Introduction of black currant under conditions of Novosibirsk region

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Abstract. Based on the study of 39 varieties of black currant on a complex of economically valuable features, conclusions were drawn: absolutely resistant varieties to spotted lesions were not revealed, all varieties are tolerant to septoriosis and anthracnose. Two varieties were affected by gall aphids: Minusinsk sweet and Bow Borisova (1 point). Altai early and Sweet-fruited were damaged by the kidney mite up to 30%. Varieties Mysterious, Belated, Compact have reached high overall productivity in the conditions of Novosibirsk region.

1. Introduction
The article provides an assessment of black currant varieties in a collection nursery for resistance to diseases, pests, and productivity when introduced to the Novosibirsk region.

Key words: introduction, adaptation, black currant, varieties, diseases, pests, productivity.

Black currant is the most popular berry crop; it winters well and bears fruit stably in the Novosibirsk region. Early maturity and yield are among the main advantages of black currant (marketable fruiting occurs 2-3 years after planting, the best varieties yield from 4 to 12.5 kg per bush) Black currant fruits are a versatile dietary product and an excellent raw material for processing. Black currant is a multivitamin culture, it contains a natural concentrate of a complex of vitamins, especially vitamin "C". Its content ranges from 130-350 mg per 100 g of product [1, 2]. One of the main factors in the intensification of berry growing, increasing yields and increasing the gross yield of berry products is the variety. The introduction into production of new varieties with sufficient adaptive potential to soil and climatic conditions is of particular relevance.

2. Materials and methods
In the formation of the assortment, breeders play an important role - the main suppliers of varieties adapted to local conditions [2].

The introduction of varieties in different soil and climatic conditions is also of great importance, which makes it possible to expand the assortment. Introductents with high plasticity can compete with zoned varieties [3, 4, 5].

In the laboratory of experimental research "biopolygon" of the SFSCA RAS, in 2014, work began on the introduction of berry crops.

The entire collection of black currant is represented by 39 varieties, of which 20 are zoned in the West Siberian region [6].
The planting material for the collection nursery was obtained from N.I. M.A. Lisavenko, Barnaul, FSUE OPKH Minusinsk, OPKH Gorno-Altayskoye, FSUE "Bakcharskoye", LLC "Eurosemena", NZPYaOS named after I.V. Michurina, ICG SB RAS, Barabinsky fruit and berry state variety section, ZAO Kalachinsky fruit nursery named after M.A. Lisavenko.

Research on the introduction was carried out in accordance with the Program and methodology for the study of varieties of fruit, berry and nut crops [7].

The collection site of 2014 includes 39 varieties of black currant (Ribes nigrum), laid according to the 3.0 x 1.5 scheme. Agrotechnics are generally accepted. Chemical means of protection against diseases and pests were not used. The agrophyone is natural.

The climate of the area where the research is being carried out is characterized as sharply continental, with long frosty winters, a rapid rise in subzero temperatures and frequent recurrent frosts. The adaptation of the introduced varieties to climatic conditions is not the same, the ecological plasticity and the ability of fruiting in the collection varieties are different.

The main factors contributing to the development of diseases on currants are contaminated planting material, increased air and soil humidity, thickening of plantings, plant stress (in spring - from sudden temperature changes and in summer - due to drought), violation of agricultural technology during soil cultivation [8, 9].

In the conditions of the Novosibirsk region, the most harmful diseases on black currants are anthracnose (the causative agent is the imperfect mushroom Gloeosporium ribis Lib. Mont. et. Desm), septoria blight (the causative agent is the imperfect fungus Septoria ribis Desm.); Among the pests, the bud mite causes significant damage to the crop [9, 10].

In Russia, anthracnose is widespread in all regions, especially harmful in the northern part, in areas with sufficient moisture and with average temperatures. This disease accompanies black currant in almost all areas of its industrial cultivation [9, 10].

3. Results and discussion

In our conditions, in all the years of research, collection varieties of black currant were affected by anthracnose to varying degrees. Most of the collection varieties were affected by spots (anthracnose, septoria) up to 3 points. Severe damage by spotting, when up to 50% of the leaves (3.1 - 4.0 points) are affected, was noted on varieties of Altayskaya early, Altayskaya late, Mila, Sadko, Sofya, Seyanets Sofia, in the zoned variety Hercules in 2020, the defeat was over 50% leaves (5.0 points) [11].

Thus, in the collection nursery, the majority (62%) are varieties with spot lesions up to 3 points. Absolutely resistant varieties to spot lesions were not revealed; in general, all collection varieties are tolerant to septoria and anthracnose.

The presence of gall aphids was noted only on two varieties: Minusinskaya sweet and Poklon Borisova (1.0 point). A slight infestation of shoot aphids (up to 1.0 points) was found in most varieties of currants.

The task of studies of the HTRN signs of damage to the kidney tick on collectible samples during the first 3 years has not been noted. Since 2018, the first signs of the defeat of this pest in the varieties of Altai early, sweet, constellation, the mermaid, and the Altai early and sweet varieties have had up to 30% of affected kidney.

The advantage of any variety in production conditions is estimated by the quantity and quality of the crop. Productivity is an indicator that characterizes the value of the variety to a large extent to allocate promising varieties with high productivity [12-15].

An assessment of the yield of varieties of currant varieties was pretended to be determined, the mass of berries, the maximum mass of berries and the harvest from the bush [11].

For the fourth year after landing, the quality declared by the originators in varieties of the crooked and the necklace was not manifested. Data varieties noted not a big yield from the bush - less than 500 grams.
At the varieties of Altai late, Galinka, mysterious, belated, compact, gift cuisor, rita is obtained vintage above 2 kg from the bush. The greatest harvest was obtained at the varieties of Altai early, Hercules, Mila, Borisova's bow - 2.6; 2.8; 2.9; 2.7 kg with bush, respectively.

Siberian grade ranged by a medium weight of 100 berries - 11.89 g, and berry size - 2.48g. Also, the high average weight of the berries above 1.5 g was marked at the varieties of Gross, Selechenskaya, Sibylla, early Potapenko.

The maximum mass of the berries was within 0.57 - 2.50 g. In the zoned varieties - Altai late, Hercules, Selechenskaya, spherical, and neracted - long-sized, belated, Mila, early Potapenko and others marked the maximum weight of berries - over 2.0 G. Maximum Weight Berry Grade Necklace Mounted in total - 0.57

Foreign grade Wellington, compared with Russian varieties, significantly inferior and under yield (450 g / s bush) and for the average weight of the berries (0.72 g) [11].

As a result of research conducted from introduced cells, varieties are allocated to the most adapted to the conditions of the Novosibirsk region are mysterious, belated and compact.

In general, the collection of introduced varieties of ferrous currant is characterized by a significant variety of indicators for disease resistance, pests, yields, large-partness. The most successfully undergo acclimatization of the variety of the Altai selection. All collectible varieties of black currant is of interest to further explore.

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4. Conclusion
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