

Influence of changed ecological conditions on occurrence of London plane (*Platanus × hispanica* Münchh.) anthracnose

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Abstract

IVANOVÁ, H., BERNADOVIČOVÁ, S., PASTIRČÁKOVÁ, K. 2007. Influence of changed ecological conditions on occurrence of London plane (*Platanus × hispanica* Münchh.) anthracnose. *Folia oecol.*, 34: 1–8.

During 2004–2007, reappearances of anthracnose on *Platanus × hispanica* caused by the microscopical fungus *Apiognomonium veneta* were recorded. Causal agent of the disease was isolated from symptomatic leaves and twigs, with characteristic spots and lesions, sampled from affected host trees growing in urban environment at the selected locality (Nitra). Subsequent identification and morphological description of fungal isolates was made by microscopical differentiation, according to the fungi identification key. Our study has confirmed interannual changes in the disease severity and influence of temperature in period decisive for occurrence and progress of the disease. Cool springs are more promoting severe plane anthracnose outbreaks. Repeated annual removal of twigs and leaves results in weakening of plane trees.

Key words

anthracnose, *Apiognomonium veneta*, *Discula platani*, ecological conditions, *Platanus × hispanica*, urban environment

Horticultural evaluation of woody plants in the National Cemetery Martin, Slovakia

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Abstract

JUHÁSOVÁ, G., ADAMČIKOVÁ, K., KOBZA, M., HRUBÍK, F., SERBINOVÁ, K., HANZEL, E., 2007. Horticultural evaluation of woody plants in the National Cemetery Martin, Slovakia. *Folia oecol.*, 34: 9–15.

In this article we present the results of horticultural evaluation of woody plants in the National Cemetery in Martin. There have been evaluated 486 woody plants, representing 43 taxons from 25 species. The obtained data reveal that 265 woody plants are of a very low horticultural value, corresponding to the degrees 1 and 2; 192 of them are acceptable (degree 3), and 29 are of a high value (degree 5). The Pearson's correlation coefficient (r) was used for expressing the relation between the horticultural value and size of the woody plants evaluated.

Key words

horticultural evaluation, trees, shrubs, cemetery

Measurements of proton load (H^+) in natural environment of the West Carpathians Mountains (passive sampling method)

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Abstract

KELLEROVÁ, D. 2007. Measurements of proton load (H^+) in natural environment of the West Carpathians Mountains (passive sampling method). *Folia oecol.*, 34: 16–23.

We studied air pollution in selected forest (beech, spruce) ecosystems in Slovakia, the West Carpathians Mts. To monitor forest exposure to air pollutants, we used the method of passive samplers. The comparison between pairs of open plots and forest stands revealed that the load was in general higher on the corresponding open plot. The only exception was the beech experimental site whose former open plot has already been restocked by natural regeneration, and the difference between the load on the regenerated plot and the original stand was not remarkable. The results of the proton load pointed out the dependence on altitude. In comparison with other regions in Slovakia and some other in central Europe, the air pollution with airborne pollutants at the Beech Ecological Experimental Station Kremnické vrchy Mts (470–510 m asl) can be assessed as moderate ($9.3 \text{ mmol } H^+ \text{ day}^{-1} \text{ m}^{-2}$). The values monitored in beech stands of the Žiarska kotlina basin (470 m asl) in 1992 were 1.3 times higher. The Biosphere Reserve Poľana Mts (1,370–1,380 m asl), with dominant spruce, had pollution levels four times higher than the BEES. In the National Park Nízke Tatry Mts (1,440 m asl), was the mean annual value 3.5 higher compared to the corresponding value at the BEES Kremnické vrchy Mts. Assessment of soil resistance against human-induced acidification revealed that the region of the Kremnické vrchy Mts was the most resistant in this case, too. As for the contamination, the most loaded ones are stands at altitudes above 600–700 m asl. On the other hand, the soil acidity in these areas is not extreme, which manifest a strong buffering and regeneration capacity of the local soils. The method of passive samplers is a simple method for mapping pollutants effects in natural environment of forest ecosystems.

Key words

air pollution, hydrogen ion, passive sampler, forest ecosystem, the West Carpathians Mts

Extensive roof garden as a thermal insulator

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Abstract

KRAJČOVIČOVÁ, D. ŠPROCHOVÁ, K. 2007. Extensive roof garden as a thermal insulator. *Folia oecol.*, 34: 24–29.

Extensive green roofs are established with thin layers of substrate exerting only small load to the roof. The construction of such a roof is relatively simple, low cost demanding, and, on the other hand, it is able to improve not only the ecological value of the concerned building but also the overall value of its surroundings. One of the requirements an extensive green roof is able to comply with is thermal insulation of the roof. The aim of our research was to find the extent of energy savings in case of a model green roof in climatic conditions of the Nitra town. The roof was built with standard materials with heat transmission coefficients refereed by the manufacturer. At the same time we evaluated, using the TEVLAKO software (software for heating systems and thermal protection of buildings), energy savings and losses corresponding to reduced thickness of thermo-insulating materials used for construction of the studied model extensive green roof. We obtained the following results:

1. An extensive green roof can represent lower costs thanks to reduction of the necessary thermo-insulation layer.
2. In summer, an extensive green roof can represent savings in energy necessary for cooling air in rooms situated immediately under the roof, because green roofs reduce the penetration of heat from solar radiation and can lower the inside temperature under the roof by 5–6 °C.

Key words

extensive roof garden, green roof, roof insulation value, reduction in heating energy costs, reduction in summer cooling needs, reduction in thermo-insulating materials

Caterpillars of the crown fauna in stands of substitute tree species

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Abstract

KULA, E. 2007. Caterpillars of the crown fauna in stands of substitute tree species. *Folia oecol.*, 34: 30–41.

We studied the crown fauna of caterpillars in the air-polluted area of the Krušné hory Mts, in tree stands consisting of substitute tree species *Betula pendula* Roth, *Sorbus aucuparia* L., *Alnus alnobetula* (Ehrh.), *Picea pungens* Englm., *Pinus sylvestris* L., *Larix decidua* Mill., *Acer campestre* L., *Pinus sylvestris* L., *Fagus sylvatica* L., *Quercus robur* L. and *Q. rubra* L. We used the method of shaking off the crown fauna of caterpillars. In the course of two years, larvae of 137 Lepidoptera species were registered, namely 123 species on broadleaved trees and 27 on conifers. Birch (63 species), alder (54) and mountain ash (38) showed the richest crown fauna. The proportion of caterpillars in the crown of beech (24), larch (18) and oak (25) was, however, poorer in species. *Paraswammerdamia albicapitella* (Scharf.) was found only on mountain ash, *Aleimma loeflingianum* (L.) on red oak and *Ypsolopha ustella* (Cl.) on sessile oak. The occurrence of caterpillars on *Picea pungens* is surprising because it represents a very unattractive species for phytophages and information is missing on its fauna from the area of the CR. Soerensen's index of faunistic similarity was highest between birch and alder (51.3%) and the same level of similarity was noted between birch and mountain ash (31.7%) and beech (32.2%) and oak (26%).

Keywords

Lepidoptera, caterpillars, birch, alder, mountain ash, larch, pine, Norway spruce, blue spruce, the Krušné hory Mts, air-polluted area

Changes in alpine meadow epigeal fauna in the Západné Tatry Mts induced by nitrogen and phosphorus additions to the soil and analysed on example of beetles (Coleoptera) assemblages

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Abstract

MAJZLAN, O., GAJDOŠ, P. 2007. Changes in alpine meadow epigeal fauna in the Západné Tatry Mts induced by nitrogen and phosphorus additions to the soil, and analysed on example of beetles (Coleoptera) assemblages. *Folia oecol.*, 34: 42–51.

Changes in structure of an epigaeon were studied in alpine meadows of the Tatry Mts influenced by nitrogen and phosphorus additions. Five sites were compared according to their epigeal beetle fauna. In total we recorded 65 species, including dominant *Carabus sylvestris*, *Otiorhynchus arcticus*, *Calathus metallicus* and *Aphodius abdominalis*. Communities in the study sites treated with the highest nitrogen amounts (site N15) and with phosphorus (P) reflected significant changes in species composition and abundance in comparison with the background (control) site (C).

Key words

Coleoptera, ecology, nitrogen input, phosphorus input, alpine meadows

Pribeta grove (Pribeta-Chapel) – a locality with a highly diversified mixture of Slovak original oaks

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Abstract

POŽGAJ, J., MERCEL, F., ORAVCOVÁ, E., POŽGAJ, R., SZABOVÁ, A., POŽGAJOVÁ, M. 2007. Pribeta grove (Pribeta-Chapel) – a locality with a highly diversified mixture of Slovak original oaks. *Folia oecol.*, 34: 52–60.

We studied the unique oak grove in the locality Pribeta Grove (Pribeta-Calvary, or Pribeta-Chapel), consisting of a number of Middle European oak species. The trees have a high variability, with the basic section *Dascia* Ky. and considerable impact of the section *Roburoides* Schwz. The oldest exemplars are 500 years in age. Similar mixtures of oak trees in Slovakia are very rare, therefore the importance of the locality is indisputable and the call for protection is well reasoned.

Keywords

Quercus, taxa, Pribeta-Chapel locality, Slovak territory

Selected chemical properties of soil in the Nature Reserve Žitavský wetland

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Abstract

SZOMBATHOVÁ, N., NOSKOVIČ, J., BABOŠOVÁ, J. 2007. Selected chemical properties of soil in the Nature Reserve Žitavský wetland. *Folia oecol.*, 34: 61–65.

We described and compared selected chemical properties of soils near Nature Reserve Žitavský wetland (Mollic Fluvisols and Eutric Fluvisols) and soil from artificial water reservoir Žitavský wetland (Histi-Umbic Gleysols). On the base of results of sorption properties, soil reaction and carbonates content and also character the surrounding relief and position of Žitavský wetland we can conclude, that alluvial soil forming substrate of Mollic Fluvisols was partially layered by carbonate loess eroded from near gentle slope. As in Mollic Fluvisols and Eutric Fluvisols profile the total organic carbon (C_T) content decreased gradually (from 19.10 g kg⁻¹ to 4.11 g kg⁻¹; and from 17.05 g kg⁻¹ to 7.26 g kg⁻¹ respectively), the dynamics of C_T content in Histi-Umbic Gleysols profile was different. In Ao horizon of Histi-Umbic Gleysols was found very high C_T content (72.54 g kg⁻¹), which gradually decreased till depth of 0.6 m (Gr horizon), where was reached second maximum of C_T content. Probably in this depth begins humus horizon of buried original Mollic Fluvisols. This assumption was confirmed by humus quality, which sharply increased just in Gr horizon (humic to fulvic acids ratio increased from 0.86 to 2.15, and colour quotient of humus substances declined from 6.26 to 4.05). Other chemical properties of Histi-Umbic Gleysols were also changed in Gr horizon.

Key words

wetland, soil, pH, sorption, organic carbon

Results of ecological research on European chestnut (*Castanea sativa* Mill.) in the Castanetarium Horné Lefantovce

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Abstract

TOKÁR, F. 2007. Results of ecological research on European chestnut (*Castanea sativa* Mill.) in the Castanetarium Horné Lefantovce. *Folia oecol.*, 34: 66–72.

The Castanetarium Horné Lefantovce was established in 1965–1970 on an area of 14.38 hectares of a former agricultural land. It is situated in a uniform ecological environment, providing suitable conditions for a thorough ecological-production research (evaluation of growth and production, phytotechnology, health condition, morphological and genetic stability) in different stand types (pure and mixed stands) and 86 seed progenies from 12 Slovak localities. Today it represents a valuable source of gene pool of the European chestnut. In this contribution we present ecological characteristics of the Castanetarium and recent scientific findings obtained when studying the subject.

Key words

European chestnut, Castanetarium Horné Lefantovce, production, thinning, seed progenies