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Celtis occidentalis ‘JFS-KSU1’: A Fastigate Common Hackberry¹

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Introduction

This is the first selection, and subsequent description, of a fastigate common hackberry (*Celtis occidentalis* L.). The species is known widely for its ability to thrive in challenging sites. Common hackberry is tolerant of hot and cold temperatures found over a wide range of the United States, and the species grows well in soils frequently encountered in the urban landscape. This fastigate clone will fit nicely into narrow urban sites where soil quality is less than desirable. The selection has been given the cultivar name of ‘JFS-KSU1’ and will be available in limited numbers from J. Frank Schmidt and Son, Inc. (Boring, OR) in 2009.

Common hackberry is native from New Hampshire to North Dakota, south to Oklahoma and east to Georgia, growing 15–27 m (50–90 ft) in height with a nearly equal width (3). The species grows in moist woodlands and floodplains in USDA Hardiness Zones 3–9, but will tolerate dry-rocky soils, either acidic or alkaline, as well as heavy to sandy soils. Common hackberry also tolerates heat, wind, and air pollution well (1, 5). For these reasons, common hackberry is often used where site conditions limit the use of many popular landscape trees. Therefore, it is often used in urban situations, which are known for their demanding environments.

Unfortunately, the species is susceptible to some pests. Most, however, are cosmetic and do not jeopardize tree survival. Most significant are a witches broom and foliar nipple-gall. The witches broom is caused by an eriophyd mite (*Aceria celtis* Kendall) working in concert with powdery mildew fungus [*Podosphaera phytoptophila* (Kellerm. & Swingle) U. Braun & S. Takam] (4). It is still unclear if powdery mildew plays a role in the development of the broom, or if the fungus simply exploits the environment created by the mite. Large trees can have numerous brooms and trees in exposed locations appear to be more severely affected. The nipple-gall is caused by a psyllid (*Pachypsylla celtidismamma* Riley) and can cause early leaf drop (2). Repeated heavy infestations can weaken trees. Typically, neither pest causes plant mortality, although they can render a tree unsightly.

There are few selections of common hackberry (1, 5). Cultivars ‘Chicagoland’, ‘Delta’, and ‘Windy City’ are described as having improved growth form, often upright and oval, and improved growth rate. ‘Prairie Pride’ is the most widely available cultivar and was selected for compact growth form, improved foliage quality, and lack of witches brooms. A putative hybrid between sugarberry (*C. laevigata* Willd.) and common hackberry named ‘Magnifica’ is also in cultivation and is reported to have improved growth rate and insect resistance.

Origin

This new selection, *C. occidentalis* ‘JFS-KSU1’, originated as a chance seedling. The original tree was discovered in a native stand in western Kansas (Fig. 1) in USDA cold hardiness zone 5b and AHS Plant Heat Zone 8. Standing nearly 10.6 m (35 ft) tall and only 2.5 m (8 ft) wide, the tree was first noticed by members of the Kansas Forest Service. Immediately recognizing the potential demand and landscape uses for a columnar hackberry, clonal propagation attempts were initiated by the authors.

Description

In nearly all aspects, *C. occidentalis* ‘JFS-KSU1’ is typical of the species. Young branches are pubescent. Mature leaves are alternate, broadly ovate to deltoid, coriaceous, scabrous and approximately 5.0–5.7 cm (2.0–2.25 in) wide by 9.0–11.5 cm (3.5–4.5 in) long. Leaf margins are serrate, tip acuminate,



Fig. 1. Growth habit of *Celtis occidentalis* ‘JFS-KSU1’ parent tree.

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Fig. 2. Growth habit of one year budded *Celtis occidentalis* 'JFS-KSU1' liner.

and base oblique to subcordate. The drupe is also typical of the species. *Celtis occidentalis* 'JFS-KSU1' differs from the species in that lateral branches arise at a uniquely upright angle that translates into a fastigiate tree. Common hackberry typically is a large tree with a rounded to vase-shaped growth habit. Width is typically equal to the height, or nearly so. *Celtis occidentalis* 'JFS-KSU1' is markedly different from the species in its growth form, with width only a fraction of the total height. This is the first known occurrence of and subsequent description of a fastigiate *C. occidentalis*.

Adaptability

The landscape adaptability of *C. occidentalis* 'JFS-KSU1' is expected to be similar to that for the species. This cultivar has demonstrated cold hardiness in USDA Zone 5b and is potentially as cold hardy as the species (USDA Zone 3). Additionally, the species is adapted to a wide range of soil

conditions from moist to dry, acidic to alkaline, and heavy to sandy. The susceptibility of *C. occidentalis* 'JFS-KSU1' to insect pests and pathogens is expected to be typical of the species.

Cultural Conditions

Landscape cultural conditions necessary for growth of *C. occidentalis* 'JFS-KSU1' are similar to those for the species. While the species prefers a deep moist soil, it grows well in most soils and shows remarkable soil pH adaptability. This cultivar will grow well in full sun with an annual growth rate similar to the species.

Performance and Propagation

The fastigiate growth habit of the parent tree is successfully reproduced in budded nursery liners with lateral branches positioned at an upright angle (Fig. 2). Asexual propagation of common hackberry is notoriously difficult. Currently, clonal propagation of *C. occidentalis* 'JFS-KSU1' is accomplished by chip budding onto seedling *C. occidentalis* rootstock, using standard budding practices. Attempts by the senior author to root stem cuttings from the mature parent tree have been unsuccessful, and micropropagation techniques for common hackberry are lacking.

Landscape Uses

Celtis occidentalis 'JFS-KSU1' is an ideal plant for urban settings or other locations where a fastigiate tree is required. Exceptional cold and heat tolerance make it an option for use across a wide geographic region. Its ability to survive in soils ranging from dry to wet and acidic to alkaline, offers almost limitless possibilities. The striking vertical habit will have year-round landscape appeal.

Availability

Celtis occidentalis 'JFS-KSU1' is in production at J. Frank Schmidt and Son, Inc., Boring, OR. Limited liner material will be available by spring 2009.

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