide to plant biochemistry. – M.: Sovnauka, 1951. – 387 p.

5. *Yermakov A.I., Arasimovich I.V., Smirnova-Ikonnikova M.I.* Методы биохимического исследования растений. – M.: Kolos, 1972. – 520 p.

6. Методические указания по определению нитратов в продукции растениеводства, № 5048. – М.: Минздрав СССР, 1989. – 49 p.

7. Bulletin of normative legal acts of central executive and other state bodies of the Republic of Kazakhstan № 27-28, 2003. – Almaty: Zan. – P. 160.

Алимханов Е.М., Петров Е.П.

АЛМАТЫ ОБЛЫСЫНДА АСХАНАЛЫҚ ҚЫЗЫЛШАНЫ СҰРЫПТЫҚ АНЫҚТАУ

Аңдатпа

Осы мақалада асханалық қызылшаны сұрыптық анықтауы ғылыми-зерттеу нәтижелері жазылған. Және Алматы облысында климаттық жағдайына байланысты ең көп өнімдік беретін сұрыптар анықталды.

Кілт сөздер: қызылша, сұрып, өнімдік, экономикалық тиімділік.

Алимханов Е.М., Петров Е.П.

ПРОДУКТИВНОСТЬ ИНТРОДУЦИРОВАНЫХ СОРТОВ СТОЛОВОЙ СВЁКЛЫ НА ЮГО-ВОСТОКЕ КАЗАХСТАНА

Аннотация

В статье приведены сведения по продуктивности интродуцированных сортовстоловой свёклы. Установлены наиболее продуктивные сорта.

Ключевые слова: свёкла, сорт, продуктивность, экономическая эффективность.