

**THE MAIN BIOLOGICAL AND ECOLOGICAL FEATURES OF THE HYBRID
HIBISCUS PLANT**

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Abstract: *This article deals with the hybridization of herbaceous perennial hibiscus; biological and ecological characteristics of hibiscus are determined. The history of the appearance, cultivation and possible problems in the cultivation of hibiscus are specifically indicated.*

Keywords: *flora, fauna, biology, ecology, features of hybrid hibiscus, ecological education, hybridization of herbaceous perennial hibiscus, world flora.*

INTRODUCTION

In the next period when science and technology are developed, the situation demands to pay attention to improving the ecological situation, managing the balance of nature, creating a favorable ecological environment for the population, improving the weather of big cities and other situations. At present, great attention is being paid to the study of flora in Uzbekistan. Educating the young generation as an ecologically literate person is one of the most urgent problems. For this, everyone should study ecology and treat natural phenomena with care. The study of the hybrid hibiscus plant is the most relevant topic of this work.

THE MAIN FINDINGS AND RESULTS

Environmental education begins in every family. At school, lyceums and universities, special attention is paid to the study of flora. At present, ecological education is spreading to people, because many different flowers and trees are grown in many houses, avenues, streets and gardens. Modern youth should not only enjoy such beauty, but also know how to properly grow beautiful flowers in order to know the basic ecological and biological characteristics of plants.

Currently, pedagogues, biologists, and scientists are paying great attention to environmental education and environmental education. Let's consider the description of environmental education and environmental education.

Ecological breeding – purposeful systematic activities aimed at the development of environmental education and upbringing of children; gathering ecological knowledge, forming skills and abilities for working in nature, instilling high moral aesthetic feelings, acquiring high moral personality qualities and strong will in carrying out nature conservation work.



Ecological education – the system of knowledge about the environment as an environment of human activity, the impact of production activities on the natural environment, as well as knowledge and skills for environmental protection.

Currently, there are about 200 forms and varieties of hibiscus. Hibiscus began to grow in the botanical gardens of European countries at the beginning of the XVIII century. Hibiscus is a plant belonging to the hibiscus family, which grows mainly in the tropical regions of Southeast Asia. Hibiscus is a shrub or small tree up to 3m tall. It includes about 300 species. It decorates the landscape design of many gardeners' plots. The beautiful color palette of different varieties of cultivated bush hibiscus makes it possible to plant plants of any taste in one's plot. This exotic plant with huge flowers will not leave indifferent even connoisseurs who appreciate landscape compositions, delight with long-lasting flowering, share positive emotions and, of course, delight not only your guests, but also neighbors, as well as random passers-by with its decorative appearance. The study of the hybrid hibiscus plant is the most relevant topic of this work.

There are many types of flowering plants in the world of flora, they decorate the parks and streets of our cities and neighborhoods, flowerbeds of country yards, houses and apartments, office buildings. Many of these plants are common and easily recognized. But the diversity of the world's flora is so great that rare plants can still be found in collectors, which, due to their attractiveness and unusual properties, deserve a place in our flower gardens or green corners of their habitats.

With the help of perennial plants, the most fantastic dreams of gardeners and florists to transform modern gardens can be realized. Such plants help to change the level of the garden, to change its size during one growing season, to create different compositions in terms of texture, color and mood. If the spring awakening periods of plants and their subsequent growth rate are taken into account, then a large assortment of completely different plants, from giants to the smallest, can be successfully revived along the perimeter of one mixborder (complex flowerbed) or garden.

A tall hybrid hibiscus that can reach up to 3 meters is an example of using winter-hardy perennials. Their properties of late awakening and rapid growth in spring can be used successfully. As they grow, bulbous plants develop and bloom at this time - tulips, daffodils, prolesques, crocuses, hyacinths, dodecatheons, as well as aquilegias, primroses, phloxes, echinaceas and many other flowers.

In the summer of 1940, during the occupation of France by German troops, hibiscus began to gain popularity. Wehrmacht soldiers in Normandy noticed that the locals were using a decoction of hibiscus as a central nervous system stimulant. Aribert Heim, who tested the effects of hibiscus on himself, wrote to Josef Mengele from the field hospital in Dijon: “...last night, before going to bed, my dear Helga brought me a mug of hibiscus tea, which is very popular among the soldiers. Half an hour after drinking it, I felt incredible strength, fatigue disappeared, the migraine that tormented me for two days disappeared! Spent the night at work last night and I still feel refreshed...”.



Hybrid hibiscus — (*Hibiscus hybrida*) what kind of flower is this? Recently civilized. Its flowers are similar to the “Chinese rose”, and its leaves resemble the leaves of a maple tree. In winter, the upper part of the plants dries up. Strong root nodules remain for the winter under the ground. This plant is not demanding on the soil and is sufficiently resistant to drought. It grows well only in open sunny places in the garden. It is propagated by cuttings or cuttings. When propagated by seeds, it blooms for 2-3 years. The plant itself is quite cold-resistant, in the latitudes of Voronezh, Russia, it can winter in open areas under a 20-30 cm layer of snow and dry leaf cover.

Hibiscus belongs to the Malvaceae family. This species includes annual or perennial herbs, deciduous and evergreen shrubs or small trees.

Different types of hibiscus and forms derived from them are widely used in floriculture. They are valued for their huge and bright flowers of different colors surrounded by beautiful leaves.

Heat-loving types of perennial hibiscus (among them - the most common “Chinese rose”) are grown in gardens of hot countries or as houseplants. Cold-tolerant types Suitable for outdoor cultivation in regions with cold winters, cold-tolerant perennial hibiscus species have become descendants of herbaceous hibiscus hybrids with unique characteristics.

Hibiscus hybrida appeared among domestic plants in the middle of the last century. The first hybrids of herbaceous hibiscus were obtained by the Russian breeder Fedor Nikolaevich Rusanov in the botanical garden of the Academy of Sciences of the Uzbek SSR. Despite the hardships of exile during Stalinist repressions, this talented scientist worked effectively in plant breeding and achieved great success.

In his work on the hybridization of herbaceous perennial hibiscus, F.N. Rusanov used North American species: *Hibiscus hybrida* (Hybrid hibiscus) or (Cotton flower) was developed by the famous breeder F.N. Rusanov in the 40-50s of the last century. Perennial ornamental plant. Needs heat and humidity. Hibiscus flowers are large, bloom for a long time. Very beautiful flowers - simple, large, up to 15-20 cm in diameter. *Hibiscus hybrida* different colors and sizes of flowers. There are white, white-yellow, rose-colored, red, pink, nastarin (siren)-colored, purple varieties. *Hibiscus hybrida* is characterized by decorativeness, fast growth, adaptability to different climates. *Hibiscus hybrida* is one of the long-blooming perennials in warm regions, blooming from the first decade of June until frost. *Hibiscus hybrida* is not demanding on soil. But it grows well in well-drained soils. *Hibiscus hybrida* is resistant to gas and smoke and can be used in urban landscaping. *Hibiscus hybrida* seeds remain viable for 3-4 years and need a temperature of 20-24°C to germinate. Seeds germinate 9-12 days after planting. *Hibiscus hybrida* is shade-tolerant, but when there is a lack of light, development is reduced and there are few flowers. Relatively resistant to drought, it grows and develops well in open, sunny areas. In winter, the branches of the hibiscus above the ground dry up. Strong roots winter in the soil - next year, new branches will begin to grow.



Currently, a *H. hybrida* nursery is established in the Botanic Garden, and the seeds ripen in late August and early September and are harvested at this time. Hibiscus seeds are sown in spring (March-April). The seeds are not stratified before sowing, they are sown directly. 0.5 cm of sand is thinly sprinkled over the sown seeds in spring and 1.0 cm in autumn. sand is covered with wood shavings and manure. The thickness of the seed should not exceed 1.5-2.0 cm when covered with sand, etc. Then it is lightly watered with a watering can. The seeds are easy to germinate and can be stored for 3-4 years. 1 pög. 4-5 g of seeds are sown per meter, it is not necessary to shade the sprouts.

Hibiscus is also easily propagated vegetatively, i.e. by cuttings, root cuttings and grafting. In autumn, hybrid hibiscus trunks are cut leaving 8-10 cm from the ground and covered with soil, humus or wood shavings, in spring the bottom is opened. Hybrid hibiscus bushes are propagated by separating the branches (in the spring with the budding) and planting. Propagated by green cuttings in spring and early summer.

Hybrid varieties of hibiscus are propagated vegetatively, that is, by division of the bush, cuttings and grafting. In the first case, the cultivation of hibiscus begins with this - in the spring, at the end of April, an adult bush is dug up (with branches), the soil is removed from it, and it is divided into several parts. In this case, it is necessary to have roots and growth point in the separated part. Divided plant branches are planted.

Cuttings should be prepared in early spring before hot days arrive. Usually the branches close to the root neck are cut or separated from it with a heel. The separated area should be cleaned with a knife. The length of the pens prepared in this way should be 10-15 cm and the diameter should be 6-8 mm. Planted cuttings are sprayed with water 3-4 times a day and the plant is rooted for 3-4 weeks.

In the summer, hibiscus is well watered, the top layer of the soil is softened when it dries, and fed regularly. From time to time, it is necessary to sprinkle water on the hibiscus and clean it from dust. Protects against diseases and pests. After watering, the soil is softened. Watering is reduced in autumn.

They can grow in one place for several years. Hibiscus is a perennial shrub that is resistant to drought, but this has a negative effect on their flowering. If the plant is not watered enough, it may lose some of its flower buds. Therefore, hibiscus needs special care during the hot season. It should be watered once or twice a week (the more, the better). Peat humus or straw is sprinkled on the irrigated fields. Although his body is strong, it must be tied up.

Hibiscus is fed with complete mineral fertilizers. It is considered well-fertilized even if manure is mixed with water (juice) and watered from time to time. Hibiscus is fed once a week from spring to mid-August, and half-dose with phosphorus and potassium once a month during the rest of the time.

As soon as it starts to get cold, the bodies of hybrid hibiscus are cut leaving 8-10 cm from the surface of the ground and covered with wood or rice shavings, dry peat humus or manure. Hibiscus grows well and blooms for a long time with proper and regular care.



Thus, the results obtained on the basis of many years of scientific experience of the republic's scientific institutions were reflected in the cultivation and reproduction of the hibiscus flower.

- Bright red hibiscus (*Hibiscus coccineus*) - heat-loving subtropical species;
- Swamp hibiscus (*Hibiscus mouscheutos*);
- Armed Hibiscus (*Hibiscus militaris*).

The last two types are frost-resistant, surviving severe winter frosts up to -300 C. In the artificial crossbreeding of these three types of hibiscus, many cold-resistant forms with very high decorative qualities were bred. Eventually they got the status of varieties.

The flowers of hybrid bush hibiscus are very large, up to 25 cm in diameter. The color of the flowers is different: white, crimson, pink. In their shape and size, they resemble Chinese hibiscus flowers.

Growing hybrid hibiscus in the garden is not difficult, even for beginning gardeners. This profuse flowering plant is not demanding on the soil, it is relatively drought resistant. Hybrid herbaceous hibiscus develops well and blooms perfectly in open sunny places with sufficient light and heat.

In winter, the root part of the hybrid hibiscus dries up. Its strong rhizomes remain in the ground for the winter - new shoots will appear from them in the next season.

Hybrid hibiscus is sufficiently cold-resistant and suitable for cultivation throughout Ukraine. And in Russian gardens, this beautiful plant can be grown with winter shelter not higher than the latitude of Moscow.

In order to protect the roots of hybrid hibiscus from freezing in low snow and severe winters, it is necessary to protect the planting site (mulchivirovanie) by sprinkling it with previously prepared dry fallen leaves.

Hybrid hibiscus is a herbaceous hybrid hibiscus cultivated by the Russian breeder F. Rusanov in Tashkent in the middle of the XX century. The species was obtained by cross-pollination of three North American species and careful selection of the resulting seedlings. Large flowers resemble the shape of a Chinese hibiscus flower, the shape of the leaf plate is maple-like. Since this type of hibiscus is considered a herbaceous annual, the upper part dries up in winter, but the rhizomes remain in the ground, which turn green again in spring. This plant is not demanding on the soil and is sufficiently resistant to drought. It grows well only in open sunny places in the garden. The plant is propagated by seeds, dividing the bush or cuttings. When propagated by seeds, it blooms for 2-3 years. The plant itself is sufficiently cold-resistant, it can winter in open places under a 20-30 cm layer of snow and dry leaf cover.

Hybrid hibiscus are heat-loving and moisture-loving, good for creating large flower clusters and borders, planting along ponds. In autumn, hybrid hibiscus are sown and covered, after opening in spring, the stems are cut from below. Newly formed young shoots are thinned, leaving the strongest ones, and the tops are removed for better processing. For



their active growth and abundant flowering, mineral and organic fertilizers are applied to the soil.

Today, hibiscuses with shiny dark green leaves, usually white, yellow, orange, red, pink, and variegated flowers, are mistakenly called hybrid hibiscuses. These hibiscus are supplied to our flower shops in large quantities from Dutch flower auctions, but they are not related to the species *Hibiscus hybrida*. However, in order to avoid confusion, we conventionally call these bright varieties of the Dutch selection “Dutch” hibiscus, especially since, in fact, this hibiscus does not resemble the forms we know. We will talk a little below about modern breeding work in Holland, Belgium and especially in the USA.

The following types of problems may be encountered. Buds appear on the hibiscus, but do not open and soon fall off - the plant lacked nutrients; watering is not enough, the soil becomes too dry; the air temperature is low. Absence of flowers in the presence of overgrown leaves - the plant is overfed with high-nitrogen fertilizers; lack of light; insufficient watering during the active growing season; winter care at very high temperatures, coolness is needed to put flower buds. The lower leaves fall off, the new ones grow yellow - an increase in the content of chlorine and calcium in the irrigation water, which caused chlorosis of the leaves due to a lack of nitrogen and iron (be sure to cool the water for irrigation and add iron chelate to it); root disease from hypothermia with excessive watering and low temperatures; very dry indoor air combined with high temperatures and insufficient spraying. If your hibiscus is very bare, cut it after freeing it from pests, so that side shoots appear, the plant will soon be green again. A beautiful tree can be grown from a young plant without branching. To do this, it is necessary to tie the central bud to the right support, leave 3-5 leaves, and cut off all the sides. It helps to thicken the body. During this period, the plant is fed with high-nitrogen fertilizers. When the hibiscus grows to the desired height, the branch is pinched, leaving 5-6 well-developed upper lateral shoots. Branches are formed from them, and they are often cut, as a result of which the branch branches more strongly. Then all the lower lateral growth can be removed.

For successful and full flowering of hibiscus, it is required:

- a) There is enough light. It is especially important to observe these conditions during the winter.
- b) Pruning annual formative branches that ensure flowering.

Conclusion

The fact is that only young shoots bloom in hibiscus, they arise from buds sleeping in leaf axils. Removing the tips of the buds creates conditions for the active growth of side shoots and their future flowering. It can be done throughout the year, but it is best immediately after flowering. In early spring, before the start of active plant growth, it is very useful to pinch all buds, including young ones. Both cutting and pinching of buds should be done wisely, trying to give the plant a certain shape. In this case, diseased, defective shoots should not be spared. “Bachkis”, i.e. shoots growing parallel to the main



body and competing with it, must be removed. Especially those that grow inside the branch and thicken it unnecessarily, excess branches should be removed just as strictly. Hibiscuses can grow very quickly under the right conditions, and they can become very large ground plants, creating problems for their owners. This should be taken into account when choosing a container for transplanting them. It is noted that all plants slow down their growth in a narrow container, but bloom relatively actively. Do not indulge in feeding various, especially nitrogen-rich fertilizers. Feeding is possible only in summer, when active growth of plants is observed. It is useful to use potash-phosphorus mixtures in early spring. Naturally, all fertilizers can be given only after abundant watering with clean water. For planting these plants, a mixture of 2 parts of fertile garden soil, 1 part of peat and 1 part of sand is used. Larger-sized specimens are given heavier soil.

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