Journal of Natural Science
Pai Chai University, Korea
Vol. 11, No. 1 : 137 142, 1998

Korean Native Landscape Woody Plants planted at JC Raulston Arboretum in USA

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미국 JC Raulston 식물원에 식재된 한국자생 조경수목

서 병 기
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JC Raulston Arboretum of the North Carolina State University houses 113 species of Korean native landscape woody plants. *Styrax japonicus* 'Emerald Pagoda'[formerly 'Sohuksan'] is native to Korea, China, and Japan. 'Emerald Pagoda' is a special cultivar found by Dr. J.C. Raulston during the United States National Arboretum plant collection expedition of the island of Sohuksan at the western end of the Korea in 1985. Incredible thick, glossy, large-leafed form of this beautiful white flowering tree found in Korea in 1985. It was probably the most outstanding ornamental plant to come from the expedition after his trip to Sohuksan and Chindo in the harsh perilous islands of the coast of Korea. He brought this one back in his suitcase. *Viburnum awabuki* 'Chindo' is an evergreen broadleaf shrub. It is for screening and as fire resistant trees in the southern region of Korea, because of its compact, leathery leaves. 'Chindo' was discovered on the island of Chindo by the U.S. National Arboretum plant exploration team including J.C. Raulston during its 1985 Korean trip. Cuttings were taken from this plant, and liners were produced over subsequent years. These liners are now being evaluated for hardiness and fruit production throughout the Southeast of USA.

미국 J.C. Raulston 식물원에는 한국자생 조경수목 36科 110종 3품종이 재배되고 있다. 이중 때죽나무 'Emerald Pagoda'는 1985년 미국 국립식물원 식물탐사팀과 J.C. Raulston이 소흑산도에서 채집한 우리나라 자생종으로 미국내에서 감상가치가 매우 뛰어난 것으로 평가받고 있다. J.C. Raulston은 이 때죽나무를 품종명 'Sohuksan'이라고 명명하였다가 'Emerald Pagoda'로 개칭하였는데 미국으로 수화물에 보관하여 도입했다. 또한 아왜나무를 진도에서 채집하였는데, 이것은 지금도 'Chindo'라는 품종으로 불리고 있으며 미국내 동남부 지방의 조경에 적응성이 높고 감상가치가 높아 대량번식 및 보급중에 있다.

Key words : *Styrax japonicus* 'Emerald Pagoda', *Viburnum awabuki* 'Chindo', JC Raulston Arboretum, Korean native landscape woody plants

Ⅰ. INTRODUCTION

Korean native plants, such as *Styrax japonicus* 'Emerald Pagoda'(formerly 'Sohuksan') and *Viburnum awabuki* 'Chindo' grow in the JC Raulston Arboretum of North Carolina State University. Also, Korean native plants are found on campus, at garden and in public parks

in USA. How many Korean plants are planted in North America gardens? And why are they planted there?

Dr. Raulston was a member of the United States National Arboretum plant collection expedition team who traveled to Korea in 1985. Dr. Kim Tripp, who worked at the North Carolina State University Arboretum from 1990 to 1993 reported in her book, 'The Year in Trees,' "Lots of excellent cuttings and seeds plants came back to America from that expedition, and many interesting plants have matured and are showing value for production in the trade. Over the next several years some of these plants will become available to gardeners and they are plants well worth waiting and watching for, such as *Styrax japonicus* 'Emerald Pagoda', *Viburnum awabuki* 'Chindo' and *Euscaphis japonica*." These plants were gifts from J.C. Raulston, who had a clear philosophy that was diametrically opposed to idea of rarity for rarity's sake. This study was carried out to investigate the information of Korea native landscape plants introduced and cultivated at J.C. Raulston arboretum.

II. MATERIALS AND METHODS

Korean native trees, shrubs and vines used in American landscapes were confirmed through reviewing 'Anderson Horticultural Library's Source List of Plants' (Isaacson, 1996), 'Collections field data - Plant exploration on the Southwest coast and islands of Korea' (Barry, Dudley and Raulston, 1985), 'Propagation Guide for Woody Plants in The NCSU Arboretum' (Raulston, 1996), and 'The Plant Finder' (Lord, 1995).

III. RESULTS AND DISCUSSION

The North Carolina State University Arboretum houses 113 species of Korean native plants (Table 1). Also, many Korean native woody plants tolerate seaside conditions and can be used in coastal landscaping. Coastal North Carolina is in a transition zone between the cold North and the subtropical South, and has a diverse flora. Examples of good Korean plants for coastal gardens include *Albizia julibrissin* (Silk tree, Mimosa), *Albizia coreana* (Korean silk tree), *Euscaphis japonica* (Euscaphis), *Viburnum awabuki* 'Chindo' (Sweet viburnum, Evergreen viburnum) and so on.

The followings are some Korean native plants which grow beautifully in south eastern of USA. Some are "Old friends," well known plants introduced over 100 years ago. Others are extremely new and rare, but are poised to become important new landscape plants.

Albizia julibrissin (Silk tree, Mimosa)

Mimosa is very popular throughout the southern states. It has an unusually long flowering period, and its leaflets fold up at night. For this reason in oriental region including Korea, China, and Japan they often called it, "nuptial tree" and plant it in the garden nearby the bedroom window. E.H. Wilson first introduced *Albizia julibrissin* to America from Seoul, Korea in 1918.

Albizia coreana (Korean silk tree)

The Korean silk tree only grows on Yudal Mountain in Mokpo, which rises to about 200 m altitude along the southern coast of the Korea. Its flowers are pure white. At first, the Korean silk tree also grew in the wild on Cheju island, Huksan island, and Eochung island along the southern and western coast of Korea. But today it seems to be extinct in the wild unless there is proper conservation. *Albizia coreana* hybridies in the wild with the more vigorous *A. julibrissin*, and it is being lost through "genetic dilution." This beautiful

Table 1. Korean native plants in the JC Raulston Arboretum in USA

Family name	Scientific name	Introduced year	Collected place
Oleaceae	*Abeliophyllum distichum*	1924	Central Korea
Pinaceae	*Abies koreana*	1908	Korea
Aceraceae	*Acer mono*		
Aceraceae	*Acer palmatum*	1820	Korea, China, Japan
Aceraceae	*Acer tegmentosum*	1829	Korea, Manchuria
Aceraceae	*Acer triflorum*	1923	Korea, Manchuria
Alangiaceae	*Alangium plananifolium var. macrophyllum*		
Alangiaceae	*Alangium platanifolium*		
Leguminosae	*Albizia coreana*		
Leguminosae	*Albizia julibrissin*	1745	Central China, Iran
Betulaceae	*Alnus japonica*		
Araliaceae	*Aralia elata*		
Cornaceae	*Aucuba japonica*		
Betulaceae	*Betula platyphylla var. jap*	1872	Western China
Buxaceae	*Buxus microphylla var. kore*	1860	Japan
Verbenaceae	*Callicarpa dichotoma*	1857	China, Japan
Verbenaceae	*Callicarpa japonica*		
Theaceae	*Camellia japonica*	1742	China, Japan
Betulaceae	*Carpinus coreana*		
Betulaceae	*Carpinus laxiflora*		
Ulmaceae	*Celtis sinensis*		
Lauraceae	*Cinnamomum japonicum*		
Verbenaceae	*Clerodendrum trichotomum*	1880	China, Japan
Cornaceae	*Cornus controversa*	1880	China, Japan
Cornaceae	*Cornus kousa*	1875	Korea, China, Japan
Cornaceae	*Cornus macrophylla*	1827	China, Japan
Hamamelidaceae	*Corylopsis koreana*		
Euphorbiaceae	*Daphniphyllum macropodum*		
Leguminosae	*Echinosophora koreensis*		
Elaeagnaceae	*Elaeagnus umbellata*	1830	Korea, China, Japan
Aquifoliaceae	*Euonymus alatus*	1860	Korea, China
Aquifoliaceae	*Euonymus japonicus*	1804	Japan
Staphyleaceae	*Euscaphis japonica*		
Araliaceae	*Fatsia japonica*	1838	Japan
Oleaceae	*Forsythia koreana*		
Oleaceae	*Forsythia ovata*	1917	Korea
Oleaceae	*Fraxinus sieboldiana*		
Malvaceae	*Hibiscus syriacus*	1600	China, India
Aquifoliaceae	*Ilex cornuta*	1846	Korea, China
Aquifoliaceae	*Ilex crenata*	1864	Korea, Japan
Aquifoliaceae	*Ilex macropoda*		
Aquifoliaceae	*Ilex rotunda*		
Cupressaceae	*Juniperus rigida*	1861	Korea, China, Japan
Araliaceae	*Kalopanax pictus*	1865	Korea, China, Japan
Rosaceae	*Kerria japonica*	1834	China
Sapindaceae	*Koelreuteria paniculata*	1763	Korea, China, Japan
Leguminosae	*Lespedeza bicolor*	1837	China, Japan
Oleaceae	*Ligustrum japonicum*	1845	Korea, Japan
Lauraceae	*Lindera glauca*		
Lauraceae	*Lindera obtusiloba*	1880	Korea, China, Japan
Lardizabalaceae	*Lonicera japonica*	1806	Korea, China, Japan
Leguminosae	*Maackia amurensis*	1864	Manchuria
Lauraceae	*Machilus thunbergii*		
Magnoliaceae	*Magnolia sieboldii*	1908	China
Rutaceae	*Phellodendron amurense*	1856	China, Japan
Saxifragaceae	*Philadelphus schrenkii*		
Pinaceae	*Pinus densiflora*	1854	Korea, China, Japan
Pinaceae	*Pinus koraiensis*	1861	Korea, Japan
Pinaceae	*Pinus parviflora*	1861	Japan

Table 1. Korean native plants in the JC Raulston Arboretum in USA

Family name	Scientific name	Introduced year	Collected place
Pinaceae	*Pinus thunbergii*	1855	Japan
Pittosporaceae	*Pittosporum tobira*	1804	Korea, China, Japan
Rutaceae	*Poncirus trifoliata*	1850	Korea, China
Rosaceae	*Prunus padus*		Korea, Japan
Rosaceae	*Prunus X yedoensis*	1902	Japan
Rosaceae	*Pyrus calleryana*	1908	Korea, China
Fagaceae	*Quercus acuta*	1878	Japan
Fagaceae	*Quercus acutissima*	1862	Korea, China, Japan
Fagaceae	*Quercus dentata*		
Fagaceae	*Quercus myrsinifolia*	1807	China, eastern Asia
Fagaceae	*Quercus variabilis*	1861	Korea, China, Japan
Rosaceae	*Rhaphiolepis umbellata*	1864	Korea, Japan
Rosaceae	*Rhodotypos scandens*	1866	Japan, China
Anacardiaceae	*Rhus chinensis*	1784	China, Japan
Rosaceae	*Rosa multiflora*	1868	Korea, Japan
Rosaceae	*Rosa rugosa*	1770	Korea, China, Japan
Liliaceae	*Smilax sieboldii*		
Rosaceae	*Sorbaria sorbifolia*		
Rosaceae	*Sorbus alnifolia*	1892	Korea, China, Japan
Rosaceae	*Spiraea miyabei*		
Rosaceae	*Spiraea prunifolia*	1864	Korea, China
Rosaceae	*Spiraea salicifolia*		
Lardizabalaceae	*Stauntonia hexaphylla*		
Rosaceae	*Stephanandra incisa*	1827	Korea, Japan
Theaceae	*Stewartia koreana*	1917	Korea
Styracaceae	*Styrax japonicus*	1862	China, Japan
Styracaceae	*Styrax japonicus* 'Emerald Pagoda'	1985	Korea
Styracaceae	*Styrax obassia*	1897	Japan
Oleaceae	*Syringa patula 'Miss Kim'*	1902	Korea, China
Oleaceae	*Syringa reticulata*	1876	Japan
Oleaceae	*Syringa wolfii*		
Taxaceae	*Taxus cuspidata*	1853	Korea, Japan
Cupressaceae	*Thuja orientalis*	1737	Korea, China
Taxaceae	*Torreya nucifera*		
Apocynaceae	*Trachelospermum jasminoides*		China, Japan
Pinaceae	*Tsuga sieboldii*		
Ulmaceae	*Ulmus parvifolia*	1794	Korea, Japan,
Ulmaceae	*Ulmus parvifolia coreana*		
Ericaceae	*Vaccinium bracteatum*		
Lardizabalaceae	*Viburnum awabuki*		
Lardizabalaceae	*Viburnum awabuki* 'Chindo'	1985	Korea
Lardizabalaceae	*Viburnum carlesii*	1812	Korea
Lardizabalaceae	*Viburnum dilatatum*	1845	Eastern Asia
Lardizabalaceae	*Viburnum erosum*		
Lardizabalaceae	*Viburnum sargentii*	1892	Northeastern Asia
Verbenaceae	*Vitex rotundifolia*		
Lardizabalaceae	*Weigela coreana*		
Lardizabalaceae	*Weigela florida*	1860	Japan
Lardizabalaceae	*Weigela subsessilis*		
Leguminosae	*Wisteria floribunda*	1830	Japan
Ulmaceae	*Zelkova serrata*		
Rhamnaceae	*Ziziphus jujuba*	1640	eastern Asia

tree is virtually unknown in cultivation. The U.S. National Arboretum plant exploration team collected it to establish genetically pure populations in cultivation on September 1985 and a large specimen grows at the NCSU Arboretum at the right of the Visitor's entrance. It flowers in late May in the North Carolina.

Clerodendron trichotomum (Harlequin glory-bower)

Harlequin glory-bower is native to Korea, China, and Japan. Koreans sometimes call its fruit 'brooch fruit', because its shape is similar to the beautiful brooch used on the Korean woman's traditional custom, 'Han-Bok'. And we abstract dye from it for coloring textiles. Its summer blooms are strongly fragrant, and with a soft white color mixed with a red calyx at the base of each flower. The U.S. National Arboretum plant exploration team collected it on Sobaek Mountain and Sorak Mountain in Korea on August 10 and October 5, 1985. Kim Tripp and J.C. Raulston(1995) reported in their book, 'The Year in Trees,' "*Clerodendron trichotomum* makes a good choice to include in a planting of blue conifers, where its shiny blue fruits and bold foliage add a change of interest and texture to the garden."

Euonymus alatus (Korean winged Euonymus, Burning bush)

Michael Dirr (1990) reported in his 'Manual of Woody Landscape Plants', "Burning bush is unlimited and, therefore, overused; excellent for hedging, in grouping, as a specimen plant, borders, screening, massing; plants used near water are very effective in the fall where the brilliant red foliage color is reflected off the water; still one of the finest landscape plants for American gardens." Koreans call it 'arrow tree' because its stem characteristics remind them of the feather of an arrow. In Korea it is used to accent the entrance of restaurants because its fall color is enough to attract passerby. The U.S. National Arboretum plant exploration team collected it along the southern and western coast of the Korea on September 9 and 26, 1985, and 10 new cultivars were selected from them.

Euscaphis japonica (Euscaphis)

Euscaphis is a small deciduous tree with large clusters of leathery heart-shaped fruits as if bouquets of brilliant valentines. Euscaphis was collected by the U.S. National Arboretum plant exploration team on the southern island of Chindo in Korea in October 6 and 10, 1985. Dr. Kim Tripp reported in 'The Year in Trees,' "one of the most unusual and delightful the plants introduced from Korea in 1985 is *Euscaphis japonica*, a plant heretofore so little known in the United Stated that it has no common name in English, although it is sometimes referred to by its fans as Korean sweetheart tree." The fruit are the most showy part of the plant and turn bright pink to red as they mature in the fall. Euscaphis is extremely ornamental and is hardy throughout North Carolina. The N.C. nursery industry is 2-3 years from having stock of this outstanding plant to release to the public.

Styrax japonicus 'Emerald Pagoda'[formerly 'Sohuksan'](Japanese snowbell)

Japanese snowbell is native to Korea, China, and Japan. A long time ago, Koreans used to stun fish in the stream by throwing in bruised fruits, because they have a poisonous principle, ego-saponine. Nowadays *S. japonicus* is planted in urban areas to purify polluted air because it can endure acid rain. 'Emerald Pagoda' is a special cultivar found by Dr. J.C. Raulston during the United States National Arboretum plant collection expedition of the island of Sohuksan at the western end of the Korea in 1985. It is an upright form with much larger leaves and flowers than the species or other cultivars. Incredible thick, glossy, large-leafed form of this beautiful white-flowering tree found in Korea in 1985. J.C. Raulston wrote

probably the most outstanding ornamental plant to come from the expedition after his trip to Sohuksan and Chindo in the harsh perilous islands of the coast of Korea. He brought this one back in his suitcase. According to Andersen Horticultural Library's source list of Plants and Seeds (1996) 'Emerald Pagoda' is already sold by Yucca Do Nursery, Texas.

Viburnum awabuki 'Chindo'(Sweet viburnum, Evergreen viburnum)

Viburnum awabuki is an evergreen broadleaf shrub. It is for screening and as fire resistant trees in the southern region of Korea, because of its compact, leathery leaves. 'Chindo' was discovered on the island of Chindo by the U.S. National Arboretum plant exploration team during its 1985 Korean trip. According to Dr. J.C. Raulston, the former director of NCSU Arboretum, the large, pendulous masses of bright red fruit looked like giant Christmas tree ornamental hanging from the tree. Cuttings were taken from this plant, and liners were produced over subsequent years. These liners are now being evaluated for hardiness and fruit production throughout the Southeast of USA.

Although new or underused, the plants discussed above offer a variety of interesting characteristics. Whether used as accents, screens or specimens, they are truly outstanding choices for Mid-Atlantic and Southeastern Landscapes. Also, There are lots of Korean native plants in North Carolina and many are naturalized and "seem at home" in USA. The naturalized Korean plants to southeastern region of USA are not just exotic plants any more to Americans.

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