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ASSESSMENT OF LIFE STATUS *ACER SACCHARINUM* IN MELITOPOL

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The article is devoted to the issues of the stability of the ACER SACCHARINUM species to pollution under conditions of increasing anthropogenic load in urban environment at the example of Melitopol town. The experiments were carried out using the visualization method and by means of V.P. Alekseev calculation methods.

Статтю присвячено питанням стійкості видів ACER SACCHARINUM до забруднення в умовах збільшення антропогенного навантаження на міське середовище на прикладі міста Мелітополь. Експерименти проводилися з використанням візуальної оцінки і за допомогою розрахункового методу В.П. Алексєєва.

Urban vegetation is one of the main objects of environmental monitoring. Plants serve as indicators of the state of the environment, so you need to know how and to what extent the environment itself affects their condition and, therefore, affects the quality of the functions they perform [8]. The effect of atmospheric pollution on vegetation is a biochemical phenomenon that primarily affects metabolic and physiological processes and destroys the ultramicroscopic structures of leaf cells. The main diagnostic sign of plant damage are chlorosis and necrosis of leaf blades [7]. The presence of certain diagnostic symptoms of plant damage allows to carry out factor indication, that caused this damage. Sometimes these signs are expressed so strongly that they determine the intensity of the weakening of plants [4, 6]. However, much more often the degree of weakening (or damage) of a tree is determined by other nonspecific signs: the weakening of the thickness of the crown due to underdevelopment or premature falling leaves and needles, a sharp reduction in growth, transient drying of branches in the upper half of the crown, and so on [5, 3].

In order to diagnose damage to trees and stands, polluting the atmosphere with gaseous toxicants in various parts of the town of Melitopol, an assessment of the life status of the species has been used (*Acer saccharinum* L. 1867).

Methods of research. To determine the relative life state of the plantings of *Acer saccharinum*, the method of Alekseev was used [1, 2], which presupposed the choice of 5 trial plots (TP) with different anthropogenic loads that are located within the town of Melitopol:

№1 - TP- the square

№4 - TP - zone located near the plant "Termolitmash"

№2 - TP - zone with high traffic intensity

№5 - TP - residential area.

№3 - TP - zone with an average intensity of movement

The method of continuous examination of trees was used to visualize the following diagnostic features: defoliation class, crown condition, yellowing class of leaves, pathomorphological deviations, damage to tree trunks [5]. Vital status *Acer saccharinum* was calculated using the formula:

$$L_n = (100n_1 + 70n_2 + 40n_3 + 5n_4) / N$$

L_n - is the relative vital state of the stand;

n_1 - the number of healthy trees;

n_2 - the number of weakened trees;

n_3 - the number of heavily weakened trees;

n_4 - the number of dying trees;

N - is the total number of trees in the area under research.

100, 70, 40 and 5 are the coefficients, expressing (in percent) the vital state of healthy, weakened, severely weakened and dying trees [1].

Results of the study. Plantings in the area of the park according to the external signs of the evaluation of crowns, can be attributed to natural, because it equals to the 1 score. There are no damage to the tree trunk. The defoliation class, yellowing and pathological abnormalities makes up 0. Indicators of the relative life condition (Ln) of plantations, in a zone with a high traffic intensity, are in the range of 82%. Defoliation has been estimated as 7%, so it can be attributed to the I-II class. Crown condition is at the level of II-III class. The degree of yellowing is equal to class I. Pathomorphological abnormalities and damage to the trunk are absent. The plantations of *Acer saccharinum* in the zone with an average traffic intensity, according to the indicators of the state of health assessment, are at the level of 88%. An estimation of the state of the crown according to the indices allows us to refer it to the second class. The defoliation class is equal to 0. There are no yellowing, lesions and pathomorphological abnormalities. Plantings that are used in planting the territory of the "Termolitmash" plant, according to the assessment of the living condition (Ln) are equal to 84%. The defoliation class on this site is 10%, which allows it to be assigned to the I-II class. The condition of the crowns is estimated within the level of II-III grade. Yellowing is graded to grade I. Damage to the trunk and pathomorphological abnormalities are absent. Indicators (Ln) of *Acer saccharinum* plantations in the area of multi-stored buildings are in the range of 96%. At the same time, pathomorphological abnormalities, yellowing of the leaves and damage to the trunk are absent. And the state of the crowns is characterized by their symmetry and completeness, which, in accordance with the classification, makes it possible to assess them at the level of the I-II class. Defoliation is set to 0. In the course of the conducted studies, it was established that among the types of plantings of the species *Acer saccharinum*, the most qualitative indices of vital evaluation were noted in the territory of the square, as well as in plantations located in the multi-stored buildings, which is caused by a low anthropogenic load. In plantations near the zone with high and medium traffic intensity, as well as in the territory of the "Termolitmash" plant, the load indicators characteristic for such zones are noted.

Conclusions. Trees of the species *Acer saccharinum* are still more resistant to anthropogenic load, compared with other types of plantings of the town. Estimation of the vital state of the plantations of this species can be estimated by high indices under the conditions of the investigated zones. Therefore, *Acer saccharinum* can be used in the gardening of the town, taking into account its value aesthetic and decorative.

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