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ADAPTATIONS OF *JUNIPERUS RUFESCENS* LINK. LEAF'S IN SOUTH CAUCASUS MOUNTAINS (AZERBAIJAN)

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АДАПТАЦИИ ЛИСТЬЕВ *JUNIPERUS RUFESCENS* LINK. В ГОРАХ ЮЖНОГО КАВКАЗА (АЗЕРБАЙДЖАН)

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Abstract. During scientific research in July-August 2019 between 40°53′N and 49°25′E widths in the Khizi territory (Azerbaijan), adaptations of the structure of the juniper leaves were studied. The leaves of the red juniper have a lancelet appearance and easily vary in different environmental conditions, for this reason we selected red juniper as the object of our studies and measured the length of leaves taken from different tiers. It was revealed that there is an inverse correlation between leaf lengths and altitude from the sea level.

Аннотация. В ходе научных исследований в июле–августе 2019 года между 40°53′ с. ш. и 49°25′ в. д. в Хизинском районе (Азербайджан) были изучены адаптации строения листьев можжевельника. В качестве объекта исследований был выбран можжевельник красный. Листья можжевельника красного имеют ланцетный вид и легко изменяются при различных условиях окружающей среды. Измеряли длину листьев, взятых с разных ярусов. Выявлено, что существует обратная корреляция между длиной листа и высотой над уровнем моря.

Keywords: Juniperus rufescens, adaptation, acclimatization, Azerbaijan.

Ключевые слова: Juniperus rufescens, адаптация, акклиматизация, Азербайджан.

Nowadays in case of environmental tensions on our planet, interest in studying the importance of plants has increased. Plants that are less sensitive to environmental pollutions have always been the focus of the attention of researchers. In this regard, the protection of plant resources in Azerbaijan is of great importance for endangered coniferous forests.

Juniperus L. forests are found in lowland slopes, humid and fertile soils, as well as in rocky, dry, and rocky areas in our republic. The most extensive areas of natural Juniper forests in the vegetation cover map of Azerbaijan are found in the arid and steppe areas at the Durbar mountain.

In current conditions the environmental monitoring of the conifer trees, the direction of their protection depends on the researches of biomorphological forms of plants and adaptations of their ecological needs to environmental conditions.

The object of the research is *Juniperus rufescens* Link. shrubs, or rarely, trees of up to 3 min height. Some species are found in the mountains at an altitude of 4000 m above sea level. All decorative and wild species in the territory of Azerbaijan are of Mediterranean and European origin and have been successfully represented in mountainous areas due to environmental adaptations [1–5].

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While examining the adaptations of this species, we first define the terms “adaptation”, “acclimatization” and “acclimation”. Adaptation is a set of features that allow the plant to adapt to new conditions when it is spread outside the center of environmental diversity.

Unlike acclimation, acclimatization only covers the signs of adaptation to climate conditions.

Acclimation is the similarity of climatic factors that surround vegetation in artificial conditions to the same factors in natural habitat. Since the environmental conditions of the successive natural diversity center are quite similar to our Republic, there is no need for subsequent acclimatization. This, in turn, is economically viable and allows for the cultivation and protection of this species on large areas with low costs. In 2019, the biological adaptive features of the *Juniperus rufescens* Link. were studied at the Khizi territory (Azerbaijan).

Red Juniper leaves are linearly convex, 11–20 mm long — 2 mm wide and have two white stripes on the upper part of the leaves along the green vein.

Figure. *Juniperus rufescens* Link. leaves (800 m and 900 m above sea level) (difference in length).

As in all coniferous plants, needles are the most susceptible organ to environmental factors and are also affected by these factors. That is why the length of needles of *Juniperus rufescens* Link. spread in different bioecological conditions were studied and results obtained according to statistical methods. The adaptations occurring in the conifer leaves under the influence of environmental factors can be divided into two groups:

1. Adaptive adaptations.
2. Ontogenetic adaptations.

Adaptive adaptations are adaptations to local conditions in which one individual lives, unlike ontogenetic adaptations. The key role here is the environment. Environmental factors dictate that certain traits change in one way or another, and although these changes are often for the individual’s benefit, adaptive adaptations often do not matter for the species as a whole. In other words, adaptive adaptations is gaining adaptive traits in accordance with the environmental conditions in plants.

As leaf’s of *Juniperus rufescens* Link. are needle like and the length can be easily measured, can easily vary in size, the red juniper was taken as a preference for adaptation studies. Results were presented in Table.

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Table.

LENGTH OF *JUNIPERUS RUFESCENS* LEAVES
FROM DIFFERENT LEVEL ABOVE SEA AND DIFFERENT RIDGES

Height above sea level	*The average length of leaves in the lower ridge (mm)*	*The average length of leaves in the middle ridge (mm)*	*The average length of leaves in the upper ridge (mm)*	*The average length (mm)*
810	16	14	12	14
800	24	21	17	21
850	17	15	15	16
840	21	19	12	17
845	13	20	10	14
890	15	10	10	12
860	27	17	13	18
850	21	23	12	19

As can be seen from the Table, the length of leaves decreases as the height from sea level increases. It can be explained as adaptation to prevent additional water loose as a result of transpiration.

It was found that the correlation coefficient was — 0.7. From this we can conclude that as the altitude increases above sea level, the leaf length decreases, with the opposite correlation between these two indicators.

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