

Koelreuteria elegans subsp. *formosana*: Goldenrain Tree¹

Edward F. Gilman, Dennis G. Watson, Ryan W. Klein, Andrew K. Koeser, Deborah R. Hilbert and Drew C. McLean²

Introduction

Goldenrain tree grows 30 to 40 feet tall with an equal spread, in a broad, somewhat irregular globe-shape. Some trees appear vase-shaped. Although it has a reputation for being weak wooded, it is rarely attacked by pests and grows in a wide range of soils, including high pH soils. Goldenrain tree tolerates dryness and casts little shade because of the open growth habit. It makes a good street or parking lot tree, particularly where overhead or soil space is limited, due to its adaptive abilities. The tree grows moderately and bears large panicles of bright yellow flowers in May (USDA hardiness zone 9) to July (USDA hardiness zone 6) when few other trees bloom. It is not as showy as *Koelreuteria bipinnata* but is much more cold-tolerant. The seed pods look like brown Chinese lanterns and are held on the tree well into the fall.

General Information

Scientific name: *Koelreuteria elegans* subsp. *formosana*

Pronunciation: kole-roo-TEER-ee-uh el-ay-gahns (subspecies) for-moe-SAY-nuh

Common name(s): goldenrain tree, varnish-tree

Family: Sapindaceae

USDA hardiness zones: 5B through 9B (Figure 2)



Figure 1. Full Form - *Koelreuteria elegans* subsp. *formosana*: goldenrain tree

Credits: UF/IFAS

Origin: native to northern China and Korea

UF/IFAS Invasive Assessment Status: caution, may be recommended but manage to prevent escape (Central, South); not considered a problem species at this time, may be recommended (North)

Uses: shade; sidewalk cutout (tree pit); street without sidewalk; specimen; parking lot island < 100 sq ft; parking lot island 100-200 sq ft; parking lot island > 200 sq ft; tree lawn 3-4 feet wide; tree lawn 4-6 feet wide; tree lawn >

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2. Edward F. Gilman, professor emeritus, Environmental Horticulture Department; Dennis G. Watson, former associate professor, Department of Agricultural and Biological Engineering Department; Ryan W. Klein, graduate assistant, Environmental Horticulture Department; Andrew K. Koeser, assistant professor, Environmental Horticulture Department, UF/IFAS Gulf Coast Research and Education Center; Deborah R. Hilbert, graduate assistant, Environmental Horticulture Department, GCREC; and Drew C. McLean, biological scientist, Environmental Horticulture Department, GCREC; UF/IFAS Extension, Gainesville, FL 32611.

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6 ft wide; urban tolerant; highway median; reclamation; container or planter

Description

Height: 30 to 40 feet

Spread: 30 to 40 feet

Crown uniformity: irregular

Crown shape: round, vase

Crown density: open

Growth rate: moderate

Texture: coarse

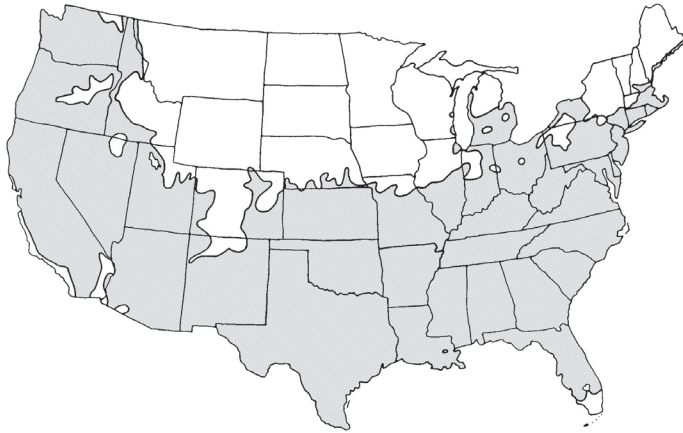


Figure 2. Range

Foliage

Leaf arrangement: alternate

Leaf type: even-pinnately compound, odd-pinnately compound; made up of 7 to 15 leaflets



Figure 3. Leaf - *Koelreuteria elegans* subsp. *formosana*: goldenrain tree
Credits: UF/IFAS

Leaf margin: lobed, incised, serrate

Leaf shape: ovate, oblong

Leaf venation: pinnate

Leaf type and persistence: deciduous

Leaf blade length: 6 to 18 inches; leaflets are 1 to 4 inches

Leaf color: green

Fall color: yellow

Fall characteristic: showy

Flower

Flower color: yellow

Flower characteristics: very showy; emerges in clusters on 12-15" long panicles

Flowering: late spring to early summer



Figure 4. Flower - *Koelreuteria elegans* subsp. *formosana*: goldenrain tree

Credits: UF/IFAS

Fruit

Fruit shape: oval, elongated

Fruit length: 1 ½ to 2 inches

Fruit covering: dry or hard; papery, 3-valved capsules

Fruit color: green to brown when mature

Fruit characteristics: does not attract wildlife; showy; fruit/leaves not a litter problem

Fruiting: late summer to early fall



Figure 5. Fruit - *Koelreuteria elegans* subsp. *formosana*: goldenrain tree
Credits: UF/IFAS

Trunk and Branches

Trunk/branches: branches droop; not showy; typically one trunk; no thorns

Bark: light gray to brown, becoming rigid and furrowed with age

Pruning requirement: needed for strong structure

Breakage: resistant

Current year twig color: brown

Current year twig thickness: thick

Wood specific gravity: unknown



Figure 6. Bark - *Koelreuteria elegans* subsp. *formosana*: goldenrain tree
Credits: Gitta Hasing, UF/IFAS

Culture

Light requirement: full sun

Soil tolerances: clay; sand; loam; alkaline; acidic; well-drained

Drought tolerance: high

Aerosol salt tolerance: moderate

Other

Roots: not a problem

Winter interest: no

Outstanding tree: yes

Ozone sensitivity: sensitive

Verticillium wilt susceptibility: susceptible

Pest resistance: resistant to pests/diseases

Use and Management

The root system is coarse with only a few but large roots, so transplant when young or from containers. Do not transplant in the fall as success rate is reportedly limited. Considered a city tolerant tree due to tolerance to air pollution and ability to withstand drought, heat, and alkaline soils. It also tolerates some salt spray but requires well-drained soil. It would be hard to find a more adaptive yellow flowering tree for urban planting. It makes a nice patio tree, creating light shade but its brittle wood can break easily in windy weather.

The tree has only a few branches when it is young and some pruning to increase branchiness helps sell the tree. Prune the tree early to space major branches along the trunk to create a strong branch structure and the tree will be longer-lived and require little maintenance. Dead wood is often present in the canopy and should be removed periodically to maintain a neat appearance. Only single-stemmed trees trained in the nursery with well-spaced branches should be planted along streets and parking lots.

One cultivar is listed: ‘Fastigiata’—upright growth habit.

Pests

Occasional attacks by scale may be seen. Sprays of horticultural oil control overwinter stages. Boxelder bug can be a menace.

Diseases

Koelreuteria is subject to few diseases. A canker causes dead and sunken areas on the bark. Coral pink fruiting bodies develop on the diseased bark. Prune out infected branches and fertilize to maintain tree health.

Verticillium wilt attacks *Koelreuteria*. The disease causes wilting and death of leaves on infected branches. Eventually the entire tree may be killed. Fertilize to stimulate growth. There are no chemical controls

References

Koeser, A. K., Hasing, G., Friedman, M. H., and Irving, R. B. 2015. Trees: North & Central Florida. University of Florida Institute of Food and Agricultural Sciences.

Koeser, A.K., Friedman, M.H., Hasing, G., Finley, H., Schelb, J. 2017. Trees: South Florida and the Keys. University of Florida Institute of Food and Agricultural Sciences.