UDC 373.549.(378.147.227)

Zhakeyeva Zh. M.,* Anlamasova G.A.
senior lecturer of M. Auezov SKU, Shymkent, Kazakhstan
associate professor of M. Auezov SKU, Shymkent, Kazakhstan

THE PROBLEM OF PRESERVING THE MOUNTAIN SIEVERS' APPLE TREE – IS THE PROGENITOR OF ALL APPLLES IN KAZAKHSTAN

Author correspondent: zhzhake@mail.ru

Abstract: The article is devoted to the problem of preserving the mountain Sievers' apple tree- the progenitor of all apples in Kazakhstan. The first description of this type of apple tree was given by the botanist Johann Sievers, who met an apple forest in the valley of the Urjar River. In Soviet times, this type of apple tree was studied for a long time by academician of the National Academy of Sciences of Kazakhstan Aimak Dzhangaliyev. In the XXI century, the mountain Sievers' apple treeis under threat of extinction due to human impact. The main problem is illegal deforestation in the foothills with a rapidly growing population, clearing space for grazing or private development.

It is listed in the Red Book of Kazakhstan. The article provides a classification of this type. The article describes the composition and benefits of this species, the description and characteristics of the leaves, flowers, fruits of the forest apple tree, its distribution on the territory of Kazakhstan, and flowering. Conservation of natural genetic resources, natural storages of the mountain Sievers' apple treethrough seed and vegetative reproduction.

Keywords: mountain Sievers' apple tree, classification, Academician of the National Academy of Sciences of Kazakhstan, Dzungarian Alatau, Trans-Ili Alatau, cross-pollination, family, genus, species.

Mountain Sievers' apple tree is a wild-fruit species of foothill apple trees of Kazakhstan. According to DNA studies, the Sievers' apple tree is the ancestor of many modern varieties of domestic apple trees. I have considered the classification of this species -
Domain: Eukaryotes
The Kingdom: Plants
Department: Flower Beds
Class: Dicotyledons
Order: Rosaceae
Family: Pink
Genus: Apple tree
Type: Sievers' apple tree
The wild Sievers' apple tree is considered to be the ancestor of domesticated trees(Fig.).

Figure 1. mountain Sievers' apple tree

It is common in almost all thickets, on the slopes. Most often it occurs in the form of a low tree or a spreading bush.

It is distributed along the following ridges:

Dzungarian Alatau - 48.8 %;

Trans-Ili Alatau - 25.4 %;
Karatau - 12.1 %;
Talas Alatau - 11.7 %;
Tarbagatai - 2 %.

Thus, on the territory of Kazakhstan, about 75 % of the Sivers' apple groves are concentrated mainly in the Trans-Ili and Dzungarian Alatau.

I read a lot of literature about the description and characteristics of the forest apple tree.

The forest apple tree or sour apple is usually up to five meters tall, but in some situations it grows up to 7 meters. The crown is often too thick, primarily due to the fact that it is not cared for. Young branches are herbaceous, green-brown, on adults the bark is brown-brown, with gray spots. Leaves are round or elliptical, may be covered with hairs or notched. Their bright green color from the bottom turns to a matte color on the underside. Flowering occurs in mid-spring, in april or even early may. They look amazing. The flowers are large, collected in large inflorescences of corymbs, white or white-pink. Along with the flowers, the leaves also bloom, which gives the apple tree a chic look. The fruits are small in size and taste very specific, bitter-sour, more edible only after a month of storage. The apple tree is very productive, although it begins to bear fruit only in the tenth year of life. Wild apples are greenish-yellow, but there are species with a yellow or red blush.

Composition and use. It is believed that wild apple trees are much more useful than their cultivated counterparts. Although the composition may vary slightly, depending on the area and even the size of the fruit, they have something in common:

flavonoids;
phitoncide;
essential oils;
organic acids;
mineral substances;
vitamins.

In the 21st century, the Sievers mountain apple tree is threatened with extinction due to anthropogenic impact. It is listed in the Red Book of Kazakhstan.

In Almaty, experts from Central Asian countries and Russia, as well as the United Kingdom, the United States, France, and Italy discussed the problem of preserving and restoring Kazakhstan's unique wild fruit forests. The theme of the international scientific and practical conference was "Malus Sieversii: a global conservation strategy".

Malus Sieversii is the scientific name of our wild apple tree, which it received in honor of the first St. Petersburg botanist Johann Sievers who drew attention to it. In his writings, Sievers pointed out that in the Tarbagatai region, he found apple trees that have amazing properties: they have very deep roots, so they can survive at critical temperatures from -40 to +40, perfectly tolerate drought, are able to resist diseases and live up to 300 years!

In 2000, according to sources, the area of apple groves was about 11 thousand hectares. Since then, it has declined significantly. The main problem is illegal deforestation in the foothills with a rapidly growing population, clearing space for grazing or private development (especially in the vicinity of Alma-Ata, whose population has grown 2.4 times. Another problem is cross-pollination with cultivated apple trees.

Why do we need to keep this "apple ancestor"? It turns out that it is very necessary, because the Sievers' apple tree is the ancestor of all apples on Earth. As established by science, apple culture began to take shape on the planet 65 million years ago. From these depths of time, the apple branch reached out to us.

By the way, the unique wild game gave birth to the famous Almaty Aport, which is not only the hallmark of Almaty, but also the national pride of all of Kazakhstan. He even built a monument, the image of the king-apple flaunts on numerous billboards. But will our grandchildren be able to touch this miracle with their hands?

And it depends primarily on whether to keep the wild Sivers' apple, which has more than 100 years ago, was first grafted SIC, cuttings of which were brought to our region Verny immigrants in the late nineteenth century.

The cuttings were grafted onto that wild Sievers' apple tree, and the variety, he said, gave just a diabolical flash.

The fact that the ancestral home of apples is Semirechye-Zhetysu, follows from the theory of the famous geneticist Nikolai Vavilov, who identified the centers of origin of a number of cultivated plants.

In the 20s of the last century, Vavilov visited our region. Here he found that in the conditions of Semirechye there are transit forms of transition from wild apple trees to cultivated ones.

Then for the first time they started talking about the fact that the foothills of Almaty are the ancestral home of unique wild apple trees. From year to year, from century to century, they climbed from the valley to the mountain slopes, acquiring the tenacity and flexibility of mountain plants. They intertwined with branches, roots, and sometimes even grew into each other, and each spring they were covered with pink and white flowers, so that by the end of summer they would produce small, sour, pigeon-egg-sized fruits. Such wild animals can not be found anywhere else, without exaggeration, we can say that there are no analogues of our apple trees in the world. It is to them that nature has assigned a special role – to become the basis of the beautiful aport as progenitors and rootstock.

Not coincidentally, at the insistence of academician of the Aimag Janalieva Malus sieversii was listed in the Red book.

This time, too, world – renowned scientists dealing with apple forests-Professor of genetics at Oxford University Barry Junipper, as well as his colleagues from the United States, Cornell University professors Herb Advinkle and Philip Forslein, who for many years have been curators of the Malus Sieversii gene pool collection of the Ministry of Agriculture (USA), confirmed the thesis of Nikolai Vavilov and Aimak Dzhangaliev that the world center of origin of cultivated apple trees is precisely Semirechye. To do this, they conducted genetic studies of the DNA of 2,500 apple varieties!

To save and preserve.

But there's still a lot of work to do. For example, it is important for everyone to know that in apple forests in any case should not get cultivated varieties that can spoil the entire gene pool. Therefore, these territories should be under strict protection and ideally have a belt that protects wild apple orchards from cultural ones. Scientists intend to appeal to the Government of Kazakhstan with a proposal to tighten the legislation to ban the export of "wild game" from the country and carefully monitor this process.

On the need to preserve the gene pool of Sievers' apple also told the researchers of plant genetic resources National research laboratory of Ministry of agriculture U.S. Gaela Wolf and John Norelli, Director of the French research center for molecular biology of plants Pascal Hitzler, University of Vienna Field-Mets Annik Schnitzler, head of the Italian center for genetic research Damiano Avanzato, the expert from Italy, the European Commission on genetic resources Pinot Kalkani and many others.

– The main task in preserving apple forests is to think about the future, about new generations. In Europe, for example, there are almost no forests left. We can only observe the struggle for the preservation of the same wild apple orchards in other countries. For example, in Kazakhstan, said Uber Didier, a scientist from France.

According to Professor Herb Advinkle of Cornell University, the topic raised at the conference is relevant for the whole world.

– We came with our colleagues to support the protection of the Sievers' apple tree, and we believe that Kazakhstan is pursuing a very correct policy in this regard, the scientist said.

Pino Calcani, in addition to the scientific report, established an exchange of important information between biologists from Kazakhstan and the European Union.

But having survived all the natural disasters of thousands of years, the Sievers' apple tree could not resist the most important thing – the appearance of a reasonable person. As noted at the conference, over the past 150-200 years, the once huge forests in the foothills of the Tien Shan have decreased by almost 95%. Therefore, at the turn of the 90s of the XX century, international experts actively talked about the need to preserve the precious biomaterial. Currently, Almaty geneticists at the Institute of Plant Physiology, Genetics and Bioengineering are growing apple clones in test tubes, or, as they say, in vitro, including the almost extinct Aport. Thus, they preserve the natural genetic resources, the natural storage of which is our wild fruit forests, so that future generations can also feel the unique taste of Aport, this amazing apple.

Conclusion: Protect and preserve the gene pool of the mountain Sievers'apple tree. We still need to develop fruit growing in Kazakhstan.

Stop illegal deforestation in the foothills with a rapidly growing population, clearing space for grazing or private development, especially in the vicinity of Almaty.

I believe that each stage of civilization corresponded to its own methods and methods of plant reproduction, of which the simplest and most cost-effective for the preservation of the mountain Sievers' apple tree:

- seed, i.e., by sowing seeds, only rootstocks and hybrid offspring are grown when new varieties are bred.

- vegetative, by the method of grafting on rootstocks, when a new plant is obtained from a part of the mother plant and is similar in everything to it.

References list:

1.Татаринов А.Н. Питомник плодовых и ягодных культур. М. Россельхозиздат,1994
2.Степанов С. Н.Плодовый питомник. М. Колос. 1999
3.Щепетков Н.Г. Учебное пособие. Астана: КазАТУ, 2007. 417 с.
4.Imankulova S. K. Botany, textbook Almaty,2016
5.Мырзабеков Ж.М. Особо охраняемые природные территории Казахстана. – Алматы, 2011. 172 с.
6.Zhakeyeva Zh.M.Anatomy and morphology of plants. Methodical instructions for the lab.works. Shymkent. SKSU named after M. Auezov 2019. 48c
7. Baturova K.I., Aydarbaeva D.K. Itroduction to Biology, textbook Almaty, 2016

Түйін: Мақала Қазақстанның барлық алмаларының арғы атасы – Сиверс тау алма ағашын сақтау мәселесіне арналған. Алма ағашының бұл түрінің алғашқы сипаттамасын Үржар өзенінің алқабында алма орманын кездестірген ботаник Иоганн Сиверс берген. Кеңес заманында алмаағашының бұл түрін Қазақстан ҰҒА академигі аймақ Жанғалиев ұзақ уақыт зерттеді. XXI ғасырда Сиверс алма ағашы адамның антропогендік әсерінен жойылып кету қаупі бар. Негізгі проблема-тез өсіп келе жатқан халқы бар тау бөктеріндегі заңсыз орман кесу, мал жаю немесе жеке құрылыс орнын тазарту. Қазақстанның Қызыл кітабына енгізілген. Мақалада осы түрдің жіктелуі келтірілген. Осы түрдің құрамы мен пайдасына сипаттама, орман алма ағашының жапырақтары, гүлдері, жемістеріне сипаттама және сипаттама, оның Қазақстан аумағында таралуы, гүлденуі беріледі. Табиғи генетикалық ресурстарды, Сиверс тау жабайы алма ағашының табиғи қоймаларын тұқымдық және вегетативті көбею арқылы сақтау.

Кілт сөздер: тау Сиверсінің алма ағашы, жіктелуі, Қазақстан Ұлттық Ғылым академиясының академигі, Жоңғар Алатауы, Іле Алатауы, айқас тозаңдануы, тұқымдасы, Тегі, түрі.

Аннотация: Статья посвящена проблеме сохранения горной яблони Сиверса - прародительницы всех яблок Казахстана. Первое описание данного вида яблонь дал ботаник Иоганн Сиверс, который встретил яблоневый лес в долине реки Урджар. В советское время длительное время изучал этот вид яблони академик НАН Казахстана Аймак Джангалиев. В XXI веке яблоня Сиверса находится под угрозой исчезновения из-за антропогенного воздействия человека. Основная проблема - нелегальная вырубка лесов в предгорьях с быстро растущим населением, расчищающим место под выпас скота или же частную застройку. Занесена в Красную книгу Казахстана. В статье приведена классификация этого вида. Дается описание состава и пользы этого вида, описание и характеристика листьев, цветков, плодов лесной яблони, ее распространение на территории Казахстана, цветение. Сохранение природных генетических ресурсов, естественных хранилищ горной дикой яблони Сиверса путем семенного и вегетативного размножения.

Ключевые слова: яблоня горного Сиверса, классификация, академик Национальной академии наук Казахстана, Джунгарский Алатау, Заилийский Алатау, перекрестное опыление, семейство, род, вид.