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БЕЛЬСКАЯ – НОВЫЙ СОРТ СМОРОДИНЫ ЧЕРНОЙ

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Климатические условия Республики Башкортостан требуют создания сортов с высокой устойчивостью к комплексу биотических и абиотических стрессоров региона возделывания. Изложены данные по хозяйственно ценным признакам нового сорта смородины черной Бельская (селекционный номер 4-46). Сорт смородины черной Бельская выведен в Республике Башкортостан в 1997 г. от опыления сортов Валовая (Крупная × Бредторп × Хлудовская) и Караидель (Память Мичурина × Компактная). Год посева – 1998, начало плодоношения – 2002 г., отбор элитного сеянца – 2003 г., передача на госсортоиспытание – 2013 г. Первичное изучение сортообразцов начато в 2005 г. по схеме посадки 3 × 1 м. Контрольным был сорт Валовая, широко распространенный и районированный по всем регионам Российской Федерации. Сорт Бельская характеризуется высокой зимостойкостью. Признаков подмерзания в суровые зимы не обнаружено, у контрольного сорта Валовая повреждения отмечены до 1 балла с подмерзанием верхушек однолетнего прироста. Листовой аппарат сорта устойчив к солнечным ожогам. В годы жаркого и сухого лета (2010, 2011) выделился высокой засухоустойчивостью, при этом продуктивность его была выше контрольного сорта. Новый сорт отличается высокой продуктивностью (урожайность в среднем 12,7 т/га), устойчив к осыпанию. Обладает полевой устойчивостью к американской мучнистой росе, слабо поражается антракнозом. Ягоды одномерные, черные, округло-овальной формы, массой 2,3 г (максимальная – 2,6 г), кисло-сладкого нежного вкуса. Срок созревания средний. В 2022 г. сорт Бельская включен в Государственный реестр селекционных достижений Российской Федерации по Уральскому региону.

Ключевые слова: черная смородина, урожайность, зимостойкость, жаростойкость, засухоустойчивость

BELSKAYA – A NEW VARIETY OF BLACK CURRANT

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The climatic conditions of the Republic of Bashkortostan require the creation of varieties with high resistance to a complex of biotic and abiotic stressors of the region of cultivation. The data on economically valuable characteristics of a new variety of black currant Belskaya (breeding number 4-46) are presented. The black currant variety Belskaya was bred in the Republic of Bashkortostan in 1997 from pollination of the Valovaya (Krupnaya × Bredtorp × Khludovskaya) and Karaidel (Pamyati Michurina × Compactnaya). The year of sowing is 1998, the beginning of fruiting is 2002, the selection of an elite seedling is 2003, the transfer to the state varietal testing is

2013. The primary study of varietal samples was started in 2005 according to the planting scheme of 3 × 1 m. The control variety was Valovaya which is widespread and zoned across all regions of the Russian Federation. The Belskaya variety is characterized by high winter hardiness. There were no signs of freezing in severe winters, in the control variety Valovaya damage was noted up to 1 point with freezing of the tops of the annual growth. The leaf apparatus of the variety is resistant to sunburns. During the hot and dry summers (2010, 2011), it was distinguished by high drought resistance, while its productivity was higher than the control variety. The new variety is characterized by high productivity (yield on average 12.7 t / ha), and is resistant to shedding. It has field resistance to American powdery mildew, weakly affected by anthracnose. Berries are one-dimensional, black, round–oval shape, weighing 2.3 g (maximum - 2.6 g), sweet and sour delicate taste. The maturation period is average. In 2022, the Belskaya variety was included in the State Register of Breeding Achievements of the Russian Federation in the Ural region.

Keywords: black currant, yield, winter hardiness, heat resistance, drought resistance

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Conflict of interest
The authors declare no conflict of interest.

INTRODUCTION

Berry crops are highly adapted to the harsh climatic conditions of the Bashkir Pre-Urals: they have early fruiting, their yield is comparable to that of fruit crops, they are easily propagated, and they contain a high concentration of microelements essential for the normal functioning of various enzymes, vitamins, and free acids (malic acid, citric acid, succinic acid, etc.) and BAS [1]. Berries have a positive impact on metabolism, enhance the immune system during colds and infectious diseases[1-6], and serve as preventive and therapeutic agents for hypertension, atherosclerosis, and other cardiovascular diseases [2-7].

Black currant has a wide distribution in the Republic of Bashkortostan. The variety adapted to the local climatic conditions of the region plays a significant role in increasing the productivity of plantations of this crop.

Breeding work on black currant in the republic began in the early 1930s. It involved collecting and propagating the most interesting forms of wild black currant, mainly represented by the European variety. The next stage was analytical breeding, where seeds from open pollination were sown.

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Currently, intervarietal crosses are the main approach in black currant breeding[7–11]. Artificial or natural crossing of cultivars is carried out by selecting parental forms with more pronounced positive traits [8-14].

The hybrid collection of black currants at the Bashkir Scientific Research Institute of Agriculture, a separate structural unit of the Ufa Federal Research Center of the Russian Academy of Sciences, consists of over 4,000 plants. Currently, eight black currant varieties developed by the Bashkir Scientific Research Institute of Agriculture are listed in the State Register of Breeding Achievements of the Russian Federation.

The purpose of the research is to create new varieties that combine high productivity with good taste and technological qualities of berries, as well as resistance to major diseases.

MATERIAL AND METHODS

The research was conducted at the Kushnarenkovsky Breeding Center for Fruit and Berry Crops and Grapes of the Bashkir Scientific Research Institute of Agriculture, following commonly accepted methodologies. The variety under study was Belskaya (breeding number 4-46). The control variety used was Valovaya, which is recognized in all the regions of the Russian Federation. The primary variety evaluation was carried out from 2005 using a planting scheme of 3 × 1 meters.

RESULTS AND DISCUSSION

The black currant variety Belskaya was developed at the Kushnarenkovsky Breeding Center through cross-pollination in 1997 using the varieties Valovaya (Krupnaya × Bredtorp × Khludovskaya) and Karaidel (Pamyati Michurina × Kompaktnaya). The seeds were planted in 1998, and the onset of fruiting occurred in 2002. Elite seedlings were selected in 2003, and the variety was submitted for state variety testing in 2013.

The seedling successfully withstood severe winters in 2005/06, 2014/15, and hot and dry summers in 2009, 2010, and 2020. In February with temperature fluctuations and in January 2006, the temperature dropped to -42 °C. No signs of freezing were observed in the Belskaya variety, while the control variety Valovaya showed damage up to 1 point with freezing of the tips of the one-year growth.

Brief morphological description of the new variety Belskaya*:* Medium-sized bush, moderately spreading, compact form. Buds are medium-sized, green, pointed, elongated, with weak anthocyanin coloration. The shoots are straight, medium-sized, dark green, and not pubescent. The leaves are medium-sized, light green, three-lobed, with small notches. Leaf blades are open. Fruit clusters are medium-sized, and the berries are arranged in the cluster at an average density. Flowers are medium-sized with bright coloration. Sepals are medium-sized with bright coloration, moderately hairy on the outer side, bent upwards. Budbreak and the beginning of ripening occur at an average simultaneous time. The onset of flowering is average.

Fruiting begins in the third year after the planting. The average yield over 4 years is 3 kg per bush, with a maximum of 4 kg.

During the years of hot and dry summers (2010, 2011), the Belskaya variety demonstrated high resistance, while maintaining higher productivity compared to the control variety Valovaya.

The new variety exhibits field resistance to American powdery mildew, is slightly affected

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by anthracnose, has an upright bush form, and its foliage is resistant to sunburn. It is resistant to fruit drop, heat-tolerant, and drought-resistant.

The berries are uniform, large, black, round, with an average weight of 2.3 g and a maximum weight of 2.6 g (see Figure 1). The calyx is open. The skin is of medium thickness. The fuzz is weak and simple. The berries have a dry detachment, and the ripening period is average. The taste evaluation is 5 out of 5 points. The variety has a versatile use of the berries.

The optimal planting scheme for Belskaya currant plants is 3.0–4.5 × 1.0–1.5 meters.

The Belskaya variety has good self-fertility (over 45%), ensuring high fruit set in plantings where there may be single-variety crops.

For shaping and sanitation purposes, it is recommended to remove shoots older than 5–7 years from the lower part of the bush. After sanitary or rejuvenating pruning of the shoots, the bush quickly recovers. It propagates easily through green cuttings using a mist propagation system in greenhouses.

The berries contain bioactive substances, with over 21.6% of dry soluble matter, 10.0% sugars, 0.6% free acids, and 181.2 mg/% of vitamin C (maximum 200 mg/%). In terms of average and maximum yield, the Belskaya variety surpasses the control variety Valovaya (see the table, Figure 2).

CONCLUSION

In conclusion, extensive research has shown that the Belskaya variety combines high biological adaptability to environmental factors and pathogens in the conditions of the Bashkir Pre-Ural region. It is a large-fruited variety with high productivity and yield, heat and drought resistance, and resistance to fruit drop. In 2022, the Belskaya blackcurrant variety was included in the State Register for the Ural (9) region of the Russian Federation.

Рис. 1. *Я*годы смородины сорта Бельская (фото Р.А. Нигматзянова)
Fig. 1. Currants of the Belskaya variety (photo R.A. Nigmatzyanov)

Основные хозяйственно-биологические признаки смородины (2013–2022 гг.)
The main commercial-biological traits of currant (2013–2022)

Trait	Variety	
	Belskaya	Valovaya (control)
Winter hardness	Strong	Strong
Drought resistance	»	Medium
Heat resistance	»	Weak
Major diseases and pests, point:		
anthracnose	1,0	1,5
grass moth	1,0	1,5
aphides	2,0	2,0
American mildew	0,0	0,0
Beginning and end of flowering (mean dates)	1–5.05, 7–12.05	1–5.05, 7–12.05
Fruit shedding, %	10	20
Yield, t/ha:		
medium	12,9	11,21
maximum	15,3	15,3
Weight of berries, g:		
medium	2,3	1,5
maximum	2,6	2,3
Berry detachment	Dry	Dry
Content of biologically active substances in berries:		
dry soluble solids, %	21,6	21,3
sugars, %	10,0	10,0
free acids, %	0,6	0,8
ascorbic acid (vitamin C), mg%	181,2	147,9
Tasting assessment in fresh form, score	5,0	4,8
Transportability of berries	Good	Good
Main purpose of the variety	Universal	Universal

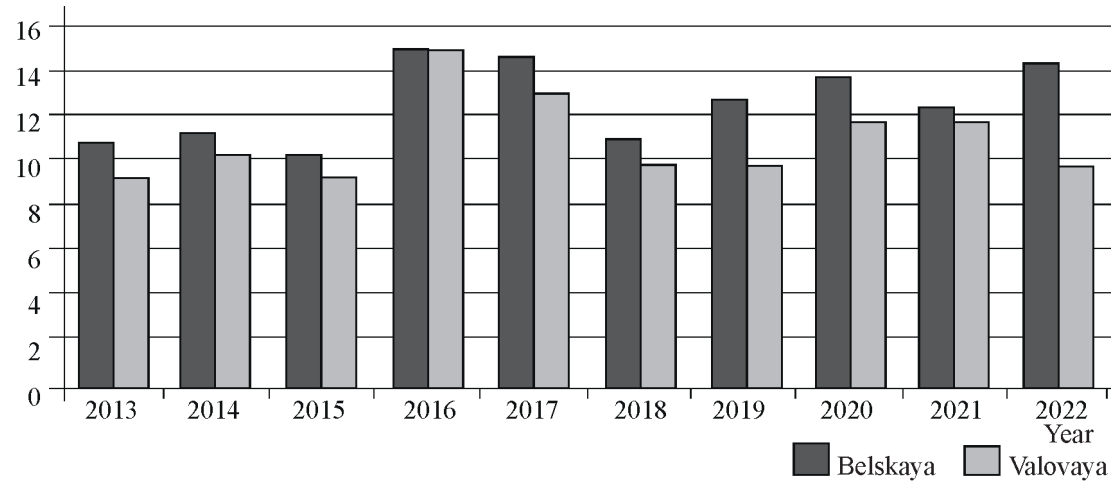

Рис. 2. Урожайность смородины черной по годам (Кушнаренково)
Fig. 2. Black currant yield (Kushnarenkovo)

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