

ЗЕМЛЕДЕЛИЕ, РАСТЕНИЕВОДСТВО И КОРМОПРОИЗВОДСТВО

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INTRODUCTION OF NEW VARIETIES OF STRAWBERRIES ON SAKHALIN

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Abstract. Conducting primary variety studies is an important step in studying the adaptive potential of introduced varieties. Therefore, the work on introduction, variety study, in order to identify the main important indicators such as winter hardiness, productivity, resistance to diseases and pests, as well as quality indicators of berries is the main task of breeding work. The novelty of the study is to conduct for the first time in a monsoon climate. Sakhalin variety tests on the adaptation of introduced varieties of strawberry. According to the results of the experiments, varieties with higher economically valuable indicators of resistance to diseases and pests, productivity, large-fruited, tasting assessment and other indicators suitable for cultivation in island conditions were identified: early-maturing – Clery; medium-maturing – Cheburashka, Ballerina; late-maturing – Tago, Amulet.

Keywords: strawberry, variety, introduction, winter hardiness, disease resistance, productivity

САХАЛИНДЕ ЖАПАЙЫ КУЛПУНАЙДЫН ЖАҢЫ СОРТТОРУН КИРГИЗҮҮ

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Аннотация. Бастапкы сортты зерттеу енгізілген сорттардың бейімделу әлеуетін зерттеудегі маңызды кезең болып табылады. Сондықтан қыстың төзімділігі, өнімділігі, аурулар мен зиянкестерге төзімділігі, сондай-ақ жидектердің сапалық көрсеткіштері сияқты негізгі маңызды көрсеткіштерді анықтау үшін Интродукция, сортты зерттеу жұмыстары селекциялық жұмыстардың басты міндеті болып табылады. Зерттеудің жаңалығы муссондық климат жағдайында алғаш рет о. Сахалин Садовая құлпынайының енгізілген сорттарын бейімдеу бойынша сорттық сынақтарды жүргізу болып табылады. Тәжірибе нәтижелері бойынша аурулар мен зиянкестерге төзімділіктің, өнімділіктің, ірі жемістердің, дәмдік бағалаудың және Арал жағдайында өсіруге жарамды басқа да көрсеткіштердің жоғары экономикалық құнды көрсеткіштері бар сорттар анықталды: ерте пісетін – Клери; орта маусымдық – Чебурашка, Балерина; кеш пісетін – Того, Тұмар.

Өзөктүү сөздөр: бакчадағы қулпунай, сорт, интродукция, қысқа туруктуулук, илдеттерге туруктуулук, түшүмдүүлүк

ИНТРОДУКЦИЯ НОВЫХ СОРТОВ ЗЕМЛЯНИКИ САДОВОЙ НА САХАЛИНЕ

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Аннотация. Проведение первичного сортоизучения является важным этапом при изучении адаптивного потенциала интродуцированных сортов. Поэтому работа по интродукции, сортоизучению с целью выявления важных показателей, таких как зимостойкость, продуктивность, устойчивость к болезням и вредителям, а также качественных показателей ягод является главной задачей селекционных работ. Новизной исследования является проведение впервые в условиях муссонного климата о. Сахалин сортоиспытания по адаптации интродуцированных сортов земляники садовой. По результатам опытов выделены сорта с более высокими хозяйственно-ценными показателями устойчивости к болезням и вредителям, продуктивности, крупноплодности, дегустационной оценки и других показателей пригодных для выращивания в условиях острова: раннеспелые – Клери; среднеспелые – Чебурашка, Балерина; позднеспелые – Того, Амulet.

Ключевые слова: земляника садовая, сорт, интродукция, зимостойкость, устойчивость к болезням, продуктивность

Introduction

Garden strawberries are a very popular crop and occupy one of the leading places among berry crops both in Russia and abroad. Appreciated for its high taste and dietary properties, its cultivation is engaged in both industrial organizations and numerous gardeners – amateurs.

The Sakhalin Oblast by its natural and climatic potential belongs to the territories of the Far North and equated to them. The large length of the island region predetermines a significant variety of climatic conditions, which are formed under the influence of monsoons of temperate latitudes, the system of sea currents, relief features and are characterized by cold dry winters and warm humid summers [1]. The southern part of the island is the most favorable territory for growing agricultural crops, including strawberries.

Observations of phenological phases of plants are the main part of the process of varietal studies of berry crops [2]. According to observations of different researchers noted that the passage of phenophase periods in different regions differ, so the flowering period of garden strawberry in the Moscow and Leningrad regions, as well as Yakutia comes from the third decade of May to the first decade of June, the beginning of ripening at the end of June – early July [3-5]. In southern regions, in particular in Kabardino-Balkaria, flowering occurs on April 20-26, fruiting from May 25 to June 2 [6], in Kazakhstan flowering on May 4-29, ripening on June 1-15 [7].

Therefore, research work on varietal studies, with the determination of the timing of phenophase onset, reflecting the biological and physiological processes of the genotype for each specific location, is very important for solving the main breeding problems in the future [8,9]. The aim of this work is the study and selection of introduced strawberry varieties of different origin with selection of the most promising for economically valuable traits, such as winter hardiness, productivity, resistance to diseases and pests of varieties.

Materials and methods of research

The research was conducted in the experimental plot of SakhNIISKh – branch of VIR. The soil of the experimental plots is medium loamy, medium degree of cultivation. Surveys and observations were conducted from June 2017 to October 2019, according to the Program and methodology of varietal studies of fruit, berry and nut crops [10]. Agrotechnics was generally accepted, without the use of chemical agents against pests and diseases.

The objects of research were introduced varieties of garden strawberry, domestic and foreign selection. The following indicators were taken into account: winter hardiness, general condition of plants in spring and fall, phenological phases of development, resistance to diseases and pests, yield and consumer qualities.

The climate of Sakhalin is moderate-monsoon, the study area is characterized by an average annual air temperature of 3.1 °C, average annual precipitation from 500 to 850 mm, the sum of active temperatures 1800-2200 °C, in general relatively favorable for the growth and development of berry crops. During the study period, the temperature regime was at the level of average multiyear values. The snow cover height for the years under study ranged from 91 to 213 cm. The main unfavorable conditions include slow temperature rise in spring and rather frequent breaks in precipitation at the beginning of the season. At the same time, high air humidity and considerable amount of precipitation during the whole vegetation period contribute to intensive growth of berry crops.

Research results

Winter hardiness is an important indicator determining the adaptability and stability of fruit bearing of a variety. Winter hardiness is the property of a genotype to resist a set of unfavorable winter conditions [11]. According to the results of evaluation of winter hardiness of garden strawberry varieties during the years of study, none of the varieties has not observed frosting of growth buds and root system, constant thick snow cover completely protected plants from freezing in winter, so all varieties are classified as highly winter-hardy.

Over the years of research, moisture and temperature conditions differed slightly and were reflected in the timing of its main phenological phases of development. The collection by maturity dates was divided into three groups: early-, medium- and late-maturing. Data on flowering and ripening dates for 2018 are presented in Table 1.

The average beginning of strawberry vegetation falls on the end of May, beginning of June. The beginning of flowering from the second decade of June, depending on the variety. The beginning of berry ripening comes from the second decade of July, the end of ripening from the first decade of August. The duration of phenophases depends on the peculiarities of each variety.

The main and most widespread diseases of strawberry under island conditions are gray rot and leaf spot. These diseases are widespread in regions with high precipitation and lack of heat. For the years of research, the indicators of gray rot and leaf spot are shown in Table 2.

The varieties Rumba, Amulet, Elsanta, Cheburashka, Clery, Deroyal, and Tago are noted for their high resistance to diseases and pests.

Fruit weight is one of the main factors determining yield. All the studied varieties had very large berry masses of not less than 12 g by the degree of large-fruitedness. The largest berries were in the varieties Gift of Fate – 29.4 g and Tanyusha – 27.8 g. Further on the degree of coarseness noted varieties Figaro – 25.0 g, Amulet – 24.7 g, Deroyal – 23.6 g. Of all varieties, the smallest average berry weight was observed in the variety Vima Zanta – 16.3 g.

Due to systematic thefts at the collection site, the data of biological accounting are given. Biological productivity was studied by three indicators per bush: the number of pedicels, the number of flowers and the average weight of berries. Varieties with the highest biological productivity from one bush – Ballerina and Cheburashka 2.2 kg, Tanyusha 2.5 kg – the highest productivity of the varieties studied. In the varieties Felicia, Figaro productivity from 1 bush was 1.5 kg, the variety Amulet – 1.2 kg, Rumba – 1.1 g. The lowest productivity of varieties: Vima Zanta – 0.48 kg, Happy – 0.54 kg.

Transportability and marketability of berries are related to their density. Density or strength of berries depends on the following characteristics: pulp density, skin strength, location of the number and size of seeds. In the collection, high density of berries is characterized by varieties: Gift of Fate, Salsa, Figaro, Clery, Talented, Tago, Surprise to the Olympics, Ballerina, Sunny Glade, Elsanta, Torpedo, Amulet.

Discussion

Thanks to the efforts of breeders, new strawberry varieties are annually added to the state register. It is very important to study with the identification of the most adapted varieties, resistant for a particular region and climate, because depending on soil and climatic conditions of growth, all varieties show themselves differently.

Table 1

Timing of flowering and ripening of garden strawberries in 2018

Sort	Flowering (date)				Maturation (date)		
	beginning	degree, %	finish	continue.days	beginning	finish	continue, days
Gift of Destiny	23.06	5	10.07	18	17.07	06.08	21
Salsa	20.06	5	07.07	18	20.07	07.08	19
Figaro	18.06	5	12.07	19	15.07	10.08	27
Cleri	18.06	25	03.07	16	15.07	10.08	27
Talented	20.06	2	06.07	17	15.07	12.08	29
Tago	05.07	10	24.07	20	13.07	08.08	27
Happy	20.06	15	09.07	20	13.07	08.08	27
Evi	25.06	10	14.07	20	17.07	11.08	26
Rumba	20.06	30	06.07	17	20.07	06.08	18
Felicia	20.06	10	01.07	12	19.07	10.08	23
Tanyusha	20.06	25	08.07	19	19.07	08.08	21
Ruby Pendant	25.06	10	17.07	23	25.07	13.08	20
Cheburashka	22.06	15	11.07	20	25.07	04.08	21
Surprise for the Olympics	26.06	15	13.07	18	25.07	14.08	21
Ballerina	20.06	10	30.06	11	17.07	07.08	22
Sunny Glade	20.06	20	06.07	17	17.07	16.08	31
Deroyal	25.06	10	06.07	12	13.07	07.08	26
Elsanta	05.06	5	19.06	15	15.07	13.08	30
Vima Zanta	25.06	10	07.07	13	20.07	10.08	22
Torpedo	26.06	10	20.07	25	30.07	15.08	17
Amulet	30.06	5	20.07	21	27.07	22.08	27

Source: Compiled by the author

Table 2

Indicators of strawberry cultivars affected by gray rot and white spot disease from 2017 to 2019, in points

Variety	Degree of damage, points					
	gray mold			white spot		
	2017	2018	2019	2017	2018	2019
Torpedo	0	0	0	0	1	1
Felicia	0	0	0	0	1	1
Sunny meadow	0	0	1	1	1	1
Tanyusha	0	0	1	0	0	0
Rumba	0	0	0	0	0	0
Amulet	0	0	0	0	0	0
Evi	0	0	0	0	0	0
Vima Zanta	0	0	0	0	1	1
Gift of fate	0	0	0	0	1	0
Cleri	0	0	0	0	0	0
Talented	0	0	0	0	1	1
Happy	0	0	0	0	1	1
Deroyal	0	0	0	0	0	0
Elsanta	0	0	0	0	0	0
Ballerina	0	0	0	1	1	1
Surprise for the Olympics	0	0	0	0	1	0
Cheburashka	0	0	0	0	0	0
Figaro	0	0	0	0	1	1
Salsa	0	0	0	0	1	0
Ruby pendant	0	0	2	0	1	1
Tago	0	0	0	0	0	0

Source: Compiled by the author

Taking into account the peculiar climate formed under the influence of monsoons of temperate latitudes, during the years of research, the absence of frosts in all varieties in winter was noted due to high snow cover protecting plants in winter. Changes in moisture availability and temperature conditions in different years of observation differed and were reflected in the timing of phenological phases. The duration of phenological phases, as well as susceptibility to diseases, depended on the peculiarities of the genotype of each variety.

Conclusions

On the basis of the obtained data on the complex of economically valuable, the following varieties characterized by high adaptive potential in cultivation in the conditions of Sakhalin Island were selected: Clery – early maturing variety, average berry weight 19.6 g, biological yield 2.0 kg per bush; middle maturing varieties Cheburashka and Balerina – biological yield 2.2 kg, average berry weight 21.2 and 20.7 g; late ripening varieties Tago – average berry weight 21.3 g, biological yield 1.7 kg, Amulet – average berry weight 24.7 g, biological yield 1.19 kg, possessing dense pulp, good taste and relative resistance to pests and diseases, recommended for practical use in industrial and homestead gardening.

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СКОРОСПЕЛЫЕ ЛИНИИ СРЕДНЕВОЛОКНИСТОГО ХЛОПЧАТНИКА ДЛЯ ОРОШАЕМОЙ ЗОНЫ ТУРКЕСТАНСКОЙ ОБЛАСТИ

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Аннотация. Изучались 10 новых перспективных сортов и линий хлопчатника в конкурсном сортоиспытании. Выявлены скороспелые сорта и линии у которых первые коробочки раскрылись на 104 – 106 день вегетации растений. Установлено, что позднеспелые сорта и линии обладали более высокой урожайностью. Не обнаружено прямой зависимости высоты урожая с густотой стояния растений. Выделены лучшие сорта и линии по показателям длины и качества волокна по микронейру. Скороспелые, урожайные сорта Туркестан, Туран, Линии-802 и Т 2/7, имеющие оптимальное сочетание длины и качества волокна рекомендованы использовать для получения второго урожая хлопка-сырца (вторичной культуры) после уборки ранних культур и культур выращенных под пленкой. Отмечено, что вышеуказанные раннеспелые сорта и линии хлопчатника вполне могут быть адаптированы и рекомендованы для возделывания на юге Кыргызстана и других республиках Средней Азии.

Ключевые слова: хлопчатник, сорта, скороспелость, вторичная культура, урожай, волокно, качество

Аннотация. Пахтанын 10 жаңы келечектүү сорту жана линиясы сынактык сорт сыноодо изилденген. Өсүмдүктөрдүн вегетациялык мезгилинин 104-106 күнү пахтанын алгачкы косектери ачыла турган эрте жетилүүчү сорттору жана линиялары аныкталган. Кеч жетилүүчү сорттордун жана линиялардын түшүмдүүлүгү жогорурак боло тургандыгы аныкталган. Өсүмдүктөрдүн