ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 8| Issue: 12| December 2022|| Journal DOI: 10.36713/epra2013 || SJIF Impact Factor 2022: 8.205 || ISI Value: 1.188

UDC 58

BIOECOLOGICAL FEATURES OF INTRODUCED PLANTS IN THE CONDITIONS OF THE REPUBLIC OF KARAKALPAKSTAN

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ANNOTATION
The article presents the results of a study of the bioecological features of introduced plants in the conditions of the Republic of Karakalpakstan.
KEY WORDS: ***introduction, introducent, bioecological features, flowering, fruiting, seeds, phenology, phenogroup.***

The drying up of the Aral Sea, leading to a global deterioration of environmental conditions within its zone of influence in the territory of Karakalpakstan, makes it necessary to find ways to help mitigate the impact of this environmental catastrophe on the population centers of the republic.

Greening cities and towns is one of the most effective ways to improve the environmental situation. To implement effective landscaping, it is necessary at least to know what plant species can grow in a given region, and as a maximum, to create mother plantations of the most promising tree species and develop methods for their mass reproduction. These problems are solved with the help of plant introduction.

The main objective of the study is to study the seasonal rhythm of growth and development of introducers in new conditions for them; - to identify the adaptive potential of introducers; - conduct an introduction assessment of plants.

The object and subject of the study is the Botanical Garden. A. Temur located in the city of Buston, in the south of the Nizhne - Amudarya dendrological region.

The methods used in the introduction study of woody plants were used in the work (Yurkevich et al. 1980; Shtonda, 1982). Phenological observations were carried out using generally accepted methods and recommendations (Yurkevich et al. 1980; Schultz, 1981).

Monitoring of introduced plants was carried out by means of visual observations. The influence of low winter and high summer air temperatures, as well as the influence of low air humidity, was noted.

Depending on the general weather conditions, stable confinement of species to a certain phenological group is not observed. This is especially true for the timing of the completion of the growing season, when early autumn frosts contribute to the simultaneous completion of the end of the growing season in plants from different phenological groups according to the degree of completion of the growing season. So, for example, in Aesculus hippocastanum, leaf fall ended (the end of the growing season) in 2020 on September 30, in 2021 - October 10. This species belongs to the phenological group of early ending vegetation, while the growing season lasts up to 200 days.

In the phenological group P (early start of the growing season), most plants belong to species that complete the growing season in the second and third ten days of October, i.e., to the phenological group C (average term for the completion of the growing season), and the growing season for these species' ranges from 200 to 215 days (*Forsythia suspensa, F. viridissima, Cornus sanguinea, Chaenomeles japonica, etc.*)

Some species complete the growing season in

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early November and their growing season ranges from 220 to 250 days. So, for *Salix babylonica* in 2021, the growing season was 250 days, for Populus alba - 238 days, for *Salix caprea* - 235 days.

Plants from phenological group C (average start of vegetation) have a not so long vegetation period - from 173 to 226 days - and almost all fit into the average long-term vegetation period, which is 214 days in the Republic of Karakalpakstan.

The exception was species of the genus Platanus, in some years *Quercus castaneifolia, Acer campestre, Crataegus nitida, Euonymus maackii, Sambucus canadensis, S. nigra, Salix matsudana*, and others.

Analyzing the phenological group P (according to the timing of the beginning of the growing season), it should be noted that almost all plants of this group, except for *Sophora japonica,* finish the growing season in the second half of October. from 170 to 205 days.

Many introducents from the phenological group P (according to the timing of the beginning of the growing season) have a longer growing season. However, during the growth period, in most species, the shoots have time to mature, and the vegetation period extended until frost in a number of species does not cause further freezing of the shoots.

The beginning of shoot growth is usually noted 3-5 days after the start of leaf blooming. Under observation were mainly lateral shoots, since most of the plants reached a significant height at the time of the observation (all species with a tree biomorph).

In woody plants of different systematic position and geographical origin, having different ages and growing in different ecological conditions, the rhythm of shoot growth can vary within different limits. In addition, it should be taken into account that the duration of the growth period is significantly affected by the weather conditions of the year of observations. However, we tried to divide the observed plant species into three groups according to the duration of the growth period.

I. A group of plants with a short growth period - from 20 to 60 days. This group included 20 species - *Cercis canadensis, C. chinensis, Catalpa speciosa, C. bignonioides, Fraxinus angustifolia, Quercus macrocarpa, Q. robur, etc*.

II. A group of plants with an average growth period of 61 to 90 days. This group included 44 species, such as *Acer campestre, A. pseudoplatanus, species of the genera Euonymus, Sambucus, Lonicera, etc.*

III. A group of plants with a long growth period - from 91 days or more. This included species of the *genera Salix, Morus, Platanus*, and others.

Individual species of such genera as *Quercus, Platanus, Fraxinus, Maclura*, etc., under fairly favorable conditions, are characterized by a secondary and even tertiary period of shoot growth. However, the extreme soil and climatic conditions of the Botanical Garden. A. Temur (saline soils, high summer temperatures, and most importantly, the almost annual lack of irrigation water in July-August) did not contribute to the appearance of secondary growth in introduced species during the years of observation.

The flowering of plants almost always indicates that the rhythm of the seasonal development of a particular species has fit into the course of the weather indicators of the point of introduction.

The development of reproductive (functionally generative) buds often begins earlier than the development of vegetative buds, often even at lower air temperatures than are needed for the development of vegetative buds. Even rather short winter thaws contribute to the beginning of flowering in 10 species that bloom before the leaves bloom (*Acer saccharinum, Ulmus americana, U. scabra, Salix caprea, Chaenomeles japonica, Forsythia ovata, F. suspensa, F. viridissima)* at a later date, but also before bud break, *Cercis canadensis and C. chinensis* bloom.

These species, especially Acer saccharinum, are often provoked by short-term warming even in the winter months (February).

In 2020 (the year of the late start of vegetation), Acer saccharinum began to bloom in the second decade of March, and in 2021 (the year of the early start of vegetation) - at the end of February. In 2022, flowering in this species began in the first ten days of March. With early flowering, a return of winter cold is always possible, which leads to freezing of the ovaries and subsequently to the absence of fruits. The reason for the absence of fruits for the same reason can also be observed in the species *Ulmus pumila, U. americana and U. scabra*, in which the earliest flowering was also noted in 2022, and the latest flowering in 2021.

Salix caprea, Chaenomeles japonica, Forsythia

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ovata, *F. suspensa*, and *F. viridissima* also have the latest and earliest flowering periods in 2021 and 2022.

The fruiting of plants is the main factor confirming the success of the introduction of a particular species in new conditions. Before all - in April - the fruits of Acer sacchrinum ripen. In May-June, the fruits of species of the genera *Populus, Salix, Morus ripen; in June-August - in Broussonetia papyrifera, Lonicera tatarica, a number of species of the genus Crataegus, Chaenomeles japonica, Cornus alba*, etc. In September-October-November, fruits ripen in *Crataegus aprica, C. oxyacantha*, species of the genera Diospyros, Fraxinus, Catalpa, Platanus. In representatives of the last three genera, the process of seed dispersal proceeds until March of the next year. In most species, the fruits and seeds fall off and disperse as they mature.

The high quality of seeds of introduced plants is evidenced by the presence of mass self-seeding in representatives of such genera as *Fraxinus, Gleditsia, Catalpa, Cercis, Lonicera, Cornus, Sambucus, Acer negundo*, etc.

Thus, introduced species adapted to the conditions of the Republic of Karakalpakstan are characterized by a shortening of the growth period and high growth rates. Under such conditions, this is explained by the fact that the main limiting factor in the period of plant growth is high temperature and low humidity. And also, on the basis of the foregoing, it should be noted that the ability to bloom and produce seeds and fruits are the main criteria for the success of the introduction of a particular species.

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