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# DISEASES, PESTS OF SPECIES BELONGING TO *ROSA* L. AND CONTROL METHODS AGAINST THEM

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# БОЛЕЗНИ, ВРЕДИТЕЛИ ВИДОВ РОДА *ROSA* L. И МЕРЫ БОРЬБЫ С НИМИ

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*Abstract.* In the article were studied control methods of *Rosa* L. species diseases, pests in the conditions of Absheron. In the conducted scientific research were observed on the species in local conditions powdery mildew, fungus, rust, black spot, gray rot, bacterial and cytosporosis cancer diseases. According to our observations, species and varieties belonging to the genus *Rosa* L. are susceptible to diseases and pests more than other plants. Therefore, special agrotechnical care should be provided for them. Species and varieties belonging to the genus *Rosa* L. have decorative and exotic beautiful views. For this reason, it is appropriate to widely use different types of roses in greening, landscape architecture, horticulture, and landscaping of parks.

*Аннотация*. В статье изучены меры борьбы с болезнями и вредителями видов рода *Rosa* L. в условиях Апшерона. В ходе проведенных научных исследований на растениях в местных условиях наблюдались мучнистая роса, грибок, ржавчина, черная пятнистость, серая гниль, бактериальные и цитоспорозные раковые заболевания. По нашим наблюдениям, виды и сорта, принадлежащие к роду *Rosa* L., подвержены болезням и вредителям более чем другие растения. Поэтому за ними должен быть обеспечен специальный агротехнический уход. Виды и сорта, относящиеся к роду *Rosa* L., имеют декоративный экзотический вид. По этой причине целесообразно широкое использование разных видов роз в ландшафтной архитектуре, садоводстве и в озеленении парков.

*Keywords:* pests, *Rosa*, control methods, diseases, environment.

*Ключевые слова:* вредители, роза, методы борьбы, болезни, окружающая среда.

## *Introduction*

Species belonging to the genus *Rosa* L. have become widespread in landscaping in our country. *Rosa* L. species are widely used in the reconstruction and improvement works carried out in our country, as well as in the construction of various styles in the private sector. As a result of climate change in our country and in the species and varieties of the genus *Rosa* L. imported from many countries around the world, many diseases and pests have recently been observed, and in research wors have been selected control methods against them.

Т. 8. №9. 2022
https://doi.org/10.33619/2414-2948/82

*Materials and Methods*

In the research work are used the works and literature of the great Russian researchers S. V. Gorlenko, N. A. Panko, N. A. Okhshar, Yu. V. Sinadsky, I. T. Korneeva, I. V. Dobrochinskaya, "Diseases and pests of garden flowers" by O. L. Berezovskaya, I. V. Broun, N. I. Denisov [1–7]. In addition, the article reflects the relevant control measures in the study, which analyzed the classification of powdery mildew, rust, black spot, gray rot disease, bacterial and cytosporous cancers on a scientific basis.

*Results and Discussions*

The study found that many climatic factors are a major factor in the spread and formation of pests found in ornamental species and varieties of the genus *Rosa* L. Especially in the spring months, the humid and weak subtropical climate of Absheron plays a key role in the spread of plants' pests and pathogens. For example, gray rot and black spot diseases develop well in humid areas of the Absheron Peninsula, while powdery mildew, on the contrary, is more common in dry and hot weather. As seen from Fgure1 to 10 the main purpose of the study was the timely detection of diseases and pests of species and varieties of roses grown in natural and cultural conditions on the Absheron Peninsula and the selection of control measures against them:

-Factors affecting the reproduction of pests and the spread of flower diseases;
-Dust, mildew, fungal diseases of *Rosa* L. species and control measures against them;
-Rust disease and control methods against it;
-Black spot disease;
-Gray rot disease and control methods;
-Selection of control measures against bacterial cancer in the varieties and species of roses;
-Factors that cause burning of flower leaves and twigs;
-Treatment of cytosporosis disease;

*The Main Factors in the Proliferation of Pests and the Spread of Flower Diseases*

Like many plants, roses grown in cultural conditions are infected and damaged with various diseases and pests as a result of environmental and anthropogenic factors. This is due to the favorable environment for pests and the lack of proper farming techniques. Sometimes certain weather conditions, and often a combination of these factors play a decisive role.

The most common pests are rose aphids, thrips, spider mites, as well as various types of sawflies, nutcrackers, insects, weeds, flower chafers, etc. cause damage.

Research has shown that the high temperatures observed in Absheron in June-July cause the growth of some pests in the rose plants, and the humid weather allows the spread of fungal diseases.

However, even in the absence of favorable environmental factors for roses, diseases are inevitable:

-For example, gray rot spreads especially quickly in humid weather, and in addition, intensive planting of rose plants can lead to diseases as a result of not drying out quickly enough after the spring rains.

-From the third decade of August to the first decade of October, the leaves, which do not dry out on cool nights, the morning dew helps to spread and develop the black spot.

-Dusty mold, and pests - spider mites, on the contrary, are more common in dry and hot weather. Various measures and methods of control were found in the species and varieties of the studied Rose genus (Figure 1).

Т. 8. №9. 2022
https://doi.org/10.33619/2414-2948/82

Figure 1. Black spot disease on roses

*Dust Mites Fungal Disease and Its Control*

Dusty mold disease, which develops mainly due to calcium deficiency or soil dryness in the species, is reflected in the pictures. Dusty mold. Powdery mildew forms on young leaves, shoots and buds, causing them to thicken and bend. Powdery mildew on roses is a mycelium and sporulation of the fungus. The causative agent overwinters in the form of mycelium on the shoots. The following Figure 2 gives an overview of powdery mildew in *Rosa* L. flowers:

Figure 2. Powdery mildew on roses

This rose's disease develops especially strongly in closed, poorly lit, damp old, airless rooms. Changes in temperature, drafts, drying of the soil in the pots and other conditions that disrupt the normal life of plants reduces their resistance to disease. Containing of delicate rose petals of Tea and hybrid tea Roses' species are especially susceptible to this fungal disease.

It is advisable to use "Topaz, Fundazol or Skorom" at the first signs of the disease to remove powdery mildew on roses and prevent re-infection. Systemic "Raek", which has long-term prophylactic and therapeutic effects, can be used as control methods against it.

Т. 8. №9. 2022
https://doi.org/10.33619/2414-2948/82

*Rust Disease and Treatment*

In rust disease, parts of the shoots bend and thicken.

As can be seen from the Figure 3, orange powder is formed on the stems and on the neck of the buds of flowers with this disease, which blooms in spring. These are spring sporulations of the causative agents of rust fungi. Fungi spend the winter in the tissues of infected plants in previous years. Rust fungus is most common in roses in hot and humid spring. Rust fungi not only take nutrients from the plant, but also significantly impair its physiological functions: they increase transpiration, reduce photosynthesis, make it difficult to breathe and impair metabolism.

In summer, small, reddish-yellow cushions of summer spores form on the underside of the leaves, which can take several generations and infect new plants. The spread of rust fungus spores occurs through air flow, water and planting material. In the second half of spring, winter sporulation in the form of small round black pads on the underside of the leaves begins to appear, eventually yellowing and falling prematurely. Rust is caused by high levels of nitrogen compounds in the soil. For this purpose, in autumn the diseased leaves should be cut and burned, and in early spring (before opening the buds) the plants and the surrounding soil should be sprinkled with ferrous sulfate (1,0–1,5%). The soil under the bushes should be plowed and mulched to reduce infection. It is recommended to carefully and timely cut the shoots affected by the root form of rust. To treat rust in roses, as soon as the buds open, the plants should be re-sprayed with Bordeaux mixture (1%) or its substitutes (Oxyhom, Abiga-Peak, Hom, copper oxychloride, Ordan, Topaz).

*Black Spot Disease*

Black leaf spot (marsonina). In the second half of the summer, dark brown, black spots of different sizes were observed on the leaves of rose species in the territory of the Institute of Dendrology. As a result, the leaves turned pale and fell prematurely. Spots were also present on the green bark of annual shoots (Figure 2).

As a result, the plant weakens and blooms poorly the following year. Under the skin of the leaves develops mycelium of the fungus — the causative agent of the disease forms brightly growing streaks. In the case of black spot disease of rose petals, this brightness is clearly visible on the edges of the spots.

This is because roses are planted in dense, shady and poorly ventilated areas. The following control measures have been selected against this disease: proper agro-technical care; pruning and burning of diseased leaves in autumn; copper-containing drugs should be used during the growing season. It should be monitored during any rain or strong dew (Figure 3).

Figure 3. Ruston roses

Т. 8. №9. 2022
https://doi.org/10.33619/2414-2948/82

*Gray Rot Diseases and Control Methods*

Below is a description of flower rot disease and how to fight it in the garden.

Gray rot is more common in humid weather in Absheron, due to the fact that the soil cover of plants does not dry out quickly enough after rain or irrigation. This fungal disease primarily affects the buds and pesticides.

A whitish-gray hairy coating forms on the flowers. The buds do not open, they rot. This is due to foggy days in early autumn, morning dew, as well as excessive watering. In extreme humidity, the whole bush can get sick and die. It is better not to plant roses near strawberries.

To fight this disease, the bottoms of the bushes should be watered with a solution of Euparen multipreparation, Fitosporin-M, Alirin-B or Gamair.

*Bacterial Cancers and Control Methods*

Tumors of different sizes are observed in the root neck and roots of plants. Bacterial cancer in roses — the growth of soft tissues, has an uneven surface of tuberculosis:

During the process of decomposition by bacteria, the color gradually changes from white to brown. The airborne parts of the plants are more susceptible in particular stems and branches.

The pathogen, which causes bacterial cancer in roses grown under cultural conditions in the Absheron Peninsula, affects the plant in various forms. Plants are selective against infection, the ability of bacteria to spread in the soil for a long time. Soil moisture, abundant manure, root wounds and alkaline soil cause disease. When transplanting such plants, the disease should be controlled and the growths on the side roots should be cut. After pruning, the roots are immersed in a 1% solution of copper sulfate for 5 minutes, then washed in water and immersed in a liquid mixture of clay and sand. In shot cancer, first appear necrotic spots, which are cracked in the bark, and then thickened at the edges. If the edges of the spots are closed, the diseased stems die (Figure 4, 5).

Figure 4. Gray mold disease on roses

Figure 5. Bacterial cancer disease of roses

Т. 8. №9. 2022
https://doi.org/10.33619/2414-2948/82

*Burning of Leaves and twigs and Disease's Control Methods*

Burning of leaves and twigs of roses is a fungal disease. At first reddish spots appear on the branches, then they begin to darken; red-brown border lasts a long time. As it grows, the spots become ringed on the branches. Sick branches usually dry out in the second half of summer (Figure 6).

Figure 6. Burns of leaves and branches of roses

Excessive moisture in the winter shelter contributes to the development of "burning". Sick and frozen branches should be cut and burned in time, and plants should be given copper-containing preparations as in the fight against rust. Proper agro-technical care (timely fertilization, plowing and irrigation) should be provided to reduce the risk of disease.

In winter, the plants should be covered so as not to create high humidity in dry weather. Before transplanting, immature shoots and leaves are removed and the plants are treated with 3% Bordeaux mixture or 1.5% ferrous sulfate solution.

*Control Methods Against Cytosporosis*

As Misko L. A., 1986 cited in his research work "Roses. Diseases and protective measures", that cytosporosis is a ubiquitous fungal disease [4]. This disease can cause the destruction of plants. Freezing, drought, sunburn, failure to prune in time cause this disease. As a result, first of all, the causative agent of the disease settles in the dead parts of the bark. Fungal pycnidia - tubercles - appear under the large, clearly visible orange-red spots all over the affected area of cover. Cracks form on the border of the affected and healthy tissue. The causative agent first moves upwards through the tissues and veins of the plants, and after the branches have dried, it spreads downwards, killing the cells adjacent to the spreading zone with its toxins (Figure7).

Cytosporosis is a secondary disease associated with the general weakening of plants, so when choosing control measures, first of all it is necessary to protect the bushes from mechanical and other damage. In addition, the following control measures should be taken on a regular basis to increase the viability of plants — timely and proper pruning, fertilization, plowing, watering, protection from sunburn, increasing winter hardiness, cutting diseased branches up to 5 cm from the healthy part and need to burn.

Т. 8. №9. 2022
https://doi.org/10.33619/2414-2948/82

Figure7. Cytosporosis disease on rose's leaves

Pruning of plants in early spring, spraying 0,5% Abiga-Peak or 3% Bordeaux liquid on the green cones of roses can prevent the spread and development of the disease.

*Pest of Rose Buds, Green Aphids*

Green aphids damage roses and wild roses in greenhouses and open ground. Among other aphid species, the pest is quite large, bright green, sometimes brown, long black. In the spring, the larvae of these pest of rose buds emerge from the overwintered eggs and turn into wingless females. Later generations of winged females emerge, fly to other plants, and form new colonies. Gives ten or more generations per year. In the open field, these pests of roses usually grow in June and cause damage until the end of spring (Figure 8). Aphids are mainly located at the tips and buds of young shoots, and a small number of aphids are found on the leaves. Rose shoots damaged by green aphids are often twisted and the buds do not open [5, 7].

Figure 8. Pests of flowers and rosebuds

Т. 8. №9. 2022
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Treatment of flowers from these pests begins when the first larvae appear and is repeated as needed for two to three weeks until the aphid is completely gone. For this purpose: “Iskra Double Effect”, “Iskra-M” or “Confidor”, “Commander”, “Tanrek”, "Bison" preparation are used. In nature, aphids are destroyed by the beetle and the sacred beetle.

*Spider Mites and Control Measures*

Spiders on roses are especially dangerous for roses in dry, hot summers. The optimal conditions for its development are a temperature of +29 +31°C with humidity below 35%. Under such conditions, the number of mites increases rapidly, because every 10–15 days a new generation of pests appears. As you can see in the picture, the spider mite on the rose sucks the cell sap from the leaves, resulting in small light spots, which turn yellow, dry out and shed (Figure 9).

One of the most effective preparatons in the fight against spider mites are: “Fufanon” and “Iskra-M”. In the presence of mites, spraying roses should be repeated every 10–12 days until the damage is reduced. If you use Thiovit Jet or colloidal sulfur to fight powdery mildew, these preperations prevent the growth of mites.

Figure 9. Spider mite on a rose

*Conclusion*

The study examined the distribution and formation of pests in ornamental species and varieties of the genus *Rosa* on a scientific basis. Research has shown that the humid and weak subtropical climate of Absheron in the spring plays a key role in the spread of plant pests and pathogens. For example, gray rot and black spot diseases develop well in humid areas of the Absheron Peninsula, while powdery mildew, on the contrary, is more common in dry and hot weather. The main purpose of the research was the timely detection of diseases and pests of species and varieties of roses grown in natural and cultural conditions on the Absheron Peninsula, and the following action plan was implemented against them.

Factors influencing the spread of pests and diseases causes of powdery mildew, fungal rust, black spot, gray rot, bacterial cancer, cytosporosis were selected control measures against them.

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