ADAPTATION PROCESSES OF INTRODUCED ORNAMENTAL PLANTS IN UZBEKISTAN

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Abstract: This thesis analyzes the adaptation processes of ornamental plants introduced to Uzbekistan from foreign countries, focusing on their physiological, morphological, and phenological characteristics. The roles of climatic factors, soil conditions, agrotechnical practices, and genetic traits in adaptation to new environments are discussed. In addition, the significance of introduced species in urban planning, landscape design, and ecological sustainability is highlighted.

Keywords: introduction, ornamental plants, acclimatization, adaptation, ecological factors, landscape design, adjustment.

Introduction

The natural flora of Uzbekistan is characterized by rich diversity. At the same time, in recent years, many foreign ornamental plant species with high decorative value have been widely used in urban landscaping and landscape design. Their growth, development, and preservation of decorative features depend primarily on their ability to adapt to new ecological conditions. Therefore, studying the physiological, morphological, and phenological adaptation characteristics of plants during the introduction process is an important scientific and practical task.

Main Part

1. The essence of the introduction process

Plant introduction is the process of bringing species and varieties from other geographical zones into a new area, cultivating them, and adapting them to local conditions. Stages of introduction:

- Acclimatization – initial adjustment of the plant;

- Adaptation – achieving stable development and survivability;

- Naturalization – full integration of the plant into the local flora.

2. Adaptation mechanisms

- Physiological adaptation: coordination of photosynthesis, transpiration, and respiration. In dry climates, plants reduce water consumption by decreasing leaf surface area and thickening the cuticle.

- Morphological adaptation: changes in leaf shape and size, stem structure, and deepening of the root system.

- Phenological adaptation: adjustment of flowering and vegetation periods to local climatic conditions. For example, magnolia blooms earlier than usual in Tashkent conditions.

- Preservation of decorative traits: maintaining vibrant flower colors, rich leaf pigmentation, and fruit appearance.

3. Observed experiments in Uzbekistan

- Conifers (Thuja, Cypress, Pine): resistant to dry climates but require intensive watering during the first years.

- Magnolia: although subtropical, it has adapted well in Tashkent and the Fergana Valley, but shows low cold resistance.

- Rose varieties: imported from different countries; maintain long-lasting decorative qualities when agrotechnical practices are followed.

- Paulownia (Empress tree): a fast-growing ornamental tree widely planted in urban areas, though susceptible to damage in harsh winters.

4. Factors influencing adaptation

- Climatic factors: temperature, precipitation, relative humidity.

- Soil conditions: fertility, salinity, mechanical composition.

- Agrotechnical practices: proper irrigation, fertilization, pruning, and protection measures.

- Genetic characteristics: the adaptation potential of species and varieties.

5. Practical significance

- Urban planning and landscape design: expansion of green spaces and creation of an aesthetic environment.

- Ecological benefits: air purification, oxygen production, microclimate regulation, noise reduction.

- Economic importance: increasing demand for ornamental species in nurseries.

6. Challenges and prospects

- Non-resistant species may perish during severe winters;

- Some species do not thrive in saline soils;

- Resistance to diseases and pests is not always high. Solutions: selecting suitable varieties, localization (hybrid development), and applying scientifically based agrotechnical practices.

Conclusion

The successful development of introduced ornamental plants in Uzbekistan depends directly on their physiological and morphological adaptation processes as well as on agrotechnical measures implemented by humans. Studying these processes on a scientific basis is crucial for future urban and rural landscaping, expansion of green areas, and ensuring ecological sustainability.

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