

# Plant Evaluation Notes

## *The Evaluation and Introduction of a Unique Dwarf River Birch*

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*"Betula nigra 'Little King' (Fox Valley™ River Birch) has proven to be a promising landscape plant in trials at the Chicago Botanic Garden..."*

In 1991, Chicagoland Grows, Inc.<sup>1</sup> introduced *Betula nigra* 'Little King' (Fox Valley™ River Birch) to the nursery/landscape industry. Similar to the species in most characteristics, the unique attribute of this clonal selection is its dwarf habit. River birch commonly grow 40 to 70 feet tall and 40 to 60 feet wide (Dirr 1990), whereas the original plant of 'Little King', estimated to be 15 to 20 years old, measured 10 feet tall by 12 feet wide with a dense, compact habit (Chicagoland Grows 1991).

'Little King' is typically single-stemmed with one or more large branches arising near the ground and densely branched within. Measuring seven to eight feet tall and wide in 10 years, its growth rate is approximately one-fourth that of most River Birch<sup>2</sup>. Its small size and compact habit expand the landscape uses for River Birch, which is often reserved for large scale sites such as golf courses and parks.

*Betula nigra* is hardy in USDA hardiness zones 4 to 9 (Dirr 1990). 'Little

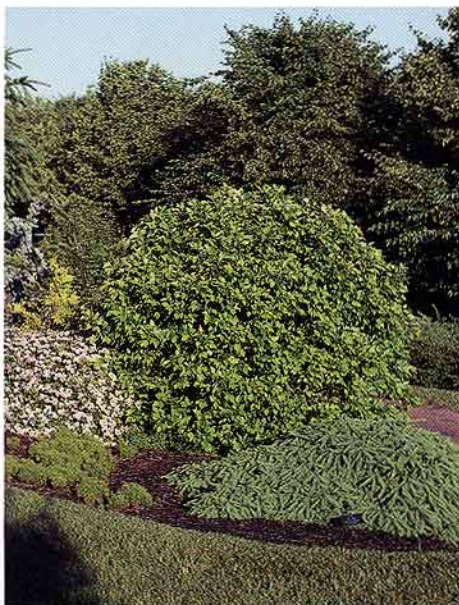
King' is winter hardy to USDA hardiness zone 4 and possibly to zone 3 with protection (Chicagoland Grows 1991). Evaluators in off-site locations have noted the plant's adaptability to a variety of environmental situations including saturated, heavy clays and extreme summer heat (Higginbotham 1991).

The plant was originally introduced to the Chicago area in the late 1970's by Jim King of King Nursery, Oswego, Illinois, and has been in cultivation since the early 1980's under the name *Betula nigra* "minor" or *B. nigra* "dwarf". Cultivar registration and trademark are pending under the names *Betula nigra* 'Little King' and Fox Valley™ River Birch, respectively.

### Performance Report 1987-1991

The evaluation of 'Little King' River Birch at the Chicago Botanic Garden (USDA hardiness zone 5b) was initiated in 1987 to confirm the cultural adaptability, aesthetic traits and landscape value of this little-known, local clone. Three distinct test sites were selected and planted with one plant each. The sites varied slightly in soil condition, exposure and slope, and were not specially amended or altered for the test program.

The first test site had a northwestern exposure, was partially shaded overhead by an ash tree and was protected on the south and east by a wood fence. Growing in partial shade produced longer inter-



*Betula nigra* 'Little King'



<sup>1</sup> Chicagoland Grows, Inc.® is a non-profit corporation established by the Chicago Botanic Garden, the Morton Arboretum and the Ornamental Growers Association of Northern Illinois.

<sup>2</sup> Plants grown in nursery fields generally have slower growth rates due to stressful conditions and reduced cultural care such as water. The growth on plants less than five years old averaged 6 to 10 inches in normal years and 4 to 6 inches in drought years. Growth rate appears to slow considerably once the plant reaches 5 to 6 feet tall (D. Brennan 1991, personal communication).

nodes and a more open habit than observed in the other test plants. The initial measurement when planted in 1987 was 49 inches tall and 57½ inches wide. In 1991 the plant measured 96 inches tall and 137 inches wide, an average growth of 12 inches per season over the four year evaluation period. No winter injury occurred during the evaluation period. Heavy aphid infestations in 1989 and 1990 resulted in severe sooty mold on leaves and stems. A horticultural oil was applied to control the aphids. The site had clay soil amended with leaf mold and manure over several years, and was well-drained but not moisture retentive. Each year the internal leaves yellowed in mid-summer and dropped by late summer. Drought can cause the foliage to prematurely drop from the species (Sabuco 1985).

The second site was in full sun, protected on the south by a wood fence and on the west by a grove of hawthorns, and had a predominately northern exposure. The site was well-drained clay soil amended with organic matter each year. In full sun the plant had a tight, densely branched habit. Approximately one-fourth of the stem growth died back during the first winter; an average of 12 inches of twig growth was lost over the entire plant. With the exception of the first winter, 1987-88, no winter stem injury occurred during the evaluation period. The die-back was attributed to inadequate cultural care, especially lack of water, following its planting in July 1987. The initial size was 50 inches tall and 56 inches wide. In the spring after the dead twigs were removed the plant measured 38 inches tall and 44 inches wide. The plant slowly recovered in 1988 and added 4 inches to its overall dimensions. The final measurement in 1991 was 69 inches tall and 90 inches wide, showing an average growth of 9 inches in height and 14 inches in width. Premature leaf drop did not occur.

The third site was in full sun, fully exposed and planted on a gentle slope. The soil was well drained and modified with sand and compost because of an adjacent dwarf conifer planting. The initial plant size in 1987 was 49 inches tall and 57 inches wide. The final measurement was 92 inches tall and 120 inches wide. Annual growth averaged 11 inches in height and 16 inches in width. This was the most robust of the three test plants due to better cultural conditions, i.e. soil and water. No winter injury occurred during the evaluation period. Orthene was used to control leaf miner in 1990.

The plants were three years old when planted in 1987. Bark on each plant was similar to the species in that it peeled to expose a smooth inner bark colored cinnamon- to reddish-brown. The exfoliating nature of the bark begins within the first three years after rooting from a cutting (D. Brennan 1991, personal communication). In form the plants were rounded-pyramidal, slightly wider than tall with several large branches just above ground level. Leaves were bright yellow-green in spring and matured during the season to glossy, medium dark green. Autumn color was yellow and the leaves dropped quickly once full fall color developed. The foliage did not differ from the species in overall character. Flowering did not occur during the evaluation period, nor have flowers been recorded on this variety in cultivation (J. King 1991, personal communication).

Maintenance included supplemental irrigation and seasonal mulching with shredded leaves. A liquid fertilizer (28-7-14, fast release nitrogen) was applied each fall to the root system at a rate of 1 pound of actual nitrogen per 1000 square feet of ground surrounding the plant. Chlorosis is a common problem of *Betula nigra* on alkaline soils. The pH of 7 to 7.5 in the test plots induced some chlorosis on each plant, but less than on other River Birch at the

Chicago Botanic Garden.

## Conclusions

*Betula nigra* 'Little King' (Fox Valley™ River Birch) has proven to be a promising landscape plant in trials at the Chicago Botanic Garden, and is recommended for use in areas of similar cultural and environmental conditions. Our observations indicate that it is as adaptable as the species and can be used in geographical areas and landscape environments where *Betula nigra* is presently used. The dwarf habit makes it appropriate for small scale sites where the large size of the species is unsuitable. It can be used as a specimen plant, as a hedge or in a shrub border. The exfoliating bark and dense branching habit are outstanding features in the winter landscape. ♣

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'Little King' is currently being evaluated by Chicagoland Grows, Inc. at cooperator sites around the country. For a complete list of test sites contact: Chicagoland Grows Program, P.O. Box 400, Glencoe, Illinois 60022.

To receive a list of wholesale and retail sources, send a self addressed stamped envelope to: Plant Evaluation Program, Chicago Botanic Garden, P.O. Box 400, Glencoe, Illinois 60022.

## References

- Chicagoland Grows, Inc. 1991. Plant Introduction Release Sheet. Glencoe, IL.  
 Dirr, M. A. 1990. Manual of woody landscape plants. Champaign: Stipes Publishing Company.  
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