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BIOMORPHOLOGICAL PECULIARITIES OF THE WILD SPECIES OF THE GENUS *RIBES* L. SPREAD IN AJARA

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ABSTRACT

The article overviews general Biomorphological peculiarities of the wild species of the genus Ribes L.: Ribes Bibersteinii Berl. ex DC. and Ribes alpinum L., spread in Ajara. It describes the outcomes of the expeditionary-routed research about wild species of Ribes L. growing under the conditions of Ajara highlands, in particular, upper and subalpine zones of Agara Gorge, 1500-2030 m and up above the sea level. It is noted, that Ribes L. species are spread not only as independent groups on the territory of the mentioned gorge, but also, they cohabitate with the groups of various low shrubs and bushes.

KEYWORDS: Berries, Ribes Bibersteinii Berl. ex DC., Ribes alpinum L., Biologically active substances.

INTRODUCTION

The richest and unique phytogenefund of Georgia is a natural-historical treasure. It requires constant monitoring, conservation, restoration and protection due to anthropological and natural impacts. The problem is actual for our country, which is an origin of multiple cultural plants and their wild ancestors conditioned by climatic and soil diversity, vertical and horizontal zonality, mutational changes, further hybridization, natural selections, proper exploitation of the gene fund by our ancestors, ethnobotanical skills, folk and scientific breeding. Georgia is called an open-air bank of genetic recourses; unique physical and geographical and climatic and soil conditions determine flora diversity and create opportunities for the cultivation of significant species including berries.

In recent years, special interest toward berry plants, in particular, Ribes, has been aroused due to the content of carbohydrates, pectic substances, vitamins and other useful substances detected in its wild species. A and B group vitamins are extremely dominant in the leaves and fruits of the plant. Ribes are used in pastry, non-alcoholic beverages, syrups, extracts, wine, liquors and canning industry.[1] Ribes leaves are equally important like it's fruits, containing vitamins, phytoncides, essential oils and carbohydrates. Therefore, both leaves and fruit are widely used in medicine. Young vegetative buds of black Ribes are rich in essential oils. Seeds contain enough fat and represent the source for obtaining fatty acids.

Object and methods: The genus Ribes L. belongs to the family Grossulariaceae. It is found in both wild and cultivated shrubs, with edible fruit - berries.

Besides cultivated forms of Ribes L., also actual its wild species, which study is one of our research directions. Based on expeditionary-routed research, we studied the biological peculiarities of the wild species of Ribes L. in the conditions of Ajara highlands. Khulo municipality had been selected as a research object, in particular, Agara gorge, which is not mentioned in the literature, thus, it is very interesting to research this zone, 1280 m above the sea level.

Khulo municipality is a mountainous region. Extends within 400-3007 meters above sea level. The average annual temperature is 10,1 °C, average annual precipitation is 1000–1200 mm. There are mountain-forest and mountain-valley types of soils on the territory of the municipality. Mostly, deciduous and coniferous plants are spread there. The following flora representatives are identified: Taxus baccata, Acer ibericum, Castanea, Quercus, Juglans regia, Ribes, Cyclamen colchicum, Primula, Populus, Ulmus and etc. The mentioned zone is rich in fruit-bearing and medicinal plants.

The following appropriate methods were applied during the research

- GIS-Arcview;
- International crop descriptors;
- International collecting descriptors;
- Gene plasma recourse research will be conducted based on IUCN categories based on the following criteria:

- Extinct;
- Extinct in the Wild;

- Critically Endangered;
- Endangered;
- Vulnerable;
- Near Threatened;
- Least Concern;
- Data Deficient;
- Not Evaluated.

- Internationa Genebank Standatrs;
- Biomorphological research of plants will be carried out by the proven appropriate methods during the ontogenesis;

Experiment: There are 3 species of Ribes L. growing naturally in Georgia: Ribes biebersteinii Berl. ex DC., Ribes orientale Desf. and Ribes alpinum L.; The first one belongs to the Caucasian-Anatolian species, the second one is spread in Caucasia, Anatolia and Iran, and the third one can be found in Northern and Middle Europe, Caucasia and Anatolia. Species spread in Georgia are thorn-free bushes.[2,3]

The following wild species are spread in Ajara: Ribes Bibersteinii Berl. ex DC. and Ribes alpinum L. Based on our expeditionary-routed researches and literature data, general biomorphological description of the species spread in Ajara are followings:

- **Ribes Biebersteinii Berl. ex DC.**– deciduous shrub up to 2 m tall; leaves are heart-shaped, 10-13 cm long; flowers are grouped in narrow clusters, 12 cm long, two sexes. Crown petals are dark scarlet; berry fruit is spheric, 6-7 mm long, blackish-red in color; In the floristic region of Ajara, they are spread from the middle zone to subalpine forests, curved sub-forests and fields and valleys after forests. Berry fruit is edible. They mostly appear in Khulo, Danisparauli, Naghvarevi, Ghorjomi, Skhalta, Sarichairi, Tbeti, Matskhvalta, etc.[3,4]
- **Mountain currant (Ribes alpinum L.)** - 1,5 m tall deciduous shrub, two houses. Leaves are 7-9 cm long. Clustered flowers are up to 4 cm long, one-sex. Crown petals are greenish-yellow; Berry fruit is red in color, 7-8 mm long, spread in the middle and upper zones and forest slopes; they can be found in Naghvarevi, Khikhadziri, Matskvalta.

It is noteworthy, that Ribes L. species are spread as independent groups as well as together with various plant groups in the mentioned gorge. These zones are the upper zone of the

forest and the edge of the subalpine zone, where they cohabitate with low trees and shrub groups. These groups are not the whole but separated and divided with valleys.[5]

Ribes Biebersteinii Berl. ex DC. grows in the following plant groups, with different species dominating:

- In the plant grouping dominated by Acer trautvetteri Medw. It is a low plant growing in this zone. Together with *Ribes Biebersteinii* Berl. ex DC., the following species are spread in the group: Viburnum lantana L., Vaccinium myrtillus L., Rhamnus imeretina Booth. (Rhamnaceae Juss.), from herbal species: Aconitum nasutum Fisch. (=A. brachynasum kem.-Nath.)(Ranunuculaceae Juss.), up to 1,5 m tall.
- Accinium myrtillus L. (Vacciniaceae Lindl.) - currant with ordinary, black fruit, low shrubes. It is widely spread, its abundant fruit-bearing is revealed in August. Together with Ribes Biebersteinii Berl. ex DC, there are growing in the following mixed groups: Rhamnus imeretina Booth., Frangula alnus Mill. (Rhamnaceae Juss.), Rubus saxafilis L. (Rosaceae Juss.). from herbs - Aconitum nasutum Fisch. (=A. brachynasum kem.-Nath.)(Ranunuculaceae Juss.) up to 1,5 m tall; Heracleum sosnovskyi I.Mand. (=H.wilhelmsii Fish. Et lall.) up to 1,5-2 m tall.
- By the dominanticy of Rhododendron luteum L. (Ericaceae L.) or yellow azalea Together with Ribes Biebersteinii Berl. ex DC, there are mixed the following species in the group: Acer trautvetteri Medw., Viburnum lantana L., Sorbus L. tall shrubs with red and orange fruits. It will be interesting to make precise systematic of these species. In August, the plant is full of matured fruits. Yellow azalea is dominant in the group; in August, it starts to bear fruit; the rest of the species including currant are presented as single units.
- Together with Ribes Biebersteinii Berl. ex DC, the following species are mixed in the group, where the dominant is Viburnum lantana L. (Caprifoliaceae Juss.): Vaccinium myrtillus L., Sorbus L., Frangula alnus Mill. Black viburnum with red and black fruits; from herbal species: Aconitum nasutum Fisch., Heracleum sosnovskyi I.Mand.

Besides the above-described plant groups, groups of single species growing on a very beautiful hills can be also found in these vicinities. For example: only Sorbus L., Viburnum lantana L., Vaccinium myrtillus L., Rhododendron luteum L., Acer trautvetteri Medw., etc. They are separated with mowing fields, while at the edges of hills, there are birch, fir and spruce tree growings.

Related to the Ribes alpinum L., it can be found in fewer quantities. They are growing together with very low plants, such as Viburnum lantana L., Rhododendron luteum L., Vaccinium myrtillus L., Rubus saxafilis L., Laurocerasus officinalis L. (too low, up to 0.5 m), Corylus avelana L., etc. Except Aconitum nasutum Fisch., and Heracleum sosnovskyi I. Mand., Hibiscus L., Senecio L. and other grass species can be found in these groups.[4]

Phenological phases are optimal under the conditions of high mountains. The fruit of both species of Ribes L. gets to ripen in the first half of August, while the end of the fruit-bearing period appears in the third decade of August. They are characterized by abundant fruit-bearing periods.

CONCLUSION

Creating industrial plantations of Ribes L. will support the plant gene fund to be preserved. This unique plant is a very valuable and irreplaceable raw material not only for the local pharmaceutical industry but also, for its export potential has a serious perspective. Based on scientifically confirmed recommendations, the priority, which is historically traditional for the country but currently forgotten, must be developed in the farmers' industries considering their biological peculiarities.

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