

Breeding Woody Ornamentals in Sweden

Rune Bengtsson, Eva Jansson, and Kenneth Lorentzon¹

Swedish University of Agricultural Sciences, Department of Horticulture, Section for Nursery Stock Research, Box 55, Alnarp, Sweden

During the last 10 years, attempts have been made to improve the genetic quality of ornamental trees and shrubs cultivated in Swedish nurseries. Selections have been made in cultivated and wild collected plant material, as well as hybridisation work. The work has concentrated on finding hardy and healthy, narrow-crowned trees for the modern Swedish garden and low growing shrubs for parks and gardens as well as for ground covers. So far about 25 clones and 7 seed provenances have been introduced on the Swedish market and given a special quality symbol - E - which is printed on the plant labels.

INTRODUCTION

A lot of work has been carried out during the 1980s to improve the genetic quality of trees and shrubs produced in Swedish nurseries. This work has been carried out at three different locations and departments, all belonging to the Agricultural University. At Umea, lat. 64 degrees, the work has been concentrated on selection among genotypes of ornamental trees and shrubs that have been growing for several decades in parks and gardens in northern Sweden. At Uppsala, lat. 60 degrees, they have established and tested about 50 orchards for seed production of trees and shrubs. At Alnarp in southern Sweden, lat. 55 degrees, we have concentrated our work on selection of clones in cultivated and wild collected material and on hybridisation. The results presented in this paper are related to work carried out at Alnarp.

CURRENT PROJECTS

Crabapples. Many crabapple cultivars in general cultivation in Sweden have limitations compared to the optimum of the genus. Most of them are susceptible to apple scab and mildew. Some are too big for modern Swedish home gardens.

Ten years ago seed was collected from ten of the best cultivars of crabapples. The flowers were open pollinated and the pollen mixed between these ten parents. About 500 plants from each half sib family were then field planted, making a total of nearly 5,000 plants. Along with scab resistance and quality of flowering and fruiting, we have selected for compact, columnar, or weeping growth plus red coloured leaves.

Spiraea. In 1991 a project was started with the intention of finding good dwarf or compact growing spireas. The first selection has been made from an open pollinated cross with *S. japonica* 'bumalda' (30 cm by 120 cm in 30 years) as the mother with several of the new yellow *Spiraea* selections.

¹ Paper presented at Conference by Kenneth Lorentzon.

Perennials. The increasing interest in perennials has now reached the point where a demand for domestic selections and evaluations has arisen. In co-operation with wholesale producers of perennials in Sweden we have begun to evaluate new cultivars; select plants from different wild collected material; select pulmonarias from open pollinated crosses with *Pulmonaria longifolia* as the mother; and develop some good white and red cultivars of *H. orientalis*.

Conservation. Together with the Swedish branch of the World Wide Fund for Nature (WWF) we have started a project on the conservation of valuable old garden plants that are now threatened. The most vulnerable plants are the short-lived ones such as perennials and bulbous plants. Another part of the project is to restore the old and hardy *Buxus* to Swedish trade.

INTRODUCTIONS.

During the last 12 years, 25 cultivars and five seed provenances of trees and shrubs have been distributed to Swedish nurseries. Some of them will be described below:

Aronia. *Aronia melanocarpa*, black chokeberry, is a shrub with natural distribution in eastern North America. It was introduced to Swedish cultivation some ten years ago. The types in cultivation are propagated from seed and are often considered too strong growing (2 to 2.5 metres in height) for parks and private gardens. The cultivar 'Hugin' was selected from populations propagated from wild-collected seed. It is a compact shrub reaching only one metre in height and is very floriferous. The autumn colouring is good.

Sorbus. Four new rowans have been introduced to the Swedish market.

Sorbus 'Astrid'. 'Astrid' is a medium-sized to small tree with a broad crown. The leaves are partly pinnate. The fruits are big and apricot pink.

Sorbus 'Brigitta'. 'Brigitta' is a medium-sized to small tree with a pyramidal crown. The leaves are rather big with a striking bluish-green colour. The fruits are butter yellow. This cultivar is supposed to be a hybrid between *S. commixta* and *S. aucuparia* 'Xanthocarpa' and seems to be much hardier in Sweden than the yellow-fruited Lombarts hybrids.

Sorbus 'Dodong'. 'Dodong' is a strong-growing rowan with big leaves and strong autumn colours, with remarkably large, many-flowered, corymbs and pear-shaped orange-red fruits. This cultivar was selected from a population of plants propagated from seed collected on the South Korean island of Ullung-do by the Swedish dendrologist Tor Nitzelius in 1976. So far it has not been possible to identify the species.

Sorbus 'Rosmari'. 'Rosmari' is a small- to medium-sized tree with an oval crown. The leaves are greyish green and develop pink autumn colours. The fruits are dark pink and the cultivar is an improvement to the Dutch cultivar 'Kirstén Pink'.

Two new whitebeams have also been introduced.

Sorbus aria 'Gigantea'. 'Gigantea' was selected by the Dutch dendrologist and nurseryman Lombarts. It has been tested in several places in Sweden. Its most valuable characteristics are the strong growth, large silvery leaves, and the rather narrow oval crown.

Sorbus incana. This is a rather compact growing whitebeam, new to cultivation. The species was described by Hedlund in 1901 from cultivated plants. It has a narrow crown with a strong leader. The foliage is dense and dark green with a

silvery shine in spring. The mature bark is smooth and silvery. A useful tree for streets and squares where space is limited.

Salix repens. This creeping willow has a wide distribution in southern Sweden where it occurs on heathlands, mires, and shores. Until recently there have been no really low-growing types of this willow in cultivation. In this project we have collected about 150 promising types from natural sites. From them, two male clones have been given cultivar names and they are now produced in Swedish nurseries. Although several female clones proved to have nice foliage and good growth performance they had to be discarded because of their unsightly seed production. When 100 plants with interesting growth and foliage were selected from plants originating from crossings, 96 proved to be female.

The two cultivars named are 'Green Carpet', with lustrous green foliage and 'Grey Carpet', with closely hairy, more greyish leaves. They will both grow to 15 to 25 cm in height and will cover one square meter in three to four years from planting.

Symphoricarpos. The common snowberry (*S. albus* var. *laevigatus*) has been used in Swedish gardens for centuries. It is normally 1 to 1.5 m high. *Symphoricarpos* 'Arvid' was selected from plant material propagated from seed, wild-collected in North America. In 8 years a plant will grow to 1.5 metre in width and 0.4 metre in height. So far it has not been possible to identify the species. This cultivar has great potential as a ground cover plant. It sets very few berries if it is not cross-pollinated by a nearby common snowberry.

Euonymus. *Euonymus europaeus* is indigenous to southern Sweden. The selection 'Evert' is from wild-collected seeds in that area. The shrub will, in time, reach 5 metres in height and distinguish itself by having bright red fruits. Compared to older cultivars like 'Aldenhamensis' and 'Red Cascade' and a long series of wild collected plants it has proved to be superior. Plants of 'Evert' show good disease resistance.

Forsythia. *Forsythia mandshurica* is a very rare shrub in cultivation as well as in the wild. It has only been wild-collected once in Manchuria in northern China. This forsythia has a rather different habit compared to others, the branches stand up stiffly, slightly suckering. Flower buds are blackish and prominent, and leaves colour up well in the autumn in tints of orange-yellow to deep wine red. The flowers are sulphur yellow, remarkably large and it is the first of the forsythias to flower in Sweden. The flowering is not as prolific as with other hybrid forsythias, but still impressive.

Philadelphus. *Philadelphus coronarius* 'Finn' is a new selection from the common mockorange complex where scent and the delicate chartreuse colour have been combined. The flower is slightly nodding.

***Populus* 'Beloni'**. This is a hybrid between *P. wilsonii* and *P. lasiocarpa*, made in 1974 in the Botanic Garden of Gothenburg, and was selected from just five plants. It has a strong pyramidal habit. 'Beloni' is a male clone, so there will be no problems with untidy seeds. The leaves are intermediate between the parents, 15 to 25 cm by 12 to 18 cm. Grafts of this poplar tend to have incompatibility problems and they should be micropropagated instead, or late summer cuttings taken.

This hybrid had been made in 1956 in Kornik, Poland, although we were not aware of it in 1974. Six clones have been kept of this cross.

SEED PROVENANCES

Alnus. Alders are widely used as pioneer trees. The two most popular have been *A. glutinosa* and *A. incana*, which both need to be thinned after only 5 to 8 years. This thinning is a cost that could be reduced by using some of the slow-growing shrub alders. *Alnus maximowiczii* from Japan and Sakhalin and *A. sinuata* from the west coast of North America have been the two best in our tests. These slow-growing pioneer trees do not need thinning as they will eventually be overtaken by the slower-starting broadleaves and slowly be shaded out.

On their own they are still worth growing for their early and long inflorescences, their large leaves and attractive winter buds, and their large "cones." *Alnus maximowiczii* has a very strong scent, similar to that of the smaller-leaved lepidote rhododendrons.

Both could very well be used as windbreaks, where 4 to 6 m of growth is sufficient.

Prunus grayana. *Prunus grayana* is a shrubby, Japanese bird cherry with elegant, vase-shaped form. The flowers are pendant in 12- to 20-cm racemes followed by 6- to 7-mm black fruits which contrast with the light-yellow autumn colours.