

The Assortment of Ornamental Tree and Shrub Nurseries in Poland

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CLIMATIC AND BOTANICAL REGIONS

There are five climatic regions in Poland: the western zone, the transitory zone, the eastern zone, the southern submontane zone, and the montane zone.

The western zone has a moderately warm climate under oceanic influence, with rather mild winters and a long growing period. On average there are less than 30 days with the temperature below 0°C. The growing period reaches over 210 days, up to 218 to 220 days on the coast. Such conditions favour the introduction of many ornamental trees and shrubs known for their sensitivity to winter frosts. There include: *Abies pinsapo*, *A. procera*, *Pinus pungens*, *Pseudolarix amabilis*, *Sciadopitys verticillata*, *Aralia elata*, *Castanea sativa*, *Paulownia tomentosa*, *Quercus imbricata*, and even such exotic plants as *Diospyros lotus* and *Sinarundinaria nitida* can be grown occasionally.

The transitory zone has harsher climate with up to 50 days seeing temperatures below 0°C. Precipitation is the lowest in Poland, often less than 500 mm of rain per year, which limits the cultivation of the more sensitive woody plants.

The eastern zone has a cold, more continental climate. There are over 50 days with temperatures below 0°C; the growing period is between 190 and 210 days, falling to only 160 days in the most extreme areas; and precipitation is 500 to 700 mm per year. Thus the only woody species which can grow there are adapted to long, cold, and windy winters, such as: *Acer negundo*, *Physocarpus opulifolius*, *Fraxinus americana*, *Aesculus hippocastanum*, *Potentilla fruticosa*, *Rhus typhina*, *Robinia pseudoacacia*, *Rosa rugosa*, *Sorbaria sorbifolia*, and *Tamarix gallica*.

The sub-Carpathian valleys and the Silesian lowlands of the submontane zone belong to the warmest region in Poland. The growing period lasts over 220 days, and precipitation is 600 to 800 mm per year. It is also the sunniest part of Poland so many valuable ornamental trees and shrubs can be introduced. Here you can find the old specimen trees of *Acer palmatum*, *Magnolia*, *Catalpa*, *Celtis*, and shrubs such as *Deutzia scabra* and *Weigela*.

The montane zone covers the lower reaches of Sudetes and Carpathian mountains. Abundant precipitation, up to 800 to 1,000 mm and the effect of montane oceanicity compensate for the lack of warmth. There are 60 to 80 days with frost and the growing period is 190 to 210 days. As a result, successful cultivation of various species, including some evergreens such as *Rhododendron*, *Pieris*, and *Chamaecyparis* is possible.

HISTORY OF ORNAMENTAL PLANT CULTIVATION IN POLAND

The great increase in interest in the introduction of new ornamental trees and shrubs began at the start of the 19th century. The dendrological collections of Tytus and Jan Dzialynski in Kornik, near Poznan, is one of the oldest and greatest in Poland. A full list of these early introductions is published in the yearbook of the

Kornik Arboretum (Arboretum Kornik vol. XVI, XVII, XVIII, XIX). At present the number of woody plant taxa amounts to about 2,500 there. There are also interesting collections of rhododendron species and cultivars at Wojslawice, with many cultivars selected by Seidel. They are very hardy and well adapted to our kind of climate. The arboretum in Glinna has many exotic trees from milder climates, for example *Sequoiadendron giganteum*, while the forest arboretum in Rogow has experimental plots of timber trees and a very wide *Acer* collection.

Based on these collections, commercial nurseries developed. One of the oldest, Podzamcze, began as early as 1800. By 1914 this nursery covered 125 ha and produced 265 species of conifers, 961 broadleaf trees and shrubs, and 225 cultivars of fruit trees. The plantings in old parks give us the evidence of this very wide assortment in the older nurseries.

World War II stopped the development of the ornamental nurseries dramatically. The years after the war were not favourable. Ornamental trees and shrubs were considered luxury products so the traditional family type nurseries were closed or severely limited. New, big municipal or state nurseries propagated easy and fast-growing plants, such as *Salix*, *Populus*, *Acer negundo*, and *Robinia pseudoacacia*, needed for quick effects in green areas within towns under reconstruction. With time, the situation changed. Nowadays there are nurseries producing many species and modern cultivars. Their range is governed by consumers, mainly amateur home gardeners and the export firms. Consequently, nurseries produce great volumes of shrubs such as *Spiraea*, *Potentilla*, *Cornus*, and *Sambucus* for export mainly to Scandinavian countries; or the variegated blue and gold conifer cultivars, very much in fashion amongst amateur gardeners in Poland.

The following cultivars were introduced to commercial nurseries in recent years:

1979. *Juniperus horizontalis* 'Andorra'; *J. × media* 'Mint Julep', 'Gold Star'; *Picea abies* 'Frohburg'; *P. glauca* 'Echiniformis'; *P. omorika* 'Nana'; *Pinus mugo* 'Hesse', 'Humpy', 'Gnom', 'Wintergold'; *P. parviflora* 'Gimborn's Ideal', 'Templehof'; *P. sylvestris* 'Globosa Viridis', 'Watereri'; *Taxus baccata* 'Semperaurea', 'Summergold'; *T. × media* 'Straight Hedge', 'Stricta'; *Thuja occidentalis* 'Danica', 'Europe Gold', 'Smaragd'.

1981. *Chamaecyparis lawsoniana* 'Rijnhof', 'Alumigold'; *C. nootkatensis* 'Tatra'; *J. davurica* 'Expansa Variegata'; *J. media* 'Blue and Gold'.

1983. *Chamaecyparis lawsoniana* 'Kelleris Gold'; *J. squamata* 'Holger'; *T. baccata* 'Schwarzgruen'; *T. × media* 'Green Mountain'.

1986. *Chamaecyparis lawsoniana* 'Nidiformis', 'Gimbury Blue' = 'Gimbornii?'; *J. chinensis* 'Iowa'; *J. communis* 'Minima', 'Vase'; *J. horizontalis* 'Jade River'; *J. × media* 'Gold Coast', 'Mathot', 'Mordigen Gold'; *P. sylvestris* 'Fastigiata'; *T. occidentalis* 'Meckii', 'Sunkist', 'Tiny Tim'; *T. orientalis* 'Aurea Nana'; *P. mugo* 'Tyller'; *P. heldreichii* 'Schmidtii'.

1987. *Juniperus chinensis* 'Blue Alps', 'Filborn', 'Maney'; *J. communis* 'Gold Cone'; *J. horizontalis* 'Blue Chip', 'Blue Forest', 'Emerald Spreader', 'Grey Pearl', 'Hughes'; *J. sabina* 'Arcadia', 'Buffalo', 'Rockery Gem'; *T. baccata* 'Melford'; *T. occidentalis* 'Stolwijk', 'Gold Pearl'.

1989. *Picea pungens* 'Montgomery', 'Spek'.

SOURCES OF NEW PLANTS

Nowadays nursery production is developing and the interest in new species and forms is also increasing. Conifers are still the most popular but flowering shrubs and groundcovers are getting more and more attention. Street trees will be in demand in the future. What are the sources of new plants for Poland?

The easiest way is to import new cultivars from abroad but not all are hardy enough for the Polish climate. However, nurserymen like to have cultivars that are easy to propagate, fast-growing, and easy to sell. This has resulted, for instance, in the appearance of many cultivars of *Chamaecyparis lawsoniana* in our nurseries and a lack of grafted, dwarf cultivars of *Tsuga* and *Pinus*.

The second source is arboreta and botanic gardens. Unfortunately these research institutions do not have the interest or resources to promote their selected forms. For example, the Forest Arboretum in Rogow has such nice plants as our native *Daphne cneorum*, *Stewartia pseudocamellia* and *S. monadelpha*, *Cornus kousa*, *Halesia monticola*, *Acer griseum*, *A. tegmentosum*, *Podocarpus nivalis* from New Zealand, and unusual forms such as *Quercus rubra* 'Aurea', *Daphne mezereum* f. *alba*, *Sambucus racemosa* 'Laciniata', and *A. cappadocicum* 'Aureum'. At Warsaw Botanic Garden there are interesting selection projects for *P. mugo*, *J. horizontalis*, and *Taxus*. The *P. mugo* seeds were collected from natural stands in the Tatra Mountains. After 20 years the seedling population shows great diversity with the height of plants varying from 20 cm to 2 m. Of course, habit and foliage are very different, too.

We can not forget the standard assortment of shrubs for mass plantings. At the Research Institute of Pomology and Floriculture in Skierniewice we have started the clonal selection of some coniferous and broadleaved shrubs. In the case of *J. communis*, we have collected 68 clones of upright form, presumably 'Hibernica' or 'Suecica' from Polish nurseries. There are important differences in the stiffness of young shoots resulting in differences in habit of the older plants.

The second object of our work is *Ligustrum vulgare*. This plant is propagated in Polish nurseries mainly from hardwood cuttings and usually the plant material is not genetically defined. From 45 clones of this species we have found one of dwarf habit but we are not ready yet to say how much this form differs from the known cultivar 'Lodense'.