To the Kuban grapes wild plants pathocomplex study

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Abstract. The new grape varieties development is based on genetic diversity, including wild-growing forms, which is important for a successful breeding process and largely depends on a given culture genetic resources knowledge level. Wild grapes, due to their unsurpassed qualities, are of great theoretical and practical interest for breeding. Wild grape plants differ from cultivated ones by higher frost resistance, drought resistance, as well as resistance to soil salinity and various phytopathogens and pests. The article reflects the research results on the phytopathogens and pests study in grapes wild forms in the Krasnodar Territory. During expeditionary studies, grapes wild-growing forms without damage external signs by major diseases and pests were visually identified.

1. Introduction
There are more than seven hundred pathogenic organisms in the world, of which about two hundred are found in our country, and on average, about 20 species are dominant [1-5]. Currently, both in Russia and in the world as a whole, there is a tendency towards greening in the wine-growing industry and the genetic selection methods prevalence and improvement chemical ones instead of in the various phytopathogenic organisms harmfulness management on grape plants [6, 7]. A new grape variety creation is a long, colossal work, which consists not only in a scientist professional skills in mastering breeding methods, but also largely depends on a given culture genetic resources knowledge level [8, 9]. At the same time, resistance more and more sources to various biotic and abiotic environmental factors, including phytopathogens and pests, need to be used. These sources can be taken not only among the cultivated grapes genotypes but also among its wild-growing forms since there are often populations among them that visually do not have lesions of phytopathogenic microflora and have been actively developing in one place for many years.

2. Objects and research methods
The study objects were grapes wild-growing forms growing on the Krasnodar Territory.

Expeditionary studies to study the wild grapes phytopathogenic susceptibility were carried out in August-September 2020 according to the methods generally accepted in viticulture and plant protection [10-12]. Earlier (in 2019-2020), these forms of wild-growing grapes were studied by the route-reconnaissance method using the geobotanical research traditional method, while their habitats relief, the phytocenotic communities structure and floristic composition, vegetative and generative organs morphological indicators were studied [10-15].
3. Results and discussion

As it is known, in Russia and the Krasnodar Territory, grapes are grown in their own-rooted and grafted culture. In most farms in our region, the following phytopathogens and pests are widespread: mildew (Plasmopara viticola Berl. et Tony), oidium (Uncinula necator Burr.), anthracnose (Gloeosporium ampelophagum Sacc.), alternariasis (Alternaria tenuissima Wiltsh.), leaf and root forms of phylloxers (Phylloxera vastatrix Planch.), various leaf-eating pests, etc. [1, 2, 16].

For the aforementioned phytopathogens and pests presence, grapes wild forms in the Krasnodar Territory were analyzed (table 1).

| No. | Location                  | The phytopathogens and pests presence |
|-----|---------------------------|---------------------------------------|
|     |                           | anthracnosis | leaf-eating insects | phylloxers |
| 1   | The Utrish reserve        | +            | +                     |
| 2   | The Red Forest reserve    | +            |                        |
| 3   | Floodplain of the river Kuban | +          | +                     |

The table indicates only the study areas and shows that these phytopathogens and pests are found on grapes wild forms plants. If to describe in more detail, then, on the Utrish state natural reserve territory, three natural boundaries were investigated, in which one the grape leaves damage by anthracnose was found (figure 1). This is the Vodopadnaya Shchel’ tract, which is close to the sea and is subject to anthropogenic impact (ecotourism).

![Figure 1. Grape anthracnose.](image)

In total, 10 populations were found in the Vodopadnaya Shchel’ tract. The populations' one grape plants were damaged up to 15-18% of the bush total foliage by leaf-eating insects, and only some leaves were damaged by 50% (figure 2). The same applies to the wild-growing grape plants susceptibility in the populations studied on the Krasny Les nature reserve territory.
Figure 2. A wild-growing grapes leaf blade damaged by leaf-gnawing insects (The Utrish reserve, The Vodopadnaya Shchel' tract).

Along the banks of the river Kuban, a populations number were studied, which have phylloxers leaf form lesions up to 25%. But there are few, and this applies only to those populations that are close to settlements and vineyards (figure 3).

Figure 3. Phylloxers leaf form on grapes wild plants (The Kuban River).

And in general, all the studied grapes wild-growing forms have a healthy appearance, every year they go through the entire life cycle, bloom, bear fruit and have a vine fairly good ripening by autumn. Such grapes wild-growing forms, presumably free from phytopathogens and pests, can be used in the future for artificial inoculation with various phytopathogens, studying resistance to them and including them
in the breeding process, as well as searching for resistance genes. Samples were taken from these populations for mycological analysis.

4. Conclusion
The constantly changing natural and climatic conditions all over the world, Russia and the Krasnodar Territory and frequently observed abnormal weather events confirm the need to search for plant resistance new sources, in particular, grapes. Grapes wild-growing forms were found, visually not showing damage signs by phytopathogenic diseases, passing through all development phases to the full. Forms growing along the Kuban River banks, the least distant from industrial vine plantations, are damaged by phylloxera. Samples were taken to further the wild grapes' susceptibility in-depth study.

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