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1. Phytosanitary diagnostics /Edited by Chenkin, A.V. – Moscow, Kolos PublishinHouse, 1994. – 323 p.
2. Illarionov, A.I. Rationale for selection of pesticide agent aimed at wheat plant protection from corn bug (EURYGASTER INTEGRICEPS PUTON) /A.I. Illarionov//The Bulletin of Voronezh state agricultural university. – V. 2 (53). – 2017. – pp. 31-39.
3. Illarionov, A.I. Resource efficiency as a criterion for selection of pesticide agent aimed at wheat plant protection from corn flies/ A.I. Illarionov // The Bulletin of Voronezh state agricultural university. – V. 3 (46). – 2015. – pp. 42-51.
4. Illarionov, A.I. Modern methods of plant protection [electronic resource]: textbook [aimed for post-graduate studies, specialisation 35.06.01 – Agriculture specializm: 06.01.01 – general soil science, horticulture, 06.01.04 – agrochemistry, 06.01.05 – selection

and seed] / A.I. Illarionov; Voronezh state agricultural university. – Voronezh: Voronezh state agricultural university, 2018. – 307 p. <URL:http://catalog.vsau.ru/elib/books/b145960.pdf>.

5. A list of pesticide agents and agrochemicals authorized to be used in the territory of the Russian Federation, 2019: reference edition. – Moscow: [for library use], 2019. – 848 p. – Supplement for the Journal «Plant protection and quarantine» № 4, 2019.

6. Illarionov, A.I. Self-guide textbook (developed for the course in «Chemical crop protection agents») / A.I. Illarionov. – Voronezh: VSAU, 2016. – 177 p.

7. Methodology of field experiments (statistics-based research data)/ B.A. Dospekhov. – 6th Impression. – Moscow: Alʹyans, 2011. – 352 p.

8. The economic threshold of pest and disease harmfulness for crops / V.T. Alyokhin, V.V. Mikhailikova, N.G. Mikhina: reference edition. – Moscow, FSBSI «Rosinformagrotekh», 2016. – 76 p.

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STUDY OF THE SPECIFIC FEATURES OF DEVELOPMENT OF LESS-COMMON TREE-SHRUB PLANTATIONS CREATED IN CONDITIONS OF THE DENDROLOGICAL PARK OF LOCAL SIGNIFICANCE «LADYZHYN GROVE»

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Abstract

A floristic analysis of the less-common ornamental species of the «Ladyzhyn grove» arboretum was carried out, according to which the taxonomic composition and description of the studied arboretum species were determined. According to the results of integrated numerical evaluation of the viability of trees and shrubs carried out on the basis of visual observations, an assessment of the prospects for the introduction of woody plants in the studied region was taken. Proceeding from these studies, a vegetation layout map was designed for the dendrological park of local significance «Ladyzhyn grove».

Keywords: arboretum, integrated assessment, taxonomic composition, decorative properties, systematic principle, exotics.

Problem statement. «Ladyzhyn grove» is a dendrological park of local significance, situated in the town of Ladyzhyn, Trostyanets district, Vinnytsia region, Ukraine. The total area of the arboretum is 10 hectares. It was created in accordance with the decision of the Vinnytsia Regional Council of June 27, 2012 and is administered by the Ladyzhyn City Council.

The arboretum was created in order to preserve and study various species of trees and shrubs and their compositions in specially created conditions with the aim of their effective scientific, cultural and recreational use.

Purpose. The research was aimed at studying natural processes at various species of trees and shrubs and their compositions, created in the dendrological park of local importance «Ladyzhyn grove», through constant monitoring of their changes.

Materials and methods of the research. During the study of botanical and geographical zoning of Ukraine, the Kokhno M.A. methodology was followed [1], according to which it was established that the studied region is located on the territory of the Forest-Steppe natural zone of Ukraine, in the area of Podillya Pobuzhyya (Southern Buh riversides). The taxonomic composition was studied by route survey of plantations. Classification of life forms was carried out according to the K. Raunkier system [1].

Description of the studied species and forms was fulfilled using the results of Kolesnikov O.I. [2], Kalinichenko O.A. [3] research results and own observations.

To assess the viability and prospects of the woody plants introduction in the region of study, which was conducted according to the Lapin P.I. and Sidneva S.V.

[2] method of integrated numerical assessment of viability and potential of trees and shrubs based on visual observations, seven main indicators were used: preservation of plant growth form, shoots lignification, shoot-forming ability, generative development of species, winter hardiness, increase in height and probable methods of reproduction in culture [5].

Results of the research. Plantations of the dendrological park of local significance «Ladyzhyn grove», which are the part of nature reserve fund, are represented mainly by tree-shrub species, which are introducers in conditions of Vinnitsia region. Such plantations require certain economic and management measures in order to maintain their proper condition and biological stability.

During the inspection of the park plantations it was revealed that some trees and aisles plantings were planted in violation of the agricultural technique. Besides, when creating separate sections of the park, the combination of tree species was done unsuitably, without taking into account their intensity of growth and development, what in the future will lead to excessive interspecific competition and the death of less stable species and forms [4].

The range of plants is regionally conditioned and has the form of a selection of species, which is determined by specific climatic, socio-economic and historical conditions. However, regardless of regional specifics, the assortment should meet a number of general requirements:

1) have high decorative effect. The collection should include trees that bloom profusely, have decorative leaves, beautiful fruits and fancy bark, trees with different forms of crowns, deciduous and evergreen life forms;

2) ensure ecological function of green areas. The assortment must be filled with the species that provide microclimate formation, clean the air from the dust, ensure wind protection, reduce noise pollution, prevent water and wind erosion of soils, etc.;

3) allow solving various architectural tasks. Collection definitely should include essential species that are necessary for the formation of the first storey of park plantings, walkway plantings, green hedges, topiary forms that provide effective vertical landscaping etc.;

4) cover full range of environmental factors of the landscaping point. Woody plants that can withstand poor and saline soils, close groundwater, capable of

growing in urban soils and industrial areas are preferable;

5) be technological, i.e. provide maximal ecological and architectural effects at minimal expenses, show the maximum decorative longevity associated with particular region climate conditions, soils and specific factors.

Given these requirements, the first stage of our research was to establish a present-day condition and species composition of the existing ornamental plantations of the arboretum.

Based on the analytical study of the reporting documentation provided by the administration of «Ladyzhyn Grove» Dendrological Park and visual inspections, an inventory of the available range of aboriginal and introduced wood and shrub plants was made for each section of the arboretum.

Proceeding from the data of the inventory of the existing aboriginal and introduced tree and shrub plants of the arboretum, a vegetation layout map of the dendrological park of local significance «Ladyzhyn grove» was obtained (Fig. 1).

It was also found that in the arboretum there are about 120 tree and shrub and about 50 herbaceous ornamental plant species, of which more than 25 ones are less-common introduced species (Table 1).

According to the analysis of the studies (Fig. 1), the introduced less-common species of section no. 1 are: *Rhus typhina* L., *Catalpa bignonioides* Walt., *Hibiscus syriacus* L., *Acer rubrum* «October Glory», *Acer rubrum* «Redpointe», *Liquidambar styraciflua* L., *Malus sieboldii*, *Davidia involucrata* Baill., *Coffea liberica* (W. Bull ex Hiern.), *Betula nigra* L.; section no. 2: *Ginkgo biloba* L., *Diospyros virginiana* L.; section no. 3: *Malus domestica* «Rajka» L., *Davidia involucrata* Baill., *Nyssa sylvatica* Marsh., *Cercis siliquastrum* L., *Koelreuteria bipinnata* Franch., *Magnolia* «George Henry Kern»; section no. 4: *Liriodendron tulipifera* L., *Prunus avium* L., *Prunus serrulata* Lindl.; section no. 5: *Paulownia tomentosa* (Thunb.) Steud.; section no. 7: *Magnolia kobus* DC, *Magnolia soulangeana* Soul; section no. 9: *Prunus maackii* Rupr; section no. 11: *Zelkova serrata* Spach; section no. 14: *Liquidambar styraciflua* L. «Stured», *Liquidambar styraciflua* L. «Thea»; section no. 15: *Laburnum anagyroides* Medik.; section no. 16: *Taxodium distichum* L.; section no. 17: *Gymnocladus dioica* (L.) K. Koch.

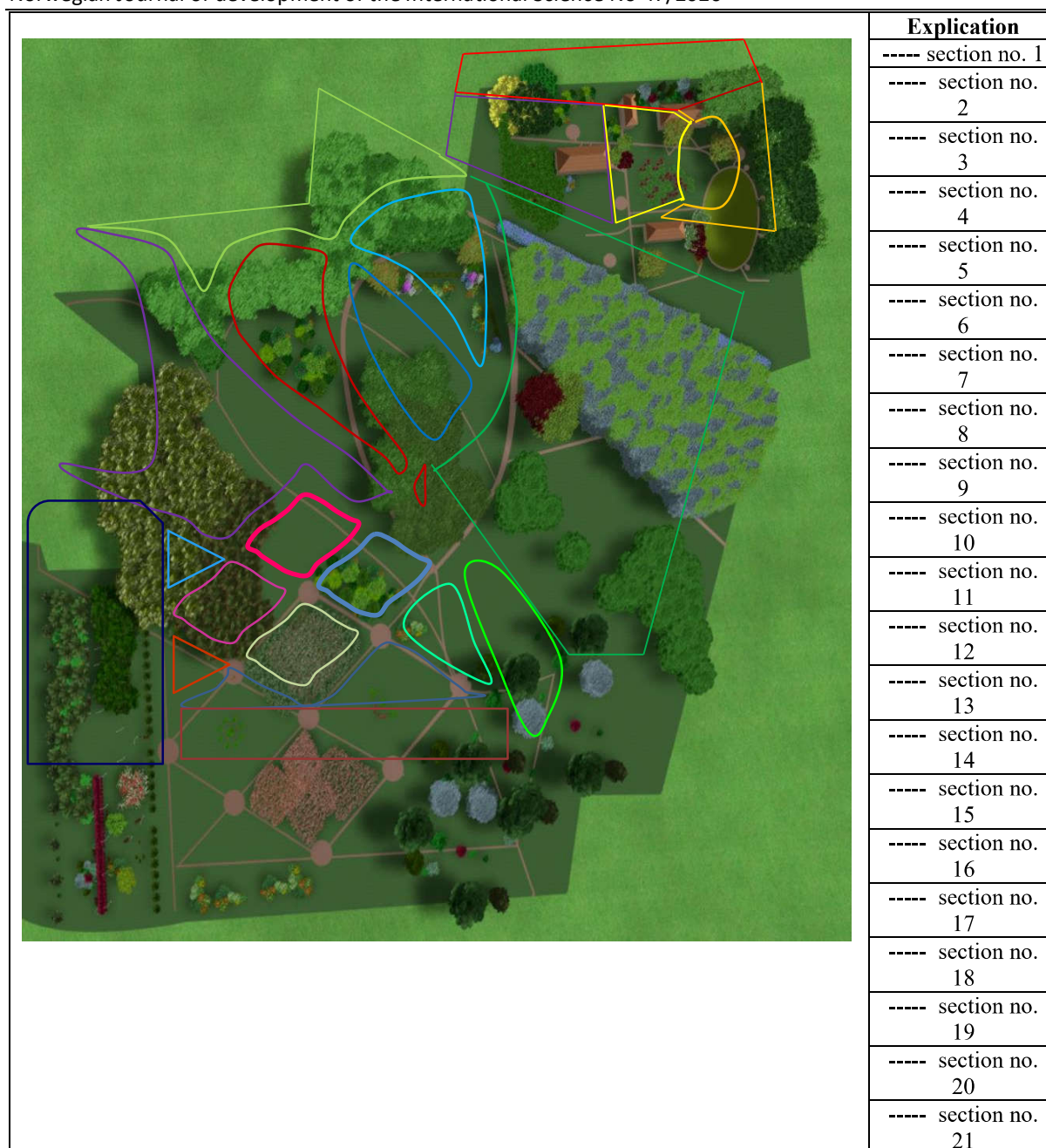


Fig. 1. General vegetation layout map of the «Ladyzhyn grove» dendrological park of local significance

The species composition of the regional assortment of the introduced woody-shrub plants was determined according to the data on the studied plants tolerance against the following environmental factors [5]:

a) aggregate factors of the winter period. Directly acting factor is negative temperature, the effect of which depends not only on the absolute value, but also on the duration of its exposure, as well as its dynamics during the winter. Indirectly acting factors (which can modify the action of negative temperature) are mesorelief, wind, humidity and soil, the presence or absence of snow cover, weather conditions of the period preceding the onset of negative temperatures – the period of hardening;

b) a number of factors of the summer period. Directly acting factors are: amount of precipitation, high temperatures, level of insolation. Indirectly

acting factors can be peculiarities of mesorelief, wind pattern, specific features of soils (first of all moisture retaining-capacity);

c) edaphic factor. Directly acting factors are: soil fertility, its PH reaction and salinity level. The soils of the area under study – blacksoils – are favorable for the growth of the most of exotic trees, except calciophobes;

d) diseases and pests of woody plants. The growing intensity of biotic factors in urban areas, especially the damage of plants by pests and diseases, is an inevitable process due to the very essence of plant culture, as well as the biology of pests and diseases. In addition, this is facilitated by the accompanying introduction of unintentional transfer of the latter, as well as increasing the diversity of their feed base through introduction of new plant species, which can provoke the evolution of the already existing pests and diseases.

Species composition of the less-common tree-shrub plants of the «Ladyzhyn grove» dendrological park

| № | Family | Species | Scientific name | Quantity, pcs. |
|----|---------------|----------------------------------|--|----------------|
| 1 | 2 | 3 | 4 | 5 |
| 1 | Ulmaceae | Дзельква японська Elm zelkova | <i>Zelkova serrata</i> (Thunb.) Makino | 3 |
| 2 | Rosaceae | Cut-leaf stephandra | <i>Stephanandra incisa</i> (Thunb.) Zabel | 9 |
| 3 | Sapindaceae | Goldenrain tree | <i>Koelreuteria bipinnata</i> Franch. | 7 |
| 4 | Paulownia | Paullinia | <i>Paulownia tomentosa</i> (Thunb.) Steud | 5 |
| 5 | Bignoniaceae | Catalpa | <i>Catalpa speciosa</i> Warder. | 3 |
| 6 | Magnoliaceae | Magnolia | <i>Magnolia soulangeana</i> Soul. | 8 |
| 7 | Anacardiaceae | Sumach | <i>Rhus typhina</i> L. | 24 |
| 8 | Bignoniaceae | Catalpa | <i>Catalpa bignonioides</i> | 38 |
| 9 | Nyssaceae | Tupelo | <i>Nyssa sylvatica</i> Marsh. | 3 |
| 10 | Cupressaceae | Sawara cypress | <i>Chamaecyparis pisifera</i> (Siebold & Zucc.) Endl. | 2 |
| 11 | Papilionaceae | European redbud | <i>Cercis siliquastrum</i> L. | 5 |
| 12 | Rosaceae | “Evereste” apple tree | <i>Malus «Evereste»</i> | 2 |
| 13 | Papilionaceae | Nickar tree | <i>Gymnocladus dioicus</i> (L.) K.Koch | 4 |
| 14 | Magnoliaceae | Magnolia | <i>Magnolia «George Henry Kern»</i> | 1 |
| 15 | Magnoliaceae | Tulip tree | <i>Liriodendron tulipifera</i> L. | 10 |
| 16 | Magnoliaceae | Magnolia | <i>Magnolia kobus</i> DC. | 1 |
| 17 | Altingiaceae | Liquidambar | <i>Liquidambar styraciflua</i> L. | 5 |
| 18 | Rosaceae | Toringo apple | <i>Malus sieboldii</i> | 1 |
| 19 | Ebony | Lotus tree | <i>Diospyros virginiana</i> L. | 1 |
| 20 | Rosaceae | “Raika” apple tree | <i>Malus domestica «Rajka»</i> | 20 |
| 21 | Magnoliaceae | Magnolia | <i>Magnolia acuminata</i> L. | 17 |
| 22 | Ginkgoaceae | Maidenhair tree | <i>Ginkgo biloba</i> L. | 4 |
| 23 | - | Coffee tree | <i>Coffea liberica</i> (W. Bull ex Hiern) | 3 |
| 24 | Betulaceae | River birch | <i>Betula nigra</i> L. | 2 |
| 25 | Pinaceae | Douglas-fir | <i>Pseudotsuga menziesii</i> (Mirb.) Franco | 4 |

It is known that in the region the tree species passes from the category of highly resistant to diseases and pests to the category of unstable in the process of wide cultivation on average for 20-25 years. The complex of endo- and exogenous abiotic and biotic factors hinder the propagation of tree exotics in culture (for example, the formation of mature seeds).

Depending on the life form, the requirements for ecological and biological properties and economic qualities of plants differ significantly. For trees, a prerequisite for inclusion into the collection is their high resistance to climatic and specific environmental factors, as well as high decorative longevity. In the regional practice of green building forest-type trees of the first size, which form the basis of the first storey of parks, gardens and squares are especially in demand. Shrubs are more diverse in their ecological and biological properties than trees and demonstrate high adaptive potential and regenerative abilities after introduction.

In general, in the life forms rank, the acclimatization potential increases from forest-type trees to geoxyl shrubs.

While studying natural processes through constant monitoring of their changes at various species of trees and shrubs and their compositions, created in the “Ladyzhyn grove” dendrological park, we made value judgments about the viability of woody and shrubby plants and prospects for their introduction based on our visual observations (Table. 2).

With respect to the Sanitary Rules for the forests of Ukraine [8], we have established that damage of trees and their decorativeness deterioration is the result of abiotic, biotic and anthropogenic factors effect. Dieback of individual trees within the dendrological park occurred due to the general weakening of trees under the influence of climatic factors. Among the primary causes of degradation and drying out of trees is global

warming, which leads to changes in forest and ecological conditions and, consequently, to changes in the composition and development of vegetation.

Table 2

Analysis of viability and prospects for less-common species and forms introduction in the «Ladyzhyn grove» aboretum

| Genus, species | Lignification | Winter yardness | Maintenance of the growth form | Shoot-forming capacity | Приріст у висоту | Генеративний розвиток | Possible ways of reproduction in culture | Total of viability indicators | Use perspectiveness group |
|---|---------------|-----------------|--------------------------------|------------------------|------------------|-----------------------|--|-------------------------------|---------------------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| <i>Zelkova serrata</i> (Thunb.) Makino | 20 | 20 | 10 | 3 | 5 | 25 | 7 | 90 | II |
| <i>Stephanandra incisa</i> (Thunb.) Zabel | 20 | 25 | 10 | 5 | 2 | 15 | 3 | 80 | II |
| <i>Koelreuteria bipinnata</i> Franch. | 20 | 20 | 10 | 3 | 5 | 15 | 3 | 76 | II |
| <i>Paulownia tomentosa</i> (Thunb.) Steud | 15 | 15 | 5 | 5 | 5 | 15 | 7 | 67 | III |
| <i>Catalpa speciosa</i> Warder. | 20 | 25 | 10 | 3 | 5 | 25 | 7 | 95 | I |
| <i>Magnolia soulangeana</i> Soul. | 20 | 20 | 10 | 3 | 5 | 20 | 5 | 83 | II |
| <i>Rhus typhina</i> L. | 20 | 25 | 10 | 5 | 5 | 20 | 5 | 90 | II |
| <i>Catalpa bignonioides</i> | 15 | 15 | 5 | 5 | 5 | 25 | 7 | 77 | II |
| <i>Nyssa sylvatica</i> Marsh. | 20 | 25 | 10 | 5 | 5 | 25 | 7 | 97 | I |
| <i>Chamaecyparis pisifera</i> (Siebold & Zucc.) Endl. | 20 | 25 | 10 | 3 | 2 | 25 | 3 | 88 | II |
| <i>Cercis siliquastrum</i> L. | 15 | 15 | 5 | 3 | 5 | 20 | 3 | 66 | III |
| <i>Malus</i> «Evereste» | 15 | 25 | 10 | 5 | 5 | 15 | 3 | 78 | II |
| <i>Gymnocladus dioicus</i> (L.) K.Koch | 20 | 25 | 10 | 5 | 5 | 20 | 7 | 92 | I |
| <i>Magnolia</i> «George Henry Kern» | 20 | 15 | 5 | 5 | 5 | 20 | 3 | 73 | III |
| <i>Liriodendron tulipifera</i> L. | 20 | 20 | 10 | 5 | 5 | 25 | 7 | 92 | I |
| <i>Magnolia kobus</i> DC. | 20 | 25 | 10 | 5 | 5 | 25 | 7 | 97 | I |
| <i>Liquidambar styraciflua</i> L. | 20 | 20 | 10 | 5 | 5 | 25 | 7 | 92 | I |
| <i>Malus sieboldii</i> | 20 | 25 | 10 | 3 | 5 | 20 | 7 | 90 | I |
| <i>Diospyros virginiana</i> L. | 20 | 25 | 10 | 5 | 2 | 20 | 7 | 89 | II |
| <i>Malus domestica</i> «Rajka» | 20 | 25 | 10 | 5 | 5 | 20 | 3 | 88 | II |
| <i>Magnolia acuminata</i> L. | 15 | 15 | 5 | 3 | 5 | 15 | 3 | 61 | III |
| <i>Ginkgo biloba</i> L. | 20 | 25 | 10 | 5 | 5 | 20 | 7 | 92 | I |
| <i>Coffea liberica</i> (W. Bull ex Hiern) | 20 | 20 | 5 | 3 | 5 | 15 | 3 | 71 | III |
| <i>Betula nigra</i> L. | 20 | 25 | 10 | 5 | 5 | 25 | 10 | 100 | I |
| <i>Pseudotsuga menziesii</i> (Mirb.) Franco | 20 | 25 | 10 | 5 | 5 | 25 | 7 | 97 | I |

Thus, according to the Lapin P.I., Sidneva C.V. method, of all species of the dendrological park under investigation 10 species of plants are quite promising (*Catalpa speciosa* Warder., *Nyssa sylvatica* Marsh, *Gymnocladus dioicus* (L.) K. Koch, *Liriodendron tulipifera* L., *Magnolia kobus* DC., *Liquidambar styraciflua* L., *Malus sieboldii*, *Pseudotsuga menziesii* (Mirb.) Franco, *Ginkgo biloba* L., *Betula nigra* L.); promising – 10 species (*Zelkova serrata* (Thunb.) Makino, *Stephanandra incisa* (Thunb.) Zabel, *Koelreuteria bipinnata* Franch., *Magnolia soulangeana* Soul, *Rhus typhina* L., *Catalpa bignonioides*, *Chamaecyparis*

pisifera (Siebold & Zuccus) Endl., *Malus* «Evereste», *Malus domestica* «Rajka», *Diospyros virginiana* L.); less promising – 5 species (*Paulownia tomentosa* (Thunb.) Steud., *Cercis siliquastrum* L., *Magnolia* «George Henry Kern», *Coffea liberica* (W. Bull ex Hiern), *Magnolia acuminata* L.). The low adaptive rate of the latter 5 species can be explained by the temperature disparity in the studied area. In the process of inventory at Paullinia, European redbud, *Magnolia*, *Coffee tree* the traces of frost cracks of annual shoots were found. Diseases and pests that have negatively affected the

growth and development of plants and their decorativeness in general were also disclosed in such species as Paullinia and Magnolia.

Global warming-related changes in temperature, atmospheric humidity, hydrological regime, sharp contrasting changes in soil surface moisture are especially dangerous for the tree species with its surface root system, which are quite demanding to the soil moisture.

Secondary factors that intensify the drying-out of the already weakened trees include the intensive development of phytodiseases and the spread of phytophagous insects, delayed or insufficient care measures as well as the impact of local factors, such as windfalls, snowbreaks and other natural phenomena.

Conclusions. Thus, in our opinion, in conditions of the Ladyzhyn town, the dendrological park of local significance “Ladyzhyn grove” can be considered as a key area for the designed ecological network. In order to ensure the effective functioning of the arboretum as a structural component of the ecological network, it is advisable to implement the following measures:

1. To keep clearly defined boundaries and actual perimeter of the dendrological park.
2. To preserve and improve the phytocenotic and zoological structure of the arboretum plantations.
3. To regulate the number of vacationers and prevent the process of recreational digression within the arboretum.
4. To take care of and replenish the assortment of the introduced less-common wood-shrub plants of the arboretum.
5. To carry out ecological and educational activities among the visitors to the park and the local population in order to form a responsible attitude to the biodiversity of the arboretum.

REFERENCES:

1. Kokhno N. A., Kurdiuk A. M. (1994). *Teoretycheskye osnovy y opyt yntroduktsyy drevesnykh rastenyi v Ukrayne* [Theoretical foundations and experience of the introduction of woody plants in Ukraine]. K.: Naukova dumka, 186 s. [in Russian].
2. Lapyn P. Y., Sydneva S. V. (1973). *Otsenka perspektyvnosti yntroduktsyy drevesnykh rastenyi po dannym vyzualnykh nabliudenyi* [Evaluation of the prospects for the introduction of woody plants

according to visual observations]. M.: Yzd. Hl. bot. sada AN SSSR, S. 7-67. [in Russian].

3. Kalinichenko O. A. (2003) *Dekoratyvna dendrologiya: navchalniy posibnik* [Decorative dendrology: a textbook]. K.: Vischa shkola. 199 s. [in Ukrainian].

4. Kohno M. A., Kuznetsova S. I. (2007). *Istoriya yntroduktsiyi derevnih roslin v Ukrayini (korotkiy naris)* [History of the introduction of woody plants in Ukraine (short sketch)]. K.: Fitosotsiotsentr. 67 s. [in Ukrainian].

5. Lipa A. L. (2006). *Yntroduktsiya ta aklimatizatsiya derevnih roslin na Ukrayini* [Introduction and acclimatization of woody plants in Ukraine]. K.: Vischa shkola. 126 s. [in Ukrainian].

6. Kucheryaviy V.P. (2005). *Ozelenennya naselenih mist* [Greening of settlements]. Lviv: Svit. 456 s. [in Ukrainian].

7. Rubtsov L.I. (1964). *Proektirovanie sadov i parkov* [Designing gardens and parks]. M.: Izd-vo lit. po stroitelstvu. 234 s. [in Russian].

8. *Postanova Kabinetu Ministriv Ukrayini vid 26.10.2016 r. № 756 «Sanitarni Pravila v lisah Ukrayini»* [Resolution of the Cabinet of Ministers of Ukraine of 26.10.2016 No. 756 «Sanitary Rules in the Forests of Ukraine»]. [in Ukrainian].

9. Popovich S.Yu., Korinko O.M., Klimenko Yu.O. (2011). *Zapovidne parkoznavstvo: Navchalniy posibnik* [Conservation park studies: a textbook], Ternopil: Navchalna kniga – Bogdan. 320 s. [in Ukrainian].

10. Haponenko M.B. (2010). *Yntroduktsiia roslin yak metod zberezhenia biolohichnoho riznomanittia v botanichnykh sadakh ta dendroparkakh* [Plant introduction as a method of biodiversity conservation in botanical gardens and arboretums]. *Yntroduktsiia roslin – Introduction of plants*, S 34-38.

11. Prokopchuk V. M., Muzychuk H.M. (2005). *Svitovi asortyment kul'tyvariv kvitnykovo-dekoratyvnykh roslin rodyny rannykovykh (Scrophulariaceae Juss.) ta perspektyvy yikh yntroduktsii v Ukrainu* [World assortment of cultivators of flowering and ornamental plants of the early-born (Scrophulariaceae Juss.) Family and prospects for their introduction into Ukraine]. *Mizhnarodnyi naukovyi zhurnal «Yntroduktsiia roslin» – International Journal of Plant Introduction*. K., № 1. S. 46-52.