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**New woody cultivars from the Botanical Garden of the
Polish Academy of Sciences**

Nowe odmiany drzew z Ogrodu Botanicznego PAN w Powsinie

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ABSTRACT: The paper describes 11 new woody cultivars selected in Botanical Garden PAS in the years 1977-2009. The new cultivars include: seedlings of *Picea pungens* found in Podzamcze Nurseries with shoots and needles similar to *Picea abies* 'Virgata'; plants selected from seedlings of *Carpinus betulus* 'Pendula' of very variable shapes, from depressed shrubby forms to tall trees with shapely pendant shoots; new yellow-leaved *Thuja occidentalis* with intensive colours and shape similar to *Thuja occidentalis* 'Malonyana' (it was selected from its seedling); a new form of delicately yellow-leaved *Ginkgo biloba*; and one cultivar of *Liriodendron tulipifera* with slightly conical, regular shape and strong growth habit.

Key words: *Carpinus betulus*, *Ginkgo biloba*, *Liriodendron tulipifera*, *Picea abies*, *Thuja occidentalis*

Botanic gardens and arboreta, as places of plant introduction and breeding, support selection of new cultivars. Some of them, e.g. US National Arboretum in Washington or Arnold Arboretum of Harvard University, conduct important research on cultivation and selection of new cultivars. In Poland Institute of Dendrology, Polish Academy of Sciences (created on the basis of Ogrody Kórnickie, "Kórnik Gardens", foundation of count Zamoyski) has obtained interesting results in this field.

Also in Botanical Garden PAS in Warszawa-Powsin, though to a lesser extent, similar works have been undertaken since 1977 in the Laboratory of Dendrology. The results include several new cultivars (Marczewski 1991, 1993, 2000a,b) and many other, yet unnamed selects grown in the Garden. At the beginning the most valuable plants in the collections were obtained from Arboretum of the University of Life Sciences in Rogów, Institute of Dendrology PAS and Czechoslovak botanic gardens and arboreta. Many living plants were purchased from Polish nurseries, where one could find numerous curiosities, e.g. interesting seedling of various species.

The present paper describes eleven, hitherto unpublished cultivars, created in the Garden or found in the Podzamcze Nurseries. Co-author of two of them is Wojciech Stolarzewicz. The Maidenhair tree with a characteristic yellowish leaf coloration was selected in Anna Depta's nursery (8-year old parental tree was presented to the

Botanical Garden PAS in 2002). Descriptions of the cultivars are given in alphabetic order.

**Seedlings of the weeping hornbeam
(*Carpinus betulus* 'Pendula')**

In the fall of 1986 I collected seeds from the old weeping hornbeam growing near the palace in Křtiny (Moravia). Parental characteristics persisted in over 50% of seedling, which also exhibited great variation. After 22 years I chose five individuals, which in my opinion are worth to be introduced into cultivation. Due to the very irregular shape (with the exception of 'Hanna Czeczottowa') it advisable to propagate them by cuttings.

While describing the trees for the purpose of the present paper I qualify them as shrubs for their bushy shape and relatively thin shoots and branches (mostly). In the future they will form multi-stemmed trees with tangled trunks and branches. Włodzimierz Seneta described such bushy tree forms using a newly created term 'shrubtrees' (*krzewodrzewy*).

***Carpinus betulus* 'Hanna Czeczottowa'**

Tall, picturesque, two-stemmed tree (Fig. 1). The trunks long, visible almost till the top of the tree. Strong growth. Branches at first grow vertically, and after a few years hang down at various distances from the trunk. The height of 22-year old tree: 7.5 m, and 5 m in diameter. The cultivar

was named to commemorate Professor Hanna Czechtowa (1888-1982), eminent paleobotanist, who published for instance several valuable papers on taxonomy of *Fagus*. For many years, after WWII she worked in The Museum of the Earth and was closely associated with the Botanic Garden PAS during its foundation.



Fig. 1. *Carpinus betulus* 'Czechtowa' – shape of tree

***Carpinus betulus* 'Zygmunt Hellwig'**

Picturesque, multi-stemmed tree. Trunks as well as the thickest branches twisted and curved with pendant new growths (Fig. 2). The strongest growth from among described herein – 5 m in height, 7.5 m in diameter. The cultivar was named to commemorate Zygmunt Hellwig (1899-1958), eminent gardener and landscaper, excellent expert on perennial plants, author of "Perennials in the park and the garden" („*Byliny w parku i ogrodzie*").



Fig. 2. *Carpinus betulus* 'Zygmunt Hellwig' – shape of tree

***Carpinus betulus* 'Włodzimierz Seneta'**

Broad shrub with creeping and slightly raised, wavy, thin shoots interweaving with one another (for over 15 years the shoots were creeping on the ground). Present size of the shrub – 1.4 m in height, 5 m in diameter. The slowest growth from among selects described herein, forms narrow, pendant



Fig. 3. *Carpinus betulus* 'Włodzimierz Seneta' – shape of tree

crown when grafted on a trunk (Fig. 3). Propagated by Dr. Marek Mędrzycki. The cultivar is named in honour of the late Dr Włodzimierz Seneta, Associate Professor of Dendrology, for many years head of the Department of Dendrology, Faculty of Horticulture and Landscape Architecture, Warsaw University of Life Sciences, one of the greatest Polish dendrologists of his times, popular lecturer and author of numerous fundamental books – among all popular "*Dendrologia*" ("Dendrology"), and three volumes of "*Drzewa i krzewy liściaste*" ("Broad-leaved trees and shrubs").

***Carpinus betulus* 'Maria Zan'**

Very broad shrub, creeping for a long time (8 m in diameter). During the last three years, though, some shoots started to grow vertically and the tip of one of them reached 3.7 m in height (2009, Fig. 4). This also was the only one to reach



Fig. 4. *Carpinus betulus* 'Maria Zan' – shape of tree

generative phase – in 2009 it produced flowers and fruit. Picturesque shape, extremely irregular. Shoots relatively thin – creeping as well as vertically growing ones. The cultivar is named in honour Dr. Maria Zan (1901-1987), botanist and passionate dendrologist, who worked in Department of Forest Botany, Warsaw University of Life Sciences (SGGW) and later in University of Warsaw Botanic Garden. In the years 1956-1979 she co-edited Dendrological Yearbook (“*Rocznik Dendrologiczny*”).

***Carpinus betulus* ‘Stefan Zan’**

Broadly growing shrub with arching shoots and branches. Five of them reached approximately 4 m in height and cascade in all directions. Side branches hang in waves or



Fig 5. *Carpinus betulus* ‘Stefan Zan’ – shape of tree



Fig. 6. *Ginkgo biloba* ‘Yellow Mist’

pendant, 8.5 m in diameter (Fig. 5). The cultivar is named in honour of Stefan Zan (1900-1983), officer of the Polish Army in times of Polish-Bolshevik War, War of 1939 and AK conspiracy under Nazi occupation, eminent dendrologist from University of Warsaw Botanic Garden.

***Ginkgo biloba* ‘Yellow Mist’**

Developing leaves yellowish, paler in the summer but still delicately yellow. The height of the 15-year old tree reached 2.8 m, and 2 m in diameter (Fig. 6). The seedling selected in Anna Depta’s nursery (eight-year old parental plant was presented in 2002 to the Botanical Garden PAS)

***Liriodendron tulipifera* ‘Majestic’** (A. Marczewski, Wojciech Stolarzewicz)

Approximately 20-year old strongly growing tree, 12 m in height. Shape conical, very regular. Dense crown. Trunk straight, visible up to the top, strong and widened at the base, where it is 43 cm in diameter, and 30.2 cm in breast height circumference (Fig. 7).



Fig. 7. *Liriodendron tulipifera* ‘Majestic’

Seedlings of *Picea pungens* found in 1977 in Podzamcze Nurseries

In 1977 in the Podzamcze Nurseries at the farm Godzisz I found in the spruce section three 6-7-year old seedlings of Colorado Spruce (*Picea pungens* Engelm.) approx. 1 m in height each. They differed from the others in having long leader, few side branches, thick needles set concentrically (bottlebrush-like), of more or less intensive bluish-silvery

coloration. They resembled young saplings of a cultivar *P. abies* (L.) H. Karst. 'Virgata' or 'Cranstonii'. As the years passed the shape of the seedlings changed, and their ornamental value allows to indicate three new cultivars. Due to some growth disturbances and mechanical damage of parental trees caused by repeated replanting events in the Arboretum of Botanical Garden PAS I described the characters of 18-year old plants propagated in 1991 and grown in the introductory nursery in Botanical Garden PAS.

Picea pungens 'Powsin 1'

Shape: Asymmetric, airy, the leader clearly visible. Side shoots have more divisions than in *P. abies* 'Virgata', initially erect at the angle of approx. 45°, after few years hanging deflected from the trunk at various angles zigzagging in a snake-like manner, sometimes their tips erect (Fig. 8). They



Fig. 8. *Picea pungens* 'Powsin 1' – shape of tree

reach over 1.5 m in length (the longest branch is 3.0 m in length). In July 2009 18-year old trees were 5.5-6.2 m in height, and 3 m in diameter. Needles thick, stiff, 27-35 mm in length (up to 40 mm in overshadowed shoots), greenish-bluish silvery in colour. Average annual growth of the leader was 32.4 cm with the maximum of 80.0 cm (in 2007).

Picea pungens 'Powsin 2'

Differs from the above-described with straight, stiff side shoots with less divisions, and slightly slower growth – 18-year old trees were 4.7-5.2 m in height (Fig. 9). Average annual growth of the leader was 27.5 cm. Needles thick, stiff, 27-35 mm in length (up to 40 mm in overshadowed shoots), more bluish-silvery than in 'Powsin 1'.



Fig 9. *Picea pungens* 'Powsin 2' – shape of tree

Picea pungens 'Powsin 3'

Shape: Almost symmetric. A tree with a straight trunk and branches up to 1 m in length (2009) hanging closely to the bole. Sporadically some branches may spread sidewise from almost cylindrical tree (Fig. 10). In July 2009 the 18-year old trees were 4.5 m in height and 1.2-1.4 m in diameter. Needles thick, stiff, 25-30 mm in length, similar in colour to former two but with dominant green hint.



Fig 10. *Picea pungens* 'Powsin 3' – shape of tree

***Thuja occidentalis* 'Golden Warsaw'** (A. Marczewski, Wojciech Stolarzewicz)

Columnar shape as in 'Malonyana'. Golden yellow coloration, especially during leaf development, more intensive than in most of yellow forms (also in winter). Height of 21-year old tree was 6 m, and diameter 1.6 m (Fig. 11). The leaves of this cultivar are resistant to sunscorching. Selected from seedlings of *Thuja occidentalis* 'Malonyana'. The seeds originated from Botanic Garden of University in Bratislava (1987).



Fig 11. *Thuja occidentalis* 'Golden Warsaw' – parental plant and 10-year old plant.

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