

Hardwood Lumber and Veneer Series



Willow

FNR-301-W

Daniel L. Cassens, Professor and Extension Wood Products Specialist
Department of Forestry and Natural Resources, Purdue University, West Lafayette, IN 47907

EXPERT
REVIEWED

Although there are many willow species, only one in the hardwood region is of adequate size to produce lumber. Black willow, or *Salix nigra* Marsh., ranges from the Gulf and Atlantic coastal plane and then north to the central portion of the Great Lake states, to southern Ontario, and then to central Maine. The trees grow rapidly and reach maturity in 50 to 70 years. They are intolerant to shade and can be found as a dominate tree in mixed hardwood stands or in pure stands, especially along the Mississippi River. The tree prefers moist or wet soils, especially in the south; and with the proper conditions, it will develop straight clear boles to substantial height.

The largest reported black willow is an amazing 10.6 feet in diameter at 4½ feet above the ground.

Wood Color and Texture

The wood has a white sapwood, which varies in width. The heartwood is light brown to pale reddish, or grayish brown, often with darker streaks. The pores are barely visible to the naked eye, and the growth rings are somewhat distinct. Tiny pin knots, caused by sprouts on the main tree bole are common. The wood is similar to that of cottonwood or aspen, but with a brown color.

Workability

Willow is a light-weight wood and rated toward the bottom of the scale in terms of machining properties.

Strength

At 12 percent moisture content, willow wood weighs 27.1 pounds per cubic foot, making it one



Chip Morrison

Willow tree log

of the lightest woods. Interestingly, its bending and breaking strengths are very low, but the shear strength and side hardness are comparable to the weaker intermediate weight woods.

Steam Bending

Surprisingly, the wood is rated somewhat better than ash and nearly as good as elm, beech, and hickory for bending when treated with steam.

Drying

The wood can be dried with a relatively severe kiln schedule.

Shrinkage

The wood, although light weight, is intermediate in terms of tangential and volumetric shrinkage but low in radial shrinkage.

Decay Resistance

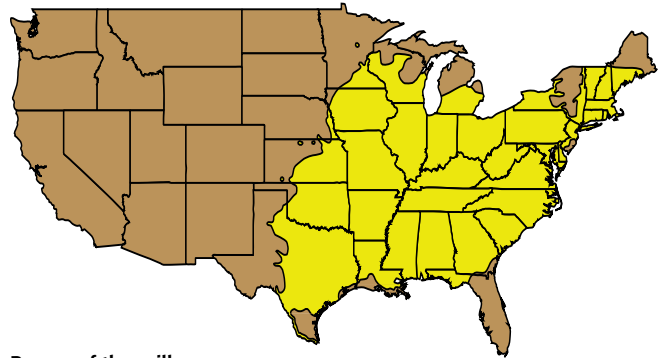
The wood has no resistance to wood decay.

Commercial Use, Grading, and Value

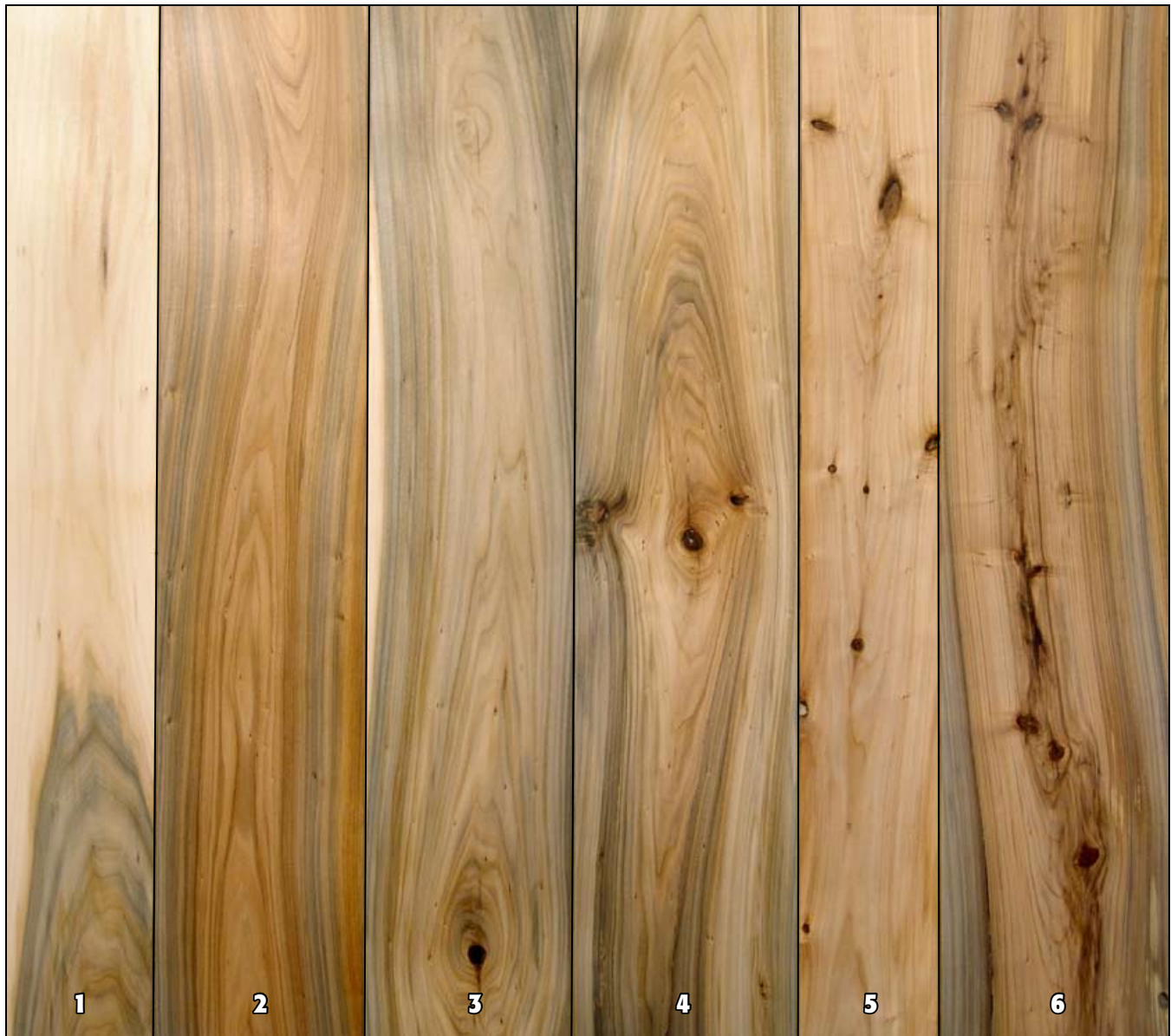
Willow is a light weight, relatively weak wood and thus not suitable where strength performance is important. Its small pores, lack of a distinctive grain pattern, and light weight make it comparable to cottonwood, basswood, and yellow-poplar. Where color is not critical, it is sometimes mixed with cottonwood. It is most commonly used for cabinets, boxes, crates, and caskets. When processed in the central states, it will likely be used for pallets and crating that will not experience heavy loading. Grade lumber is produced in the south.

Willow is graded standard, except stain is admitted for the grades of 2B Common and better. In No. 3A Common, the cuttings are only required to be sound.

Wholesale prices are reported only for the southern marketing region. It is a very inexpensive wood.



Range of the willow



Chip Morrison

Willow is a light-weight, uniform-grained wood with low value. It is seldom sawed for lumber in the central midwest. It is predominately heartwood.

Board 1 is flat sawn and shows the contrast between a white sapwood and the dark heartwood.

Boards 2, 3, 4, and 5 show a characteristic range in heartwood color from a light brown (Board 5) to darker bluish grey color. Numerous, very small pin

knots caused by sprouting on the main stem can also be seen.

Shake, or the separation between rings, is common in the species and can be seen in several locations.

Board 6 is cut through the very center of the log or quarter sawn. The ray fleck is very small but the characteristic grain pattern can be seen on each side of the highly defective center.

PURDUE AGRICULTURE

NEW 9/07

It is the policy of the Purdue University Cooperative Extension Service that all persons have equal opportunity and access to its educational programs, services, activities, and facilities without regard to race, religion, color, sex, age, national origin or ancestry, marital status, parental status, sexual orientation, disability or status as a veteran. Purdue University is an Affirmative Action institution. This material may be available in alternative formats.