

'Emerald Prairie' Lacebark Elm

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Lacebark elm (*Ulmus parvifolia* Jacq.) is grown widely across the United States, and in recent years has become a popular landscape tree. The genetic diversity in seedling populations has led to an increase in the number of cultivars released. Growth habit ranges from a broad rounded canopy to a more upright spreading plant that resembles american elm (*Ulmus americana* L.). Ornamental characteristics of lacebark elm include lustrous dark-green foliage and mottled orange and brown bark in some selections. However, its primary attributes include adaptability to a diverse range of landscape environments and superior pest resistance; including dutch elm disease [*Ophiostoma ulmi* (Buism.) Nannf. and *O. novo-ulmi* Brasier], black leaf spot [*Stegophora ulmea* (Schweinitz: Fries) Sydow & P. Sydow], japanese beetle (*Popillia japonica* Newman) and elm leaf beetle (*Xanthogaleruca luteola* Mueller). Resistance to black leaf spot appears to vary by genotype, and while cultivars have been selected for resistance, many are still susceptible and experience significant leaf drop in certain years. The species is tolerant of a range of soil conditions, appears hardy in USDA hardiness zones 4 through 9, and shows potential for use as a street tree. However, cold hardiness appears to be highly variable within the species making cultivar selection a critical factor in landscape use (Dirr, 1998; Rajashekar et al., 1996).

Currently, two popular cultivars are common in the nursery trade. *Ulmus parvifolia* 'Emer I' and 'Emer II' (Athena and Allée, respectively) are commonly grown and often used in the landscape as specimen trees. 'Emer II' (Allée) matures as a tall shade tree that is best known for its outstanding exfoliating bark, whereas 'Emer I' (Athena) fulfills a different role as it is a smaller tree with a rounded canopy (Dirr, 1998). 'Emerald Prairie' also forms a large shade tree; however, it was

selected for release because of its outstanding growth form, superior foliar quality, and disease resistance.

Origin

'Emerald Prairie' lacebark elm originated as a seedling designated A1 at the Wichita Horticulture Research Center (currently the John C. Pair Horticultural Center). The parent plant still exists at a private residence in Wichita, Kans., and was chosen as a seed source because of its outstanding form and apparent disease tolerance. Seeds were collected from the parent plant in Fall 1987, germinated, and planted in a nursery row in Spring 1988. Noteworthy plants were propagated vegetatively and transplanted along with several previously named cultivars to a lacebark elm evaluation block during Fall 1990 at the John C. Pair Horticultural Center. Steve Bieberich of Sunshine Nursery and Arboretum (Clinton, Okla.) encouraged us to name and release this clone. The cultivar name, 'Emerald Prairie', was selected by a group of individuals from the Kansas Nursery and Landscape Association (KNLA) to represent its outstanding foliage quality and region of origin.

Description

The habit of 'Emerald Prairie' lacebark elm is upright and spreading, somewhat reminiscent of the American elm, rather than the broad oval silhouette that is common for the species. The bark on the main trunk is furrowed and gray (RHS grey 201B) (Royal Horticultural Society, 1966). Branches <5-cm diameter are smooth and gray (RHS black 202C), whereas larger branches (7- to 11-cm diameter) in the middle of the canopy are beginning to exfoliate, exposing an orange underneath (RHS

greyed-orange 165B to 165D). Stems of the most recent annual growth are slightly pubescent and brown (RHS brown 200C) to dark orange (RHS greyed-orange 177A). Buds are five-scaled, brown (RHS brown 200C), ovoid, and pubescent. The leaves are alternate, simple, serrate, acute, and oblique. Size and color are given in Table 1.

In the Wichita trials, plant height (July 2002) was 8.8 m for an average growth rate of ≈ 0.6 m per year. Tree width, (diameter of the drip line) was 7.5 m. The industry standard, 'Emer II' (Allée), was of equal height and similar width (7.0 m), with an oval growth habit. Another popular clone, 'Emer I' (Athena), was slightly shorter at 7.3 m but equal in width to 'Emerald Prairie', forming a more globose canopy. Stem diameter was measured at 30 cm above the soil line and was greatest for 'Emerald Prairie' at 24.8 cm, whereas 'Emer II' (Allée) and 'Emer I' (Athena) were 22.2 and 17.1 cm, respectively. Trees have not been irrigated in recent years, suggesting that once established, this species is well adapted to the mid-continent Plains region and grows well without supplemental irrigation.

Leaves of 'Emerald Prairie', 'Emer II' (Allée), and 'Emer I' (Athena) lacebark elm were collected throughout the mid canopy for comparison. Leaf width, length, and color were recorded, and observations on black leaf spot were made (Table 1). Leaf length and width of 'Emerald Prairie' lacebark elm were similar to the other examined cultivars, and foliage color was a darker green. The leaf surface of 'Emerald Prairie' has been completely free of black leaf spot, and there are no signs of feeding by elm leaf beetle. This observation is significant given 'Emerald Prairie' was in a block of 75 other lacebark elms with varying levels of black leaf spot, thereby allowing for ample plant/pest interactions.

One of the primary ornamental attributes of lacebark elm is the mottled orange/brown bark that develops with age in individual plants. However, this character is variable among seedlings and does not develop on the main trunk of 'Emerald Prairie'. Primary desirable landscape characteristics of this tree are its high canopy, vase-shaped growth habit, cold tolerance, and pest resistance. Local nursery growers have indicated that during years of heavy black leaf spot infestation that have partially defoliated many lacebark elm cultivars, this selection shows no symptoms of infestation.

Table 1. Comparison of length, width, color, and black leaf spot (*Stegophora ulmea*) infestation of 'Emerald Prairie' lacebark elm lamina to two other common cultivars.

	Cultivars of lacebark elm		
	Emer II (Allée)	Emer I (Athena)	Emerald Prairie
Length ² (cm)	4.6 – 5.2	3.6 – 5.0	4.1 – 4.9
Width ² (cm)	1.8 – 2.2	1.8 – 2.2	1.8 – 2.1
RHS ³ color	148A	148A	147A
Black leaf spot	Mild infestation	Moderate infestation	No infestation

²From 50 randomly selected leaves throughout the canopy. Only the distal 3 leaves per shoot were measured. Mild infestation = 1 or 2 lesions per leaf on a low percentage of randomly selected leaves. Moderate infestation = 1 or 2 lesions per leaf on a majority of randomly selected leaves. No infestation = no lesions on any of the randomly selected leaves.

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Availability

'Emerald Prairie' lacebark elm has been released as a public cultivar. There are no restrictions to its propagation and production. Currently, plants are in production and further inquiries regarding future availability may be made at: The Botany Shop (Joplin, Mo.), Cedar Valley Liners (Ada, Okla.), J. Frank Schmidt

& Son (Boring, Ore.), and Sunshine Nursery and Arboretum (Clinton, Okla.). Limited propagation material may be obtained from the lead author.

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