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OUR NATURE'S GREEN PROTECTORS

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Abstract
This article provides information on the importance of green plants in nature in human life, especially their beneficial properties in maintaining health, including the Lycium (Goji) plant acclimatized in our country.

Keywords. Greening, Lycium, Goji, longevity fruit, antioxidant, sandy area.

Introduction

Since the dawn of humanity, people have enjoyed the blessings and beauty of nature. The way nature wraps itself in a green garment, adorned with colorful flowers and branches, resonates harmoniously with changes in their physical structures. Beautiful landscapes, flower gardens, and parks uplift human mood, refresh the spirit, and provide aesthetic pleasure. Furthermore, the ability to enjoy these beauties, to perceive them deeply, and to develop the correct attitude towards them is a reflection of one's culture and aesthetic standards.

In Uzbekistan, the creation of green spaces and garden architecture has a history of many centuries. In the gleaming city of Samarkand, in open-air museums such as Bukhara and Khiva, parks like the Bagh-i-Eram, Bagh-i-Rayhan, Bagh-i-Shamol, Bagh-i-Dilkusho, Bagh-i-Zagon, Bagh-i-Baland, and Bagh-i-Bahisht, as well as garden parks in distant lands like Agra, Delhi, and Herat, are comparable. In these parks, local tree species such as the sada qayrag'och, majnuntol, silvery-leaved poplar, and various mulberry trees were planted, along with vineyards featuring arched trellises, impressing foreign visitors and tourists.

Today, the aesthetic development of cities demands the introduction of new, visually striking trees and shrubs that are adapted to the local climate for the creation of city landscapes. Ornamental native and introduced plants, with outstanding aesthetic qualities, are widely used as the green decoration of urban, district, and village architecture. In our country, along with local flora, various introduced species with promising biological traits and high ornamental value are being used extensively in landscaping and phytodesign projects. In selecting plants for these purposes, it is important to choose those that not only attract attention with their appearance and beauty but also adapt well to Uzbekistan's harsh continental climate and soil conditions, while exhibiting phytocidal properties and other beneficial traits.

Ornamental shrubs not only provide aesthetic pleasure but also play a significant sanitary role by protecting urban and rural areas from dust, smoke, industrial gases, and other pollutants. Many shrubs possess phytocidal properties, acting as a unique means of purifying the air in cities. They regulate street noise, control temperature fluctuations, increase air humidity during hot days, and possess ameliorative and water retention qualities.

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In landscaping, when creating compositions with promising ornamental plants, trees and shrubs with varying leaf colors and beautiful flowering patterns are selected. By placing promising and highly ornamental shrubs and trees in the right locations according to Uzbekistan's diverse soil and climate conditions, the created composition will fully display its aesthetic beauty. The visual appeal of plants improves human mood and calms the nervous system. In Fergana city, many highly ornamental shrubs have been introduced and are still being planted.

Moreover, it is essential to remember that one hectare of parkland produces 3 tons of oxygen per year, absorbs 54 tons of dust, and sequesters 5 tons of carbon dioxide. Given that the human body consumes 300 liters of oxygen in a day during rest, and 10-15 times more during physical activity, the significance of trees becomes apparent.

Research on the impact of green areas on human health has confirmed that visits to gardens, public parks, and other green spaces improve mental health. Specifically, individuals who visit green spaces 3-4 times a week use 33% fewer mental health medications, 36% fewer blood pressure medications, and 26% fewer asthma medications than those who visit less frequently. Spending two hours in nature weekly helps reduce anxiety, depression, high blood pressure, and the risk of heart disease. Additionally, doctors recommend spending more time in nature instead of relying on certain medications. For instance, in New Zealand, since 1998, doctors have been recommending specific amounts of time to spend in green spaces, while in Japan, forest air breathing has become a form of eco-therapy.

Green areas significantly improve the microclimate by reducing temperature, increasing air movement speed, and positively affecting the human body, especially in hot summer conditions. Plants enhance the radiation regime, reducing the intensity of direct solar radiation.

Landscaping sidewalks and boulevards with green plants notably reduces harmful heat radiation for pedestrians on hot days. The creation of green spaces between sidewalks and roads can reduce the heat radiation from the roads to pedestrians by 2.5 times. According to existing standards, some areas in cities are required to limit sunlight exposure. For instance, at least 50% of the children's playgrounds and sports areas should be shaded, and at least 75% of pedestrian walkways and sidewalks should have shade.

Broadleaf trees (oak, maple, chestnut, linden, and others) provide the best results in reducing temperature and improving the climate. During the growing season, plants in one hectare of green space can transpire up to 3,000 tons of moisture. A square meter of lawn can transpire between 500 to 700 liters of water during the same period. A single maple tree can transpire up to 200 liters of water daily, while a hectare of century-old oak trees can transpire approximately 26 tons of water. A forested hectare increases air humidity significantly (almost 10 times more) compared to the same area of a water body and also renews the air quality.

Green plants have a major impact on gas exchange processes through the continuous breakdown of carbon dioxide, enriching the air with oxygen. For example, a hectare of forest absorbs 220-280 kg of carbon dioxide annually and releases 180-220 kg of oxygen into the atmosphere. On average, a hectare of green space absorbs about 8 liters of carbon dioxide per hour, equivalent to the amount of carbon dioxide inhaled by 200 people during this time. A typical-sized tree can supply oxygen for three people's breathing.

Urban green areas also play an essential role in sanitation and hygiene by improving air quality, cleansing it of dust, absorbing harmful gases, and storing toxic substances in their leaves, tissues,

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fruits, trunks, and roots. The total amount of sulfur, chlorides, and fluorides accumulated in plant organs, including leaves, constitutes about 20% of the concentration in their leaves. Environmental pollution by heavy metals leads to their accumulation in plants, which results in a 1.5 to 2 times increase in the ash content of the plants. Some plants' root absorption capabilities help prevent excessive metal accumulation. The most resilient tree species accumulate most of the metals in their roots, which means that their above-ground parts have a lower concentration of these metals. Green plants are crucial in improving the environment and play a significant role in maintaining human health and ecological balance. When selecting plants for green spaces, it is essential to choose those that not only purify the air of harmful gases but also protect against dust. The best trees for trapping dust are those with hairy and sticky leaves. Studies show that the air dustiness between trees is on average 42% lower compared to open fields during the growing season. A hectare of pine forest can trap up to 32 tons of dust, while a black poplar forest can trap up to 68 tons of dust. The ash tree is also an excellent dust collector, retaining six times more dust than the poplar tree. These trees contribute to improving the urban microclimate, enhancing air quality, and improving living conditions in cities.

By carefully selecting green plants, not only does air quality improve, but human health also benefits. In the plant kingdom, some species evoke a profound sense of beauty, enhancing mood and increasing love for nature and our homeland. These plants, found in our homes, workplaces, parks, recreational areas, and educational institutions, decorate our environments throughout the year.

Green plants serve as a natural laboratory, purifying the air of pollutants like dust, smoke, and gases, while enriching it with oxygen. They also provide raw materials for food, clothing, medicine, construction, and industrial uses. By trapping harmful and toxic substances such as dust, smoke, and gases, green plants improve nature, streets, parks, homes, leisure areas, and workplaces, bringing strength, joy, and satisfaction to humans. In today's society, where people are living prosperous lives, ornamental plants play a leading role in urban development and the enhancement of human health.

Among the "green shields" of our city, the Lycium (Goji) plant holds significant importance due to its beautiful flowers, lush green foliage, and its constant greenness, which bring a unique charm to nature, streets, parks, and courtyards. Its presence enhances the environment with vibrant, multicolored blossoms, providing strength, positive energy, and an excellent mood to everyone.

The native land of Lycium (Goji) is China, where more than 90 species are found worldwide. In Uzbekistan, three wild species of Goji can be found. Goji is widely used in traditional medicine, particularly in China, Korea, Japan, and Tibet. The plant's fruits, roots, and leaves are used in medicine and also play a role in the food industry as well as in the production of natural dyes.

The Goji fruit is highly nutritious, containing many beneficial substances, including:

- **Vitamins:** Ascorbic acid (Vitamin C), B1, B2, B6, Vitamin E.
- **Amino Acids:** 18 amino acids, 8 of which are essential and cannot be produced by the body.
- **Minerals:** Potassium, sodium, calcium, magnesium, iron, copper, manganese, phosphorus, and germanium.
- **Polysaccharides:** Substances that activate the immune system.
- **Antioxidants:** Help protect against free radicals and slow down the aging process.

Goji fruits have high antioxidant activity, which supports their beneficial properties, such as

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improving metabolism, restoring mental and physical energy, boosting immunity, and slowing down the aging process. They are also widely used for treating anemia, diabetes, cardiovascular diseases, and skin disorders.

The Goji plant is renowned for its natural healing properties and is famously known as the "Longevity Fruit." It is considered the number one food for boosting the body's vitality against the adverse effects of the environment in Asia. The Goji plant is used for preventing and treating various pathological processes in the body. It is a powerful antioxidant that helps strengthen the immune system, improve metabolism, increase the body's resistance to stress, protect against radiation, and act as a powerful natural detoxifier. It is also effective in reducing harmful cholesterol, eliminating cholesterol deposits in the arteries, treating liver diseases, gallbladder inflammation, prostate infections, ischemic heart disease, and improving brain circulation.

Lycium (Goji) is rich in biologically active compounds, including germanium, beta-carotene, amino acids, polysaccharides, betaine, and many other bioactive substances. It is exceptionally high in vitamins, minerals, and amino acids, many of which are not found in other plants. Goji berries contain 21 different minerals, including potassium (K), sodium (Na), calcium (Ca), magnesium (Mg), iron (Fe), copper (Cu), manganese (Mn), zinc (Zn), and germanium, as well as vitamins B, E, C, B1, B2, and B6.

Medicinal Benefits of Lycium (Goji)

1. **Boosting Immunity:** Goji is a powerful antioxidant that protects the body from free radicals, helping to strengthen the immune system.
2. **Stress Relief:** It helps increase the body's resistance to stress.
3. **Blood Pressure Regulation:** Goji is effective in reducing and normalizing blood pressure.
4. **Heart and Circulatory System Health:** It helps in treating ischemic heart disease, prostate inflammation, and increases the elasticity of blood vessels.
5. **Anti-inflammatory Properties:** Goji is used as an anti-inflammatory and antibacterial agent.
6. **Anthelmintic (Parasite Control):** It acts as an effective remedy against parasites.
7. **Improving Vision:** Goji is known to enhance eyesight and treat eye diseases.
8. **Endocrine System Improvement:** It is effective in stimulating and improving the function of the endocrine system.
9. **Cancer Prevention:** Goji helps in preventing cancer, thanks to its natural healing properties.
10. **Detoxifying the Body:** Goji is effective in removing excess fluids from the body.
11. **Slowing the Aging Process:** Goji slows down the aging process and has rejuvenating effects on the body.

In Tibet, Goji is widely used to treat eye diseases, reduce stress, and normalize blood pressure. The germanium content in Goji has anti-tumor properties, making it an effective tool in cancer prevention and treatment.

Goji plants are currently being successfully cultivated in Uzbekistan, and their health benefits are of great importance to the public. The cultivation of this plant and the production of medicinal products from it will not only have a significant impact on national medicine but also create opportunities for international markets. The medicinal properties of Goji and its cultivation in Uzbekistan are opening up new opportunities in the healthcare sector.

The widespread cultivation of Goji and its use in the production of medicinal products can

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significantly contribute to the field of modern pharmaceuticals. Due to its natural healing properties, high antioxidant activity, and beneficial effects on the body, Goji has the potential to transition from traditional folk medicine to the modern pharmaceutical industry.

The high vitamin and mineral content of Goji fruit, along with its health benefits, has made it a promising plant for scientific research. Research is currently underway in Uzbekistan to explore its potential for medicinal use and the production of new medicinal products.

The successful cultivation of Goji in Uzbekistan is not only providing local health benefits but is also paving the way for the creation of new medicinal products in the global market.

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