

**J. Supuka, P. Vreštiak: Woody plants and greenery for the environment of settlements and landscape**

The scientific-research base of the Arboretum Mlyňany takes an important part in investigation and solving of the topical problems of woody plant and greenery in the urbanized and landscape environment. From among a wide range of results the most valuable are the following: ecoproduction of selected species of indigenous and exotic woody plants, dendrogeography of landscape wholes before the man's intervention into them, dendrological and architectural evaluation of historical parks in Slovakia from the view of reconstruction, zoning of exotic woody plants and their applicability in greenery setting to settlement and landscape, principles for park forest creation, functional green spaces in industrial agglomerations and in surrounds of nuclear plants, greenery normatives and estimation of trees in settlements, diseases and pests of woody plants. Experimental works are directed towards: phytocidic efficiency of woody plants, share of woody plants and green spaces in the air detoxication, in noise silencing, climate melioration, development and creation of leaf biomass from the point of view of their effects on the air quality, resistance of woody plants to salts, woody plants and urban soils in towns.

The future period will be aimed at the study of actual problems of woody plants, and greenery in general, in the urbanized environment.

**P. Hrubík, G. Juhásová: Protection of woody plants in urban greenery and dendrological features of Slovakia**

Following from our many-years lasting investigations we may say that the harmful entomofauna and mycoflora of the urban greenery woody species are very rich and diverse. Entomofauna comprises 287 species and mycoflora 253 species on more than 350 woody plant taxa. Parasites penetrate here together with plant material from nurseries, surrounding forests, orchards, gardens, and farmland areas. The most significant pests of urban greenery are representatives of the Apidae family containing 23 species, Curculionidae family containing 14 species, Cynipidae family containing 22 species. The most numerous group is formed by the representatives of the Lepidoptera family with 76 species. The Diptera family comprises 54 species and they belong to the most infested pests of urban greenery in Slovakia.

Microscopic fungi parasite on roots (the Phytophthora genus), on stems and branches (the Botryodiplodia, Phoma, Phomopsis, Coniothyrium, Discula, Valsa, Botrytis, Verticillium, Puccinia, Fusarium, Heterosporium, Cryptodiaporthe, Diplodia, Thyronectria, Cryphonectria, Gymnosporangium, Cronertium, Pesotum, Botryosphaeria, Cucurbitaria, Melanconis, Ceratocystis genera). They occur most often on assimilative organs (194 fungal species on 236 taxa).

In conclusion we inform on the possibili-

ties for protection against the listed harmful agents.

**F. Tokár, T. Benčať: Production of chosen introduced woody species**

The work appraised production (volume and weight) of chosen introduced woody plants such as chestnut (*Castanea sativa* MILL.), red oak (*Quercus rubra* L.) and black walnut (*Juglans nigra* L.) on permanent research areas (PRA) (Žirany, Lefantovec, Ivanka pri Nitre and Sikenica) and black locust (*Robinia pseudoacacia* L.) on 11 PRA (Ipeľský Sokolec, Svodov, Arboretum Mlyňany, Senica, Kostolište, Pribeta, Sikenička and Bajč) and Austrian pine *Pinus nigra* ARNOLD in forest stands of Malé Karpaty mountains. Results are given in the enclosed tables.

The mean annual volume increment for chestnut range from 12.4 to 17.5 m<sup>3</sup>·ha<sup>-1</sup>·year<sup>-1</sup> and in dry matter from 8.9 to 12.7 t·ha<sup>-1</sup>·year<sup>-1</sup> for black walnut from 6.43 to 7.92 m<sup>3</sup>·ha<sup>-1</sup>·year<sup>-1</sup> and from 3.42 to 4.06 t·ha<sup>-1</sup>·year<sup>-1</sup> and for red oak from 7.33 to 10.68 t·ha<sup>-1</sup>·year<sup>-1</sup> and from 5.47 to 7.35 t·ha<sup>-1</sup>·year<sup>-1</sup>. The mean annual volume increment in dry weight biomass of black locust ranged from 3.1 to 7.4 t·ha<sup>-1</sup>·year<sup>-1</sup>, that is about 4 times more than i.e. hornbeam 1.8 or oak 1.9 t·ha<sup>-1</sup>·year<sup>-1</sup>. The best results in growth of Austrian pine in volume in the Malé Karpaty mountains is in forest communities Querceto - Fagetum (QF), Fageto - Quercetum (FQ) and Fagetum pauper (Fp) with representation up to 30 %.

**T. Baranec, I. Tábor, M. Lanáková, B. Benčaťová: Investigation and protection of the gene pool of tree species - the values for today and future**

Onesided exploitation of the biological natural resources and the negative man activities bring about the gene pool carosion and due to risk of the biological species extinction's possibilities. The gene pool of the natural woody plants species are mainly stricken and so ecological relationships of the natural biotops are broken. In Slovakian flora about 50 woody plants species are endangered.

Possibility of the species conservations based on the serious scientific knowledge of the biological qualities and ecological claims the species for the next people' generations.

The important information about the populations biology, autoreproductions and ecological and cenological relations of the species are obtained by the scientific research. Which opinion's are necessary for their protection for away in the natural condition's.

Exotic woody plants and their gene pool are significant of man's environment. Important gene pool resources of these are in botanical garden - Arboretum Mlyňany.

**F. Mercel: Taxonomy, ecology and distribution of some native woody species in Slovakia**

The Department of woody plant taxonomy the Arboretum Mlyňany is concerned with problems of taxonomy, chorology and ecology of autochthonous woody plants. It has been of the greatest importance for the environment to preserve original and natural plant communities not excluding woody plants which if we want to protect and preserve for future generation we must know them. The studied species belonged to the following genera: oak - *Quercus* from the Fagaceae family, honeysuckle - *Lonicera*, elder - *Sambucus* and snowball - *Viburnum* from the Loniceraceae family, dogwood - *Cornus* from the Cornaceae family, hazel - *Corylus* from the Corylaceae family, serviceberry - *Amelanchier*, - *Cotoneaster*, Hawthorn - *Crataegus* and spirea - *Spiraea* from the Rosaceae family.

Woody plants belong to a taxonomically complicated group of plants because of their retard reproduction cycle. Taxonomically decisive marks on flowers and fruits can be compared and verified in some species in the following generation only after 10 years. It is therefore necessary to study whole populations of particular species in various ecological conditions at least in 5 years using morphological-observational, numerical, cytological, chemical and or other suitably chosen methods.

**A. Kamenická, D. Krajčová: Untraditional methods of propagation by means of ex-plant cultures.**

The work presents survey results reached in solving the problems of explant cultures of selected introduced and native woody species. Main attention is being paid to callus and organ cultures. From organ cultures regeneration possibilities of horse chestnut (*Aesculus hippocatanum* L.) from apical buds, of bower actinidia /*Actinidia arguta* Sieb. et Yucc. (Miq.) and of Yangtao actinidia (*A. Chinensis* Planch.) from axillary buds, of Spanish chestnut (*Castanea sativa* Mill.), (*Thuja occidentalis* L. cv. malonyana), Scotch pine (*Pinus sylvestris* L.), Armand pine (*P. armandii* Franch.) and larch (*Larix decidua* Mill.) from isolated embryos were studied. The influence of the donor woody plant, sampling period, and culturing medium composition on growth and development of explants was confirmed. The method of organ cultures proceeding from juvenile tissues represents a perspective possibility how to cultivate regenerats.

**M. Pejchal: Native and introduced tree species in town verdure**

In formation of verdure one of the essential conditions of its functioning and unpretentious cultivation is the proper choice of tree species. In this relation the problem of suitability and unsuitability of the use of

reign (introduced) tree species becomes conspicuous. In proposal of species composition often exist reasons for and against use of exotic species but none of them is of essential validity. It is necessary to speak about suitability or unsuitability in connection with the concrete taxon, concrete stand and required function of the tree species. We may state that especially in strongly changed stands and traditional objects of garden architecture we cannot do without introduced tree species. We have to consider this possibility after we exhausted all possibilities of the use of suitable native tree species. Investigation ought to aim especially at objective evaluation of ecological function of introduced tree species in our environment.

**M. Kozová, E. Kalivodová, A. Jurko, D. Štefunková, M. Vagačová: Ecological evaluation of Bratislava and formation of the local territorial system of ecological stability**

The aim of the study "Ecological evaluation of the territory of the capital of SR Bratislava and the proposal of the territorial systems of ecological stability", elaborated in the Institute of landscape ecology of SAS in cooperation with other organizations, was to evaluate the present hygienic situation on the territory of the town, the qualify to degree of ecological stability and to propose basic territorial conditions for realization of ecological equilibrium. The most important results of the study are maps evaluating landscape-ecological significance of biotic components in the landscape, maps for optimum utilization of agricultural soil and the proposal of local territorial system of ecological stability. The study ought to serve as a starting foundation in formation of the regulation plan of the development of Bratislava.

**International symposium to the centenary of the Arboretum Mlyňany**

The symposium to the anniversary of the Arboretum Mlyňany preparing by the Institute of dendrobiology of SAS will take place in the area of the Agroinstitute in Nitra in 22. - 24. September 1992. The discussion will be aimed at the following themes: Importance and use of tree species in settlements and landscape, Ecology, introduction and cultivation of economically significant tree species, Physiology, genetics, propagation and improvement of tree species, Taxonomy, chorology and genepool of tree species, Injury of tree species by biotic and abiotic factors and the possibility of their protection.

**L. Tomaško: Dendroexpositions of the Arboretum Mlyňany**

Evergreen (*semper vireo*) nature of the Arboretum under given climatic and soil conditions of the European continent ma-

kes the whole object extraordinarily interesting not only by its species composition and biological significance of woody plants presented but also by its appropriate architectural arrangement. The regular park part gradually passes to free landscape arrangement of collections. Newly built woody plant expositions are organized according to a phytogeographical principle. More than 2200 taxa (species, varieties, forms and cultivars) of woody plants concentrated in the Arboretum represent interesting park views and dominants which along with ponds, rock gardens, and small garden architecture form highly cultivated, biologically and aesthetically extremely valuable park landscape.

The dendrobiological park Arboretum Mlyňany as an object of acclimatization having great scientific value, at present has acquired, owing to the Institute of Dendrobiology of the SAS, a great publicity and ranks among the prominent in Europe. It is a unique park object - the result of 100 years lasting successful experiment to acclimatize, at the foot of the Slovak Carpathians, various trees and shrubs that normally grow in much warmer conditions: in southern and western Europe, Florida, California, Japan, Korea, northern, central and eastern Asia.

**V. Kara: Actual questions of some towns reserved green spaces**

It has been the aim of this article to give an outline of the health conditions of special and reserved greenery in the model settlement of Zlaté Moravce, and to point to its positive as well as negative sides and to tendencies for improvement. It follows both the data reached during field investigations and in surveying. The analyses of data reached provide partial results of area-spatial, dendrological, technical, and functional structure of the greener of the localities followed. Greenery has been evaluated from the view of species representation, consequences have been drawn and measures for its structural reconstruction on the basis of greenery intensification proposed thus reaching its adjustment to the greenery system of the settlement.

**Z. Rózová: Tree species in settlements**

In settlements verdure has an important role from the viewpoint of aesthetics, climate, hygiene, protection, amelioration as well as of ecology. In order to fulfil all the functions it must have preconditions for growth and good state of health. It is enabled by the choice of tree species according to their features on the given stands. The crown density, size and type of leaves, leaf area, phenological conditions are important in order to fulfil the given functions as long as possible and as effective as possible. In rural settlements the choice of tree species is also important because the areas in the settlement are not always large and spacious.

**M. J. Lisický: The declaration of Astrachan**

On the international conference on rational utilization of natural resources and nature protection of the lower course of the Volga and the area of northern Caspian Sea (held in October in Astrachan) the participants took up a declaration stressing the values of this ecosystem, and prepared the action plan for its conservation.

**M. Matrka, V. Rusek: Importance of toxicological and ecotoxicological evaluation of certain xenobiotics penetrating into the environment**

The presence of toxic, or ecotoxic xenobiotics is the basic criterion of the risk of ecosystem threatening. These materials may influence the quality of human environment significantly. The basic investigation of chemical materials penetrating into the environment either on purpose or by mistake (wastes) is not only exacting but also expensive. Methodology of toxicological and ecotoxicological investigations are at present (on the basis of different international agreements) on a such level that the results obtained may be accepted mutually and utilized in realization of counter measures. Chemical xenobiotics is important and it ought to be done not only by chemical or physical-chemical analysis but simultaneously also biologically. Biomonitoring on different level of toxicological testings more important because it brings concrete data of threatened working, and human environment and state of inhabitants' health.

**The past, present and future of the Arboretum Mlyňany**

The former director Gejza Steinhübel, the director Ivan Tomaško and the scientific secretary of the Institute of dendrobiology of SAS Pavol Vraštiak meditate on the history, the present and perspectives of the Arboretum Mlyňany on the occasion of its jubilee.

**B. Divinský: The Evaluation of nuclear power plant impact on settlement structures from geographical point of view**

The evaluation of the effects of nuclear power plants on either a smaller or a larger region ought to be complex.

Multidisciplinary approach is necessary and the cooperation of rather large professional teams taking into account the synergic character of this phenomenon. We are presenting some topics that ought to be - from geographical point of view - the component of the methodology of nuclear power plants' impact estimation in relation to settlement structures. An optimum solution should be result of competent estimation of controversial arguments.