BIOLOGICAL SCIENCES

BIOECOLOGICAL FEATURES OF GROWTH AND DEVELOPMENT OF HAZELNUT (*CORYLUS DOMESTICA* KOSENKO ET OPALKO) PLANTS IN THE CONDITIONS OF THE RIGHT-BANK FOREST-STEPPE ZONE OF UKRAINE

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The ability of plants to adapt to changing growing conditions manifests itself in the nature of the passing of phenological phases. The study of the seasonal development of hazelnut plants is necessary for understanding the plant growth in the specific conditions of this zone in order to develop agrotechnical measures for planting care, to find the best time for harvesting nuts, and to determine the dates for protecting plantations from pests and diseases. Therefore, to determine the features of adaptation of hazelnut plant varieties to the conditions of the area of introduction, seasonal rhythms of growth and development were investigated. As a result of phenological observations in the Right-Bank Forest-Steppe Zone of Ukraine, the following seasonal phenological phases of plants of *Corylus* L. varieties were noted: the beginning of the vegetation and the dormancy. These seasonal rhythms of plant development are included in the complex of the most important bioecological and economic and biological indicators characterizing the degree of compliance of new climatic conditions with the natural requirements of introduced varieties.

The seasonal rhythms of plant organisms (changes in their phenophases) are an integral indicator of adaptation and reflect the ecological response to changes in environmental factors that affect directly or indirectly the plant [7, p. 23]. Therefore, the phenophases can be used to predict the outcome of an introduction experiment, to describe the adaptive states of introducents. And systematic description of the complex of phenological phases is relevant for the formation of the theoretical foundations of plant adaptation to changes in the conditions of existence that occur under introduction. The generalization of individual changes in plant organisms and their subsequent incorporation into a single logically grounded theory of adaptation is a long-term strategy for obtaining fundamental solutions [8, p. 54].

It is known that reliable data for analyzing the adaptive properties of plants, that is, assessing their potential for introduction, can be obtained by visual field methods,

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which include phenological observations. And the dates of passage of the main phenological phases by plants reflect the level of their adaptation to the environment. So, the analysis of phenological rhythms is an important tool for the study of the ecology and biology of individuals and populations [5, p. 136].

Hazelnut is originated from the Mediterranean subtropics, and for the agroecological conditions of the Right-Bank Forest-Steppe Zone of Ukraine, it is an introducent for which the soil-climatic conditions are quite favorable.

The most important exogenous factors influencing plant organisms, along with the solar energy, should also include temperature and humidity. Therefore, in our experiments, we focused on temperature as a factor influencing changes in the phenophases of the objects under research.

The temperature value is determined primarily by the fact that it determines the rate of chemical reactions in living organisms. For organisms, there is a temperature optimum for the realization of both certain chemical processes and for the very existence [1, p. 173]. This results from the ecological valence of the organisms. Outside of the temperature optimum, the oppression of all vital functions comes [2, p. 158]. So, the growth of hazelnut shoots begins at the transition of average daily temperatures through +10 °C only, and the length of the growth period is 60–75 days [3, p. 226, 4, p. 59].

An organism with a wide amplitude of ecological valence to the action of the temperature factor (typical of eurybionts, in particular, from temperate climatic zones) is better adapted to changing conditions, which can manifest itself in the absence of specific reactions to temperature changes.

From the point of view of identifying potential introducents to the Forest-Steppe Zone of Ukraine, it can be assumed that phenological studies will reveal the most promising ones among the studied varieties that come from different climatic regions. For example, the variety Futkurami is of Georgian selection. Potentially, data should be found that will indicate that it is less adaptive than the varieties of local selection and, consequently, less productive.

Sudden temperature gradients are the so-called "disturbing" factor, that is, a stress factor. In terms of its presence, it is possible to find organisms that are characterized by lower nonspecific resistance – or lower ecological valency – that is, their lower ability to maintain homeostasis (this is about such a property of biological systems with any levels of their organization as self-organization) [6, p. 121].

Since, as noted above, the temperature determines the rate of chemical reactions in living organisms, therefore, its sharp gradients should be reflected in a number of parameters that depend on the adaptive capabilities of the organism (or the level of its nonspecific resistance, or ecological valence). In our studies, this is the period of the duration of the phenophase growth and development of hazelnut varieties. Phenological observations will indirectly indicate the hazelnut varieties that are most promising for the agro-ecological conditions of Ukraine.

The study of the seasonal development of the studied varieties of hazelnuts is necessary for understanding the plant growth in the specific conditions of this zone in order to develop agrotechnical measures for planting care, to find the best terms for harvesting fruits (nuts), to determine the dates for protecting plantings from pests and diseases, etc.

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