

Chinese vs. American Chestnut

(*Castanea mollissima* vs. *Castanea dentata*)



Top View American Leaf (left):

Leaf is long in relation to its width

Large, prominent teeth on edge; bristle at the end of each tooth curves inward

Base of leaf blade tapers sharply

Leaf is very thin and papery

Chinese Leaf (right):

Leaf is oval-shaped

Teeth are smaller

Base of leaf blade is rounded

Leaf is thick and waxy-feeling

Burs and Nuts

American vs. Chinese



American Chestnut Burs:

A dense mass of long, slender spines
Spines are 2 to 3 cm long, 0.5 mm thick
Up to 3 nuts per bur

Chinese Chestnut Burs:

A sparse mass of short, thick spines
Spines are 1 to 2 cm long, 1 mm thick
Up to 3 nuts per bur

LEAF TRAIT ANALYSIS FIELD LIST*

Leaf Type	THICK	THIN	POSSIBLE GENUS†
leaf thickness	THICK	THIN	indeterminata
leaf shape	OVAL	CANOE	indeterminata
leaf shininess	SHINY	DULL	indeterminata
dentation	WEDGE	OCEANWAVE	indeterminata
leaf shape	OVAL	CYLINDRICAL	indeterminata
bud color	RED	YELLOW	GREEN
bud hairiness	YES	NO	indeterminata
sculples	FLARED	THIN	NOT PRESENT
twig color	RED	GREEN	BROWN
twig hairiness	YES	NO	indeterminata
petiole angle	ACUTE	ORTHOGE	indeterminata
relative stem size	THICK	THIN	MODERATE
lenticel size	SMALL	MEDIUM	LARGE
Simple hairs on veins	YES	NO	indeterminata
simple hairs in interveinal areas	YES	NO	indeterminata
presence and abundance of stipitate hairs	YES	NO	indeterminata
shape and abundance of trichomes	4-CELLED	CHINESE STALKED	EUROPEAN-STALKED
			8-CELLED
			indeterminata
Depending on the combination, the final analysis will be one of these candidates			
SPECIES ATTRIBUTED			
	American	Chinese	European
	Chinkapin	indeterminata	indeterminata
*This is not an exhaustive list.			

Chestnut and Chinkapin Leaves Top of leaves



Chinese vs. American Chestnut

Burs and Nuts

American vs. Chinese



American Chestnuts:

Nuts are relatively small, 1/2 to 1 inch in diameter
 Tips of American chestnuts are pointed
 Nuts are hairy over 1/3 to 2/3 of length from pointed end
 Vascular bundles in a sunburst pattern on hilum end
 2 to 3 nuts in each bur

Chinese Chestnuts:

Nuts are relatively large, 3/4 to 2 inches in diameter
 Tips of Chinese chestnuts are rounded
 Only the tips of the nuts are hairy
 Vascular bundles in a diffuse pattern on hilum end
 2 to 3 nuts in each bur

Bottom View

American Leaf (left):

Elongated leaf
 Large, prominent teeth on edge; bristle on teeth curves inward
 Blade tapers sharply to meet stem at base of leaf blade
 Light green underside on leaves exposed to the sun

Chinese Leaf (right):

Oval-shaped leaf
 Small teeth on edge
 Base of leaf blade rounded
 Underside of sun leaves look whitish because of many hairs



Chestnut Stems and Buds



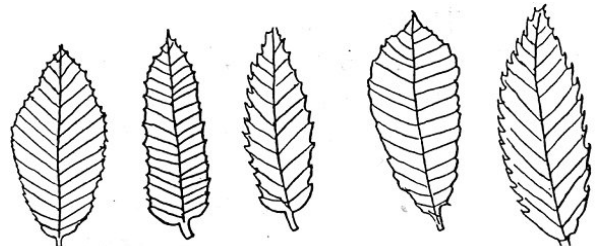
From Left:
American, Chinese, European, and Japanese twigs

American twig: pointed bud at 45 degree angle from stem; smooth, reddish stem

Chinese twig: rounded, hairy buds, large stipules (leaf-like coverings over the buds), large lenticels (white "bumps" on stem)

European twig: thick stem, large buds

Japanese twig: pale, pinkish stem



Chinkapin	Japanese	European	Chinese	American
Leaf Taper to Stem				
Straight	Curved	Curved	Curved	Straight
Taper to Tip				
Straight	Curved	Curved	Curved	Straight
Teeth				
1-3 mm, small, sharp, no hook	Tiny, often only bristles, no hook	Big, sharp or rounded, no hook	Large or small, not pronounced or hooked	6 mm, big, sharp, and often curved (hooked)
Underside of Leaf				
Sun leaves hairy	Many large dots (glands), sun leaves hairy	Many small dots. Sun leaves hairy on some specimens but not others	Sparse dots. Sun leaves hairy.	Many small dots. Sun leaves not hairy, long sparse hair only on midrib.
Twig				
Hairy tips, purple or brownish grey	Pink to light red, large white lenticels	Stout dark, brown, small white lenticels	Hairy tips, tan to pea green. Large elliptical yellow lenticels	Slender, smooth, hairless reddish brown, small white lenticels
Bud				
Up to 3mm, downy dark red, pointed longer than wide, sticks out from stem	Glossy brown, as long as it is wide (rounded)	Dark red, fat and globular	Hairy, tan, dull brown to black rounded and flat against stem	Up to 6mm, smooth, reddish brown to yellow, pointed, or longer than it is wide, sticks out from stem
Nut				
1 nut 1/2" tip pointed with a round cross section	2-3 nuts, 1-2 in. No sunburst pattern at base, moderate brown	2-3 nuts, 1-2 in. No sunburst pattern, dark brown black stripes	2-3 nuts, 3/4- 2 in., rounded hairy tip, sunburst pattern uncommon, often it brown	2-3 nuts, 1/2- 1 in., pointed tip, top 1/3 to 2/3 downy, sunburst at base
Taste				
Sweet	Not sweet	Starchy	Sweet	Sweet
Resistance to blight				
None	Moderate	Slight	High	Low to None

Bottom of leaves

(Reverse side)

Top Row: Allegheny chinkapin leaf

Bottom row (from left): American, Chinese, European and Japanese Chestnut leaves

Chestnut and Chinkapin Burs



Clockwise from top:

Allegheny chinkapin, European chestnut, Japanese chestnut, Chinese chestnut, and American chestnut burs

Note that the Chinese bur looks small, even though the nuts inside are large. This is because of their short, stubby spines.

Stipules



American Stipules

Slender

Angle sharply out from stem

Usually fall off in June

Chestnut and Chinkapin Nuts



Top and Side Views of Chestnuts

From Left: American, Chinese, Japanese, and European chestnuts



American Buds and Lenticels

Pointed buds that angle away from the stem

Stems smooth and hairless

Stem color reddish brown to dark green

Small but numerous lenticels on stem

Buds and Stems



Chinese Stipules

Broad

Cover the buds

Remain on the stem through September

Chestnuts



Chestnut burrs have two sutures and open into four valves (sections)

There are up to three nuts per bur.

Chinkapins



Chinkapin burrs have one suture and open into two valves (sections).

There is only a single nut per bur.

Buds and Stems



Chinese Buds and Lenticels

Rounded buds that hug the stem

Hairy stems and hairy leaf veins

Stem color tan to pea-green

Large lenticels (bumps) on stem

Chestnut and Chinkapin Nuts



Top: Chinkapin nuts: note the pointed end

Middle: American chestnuts: note the hairy surface

Bottom: Chinese chestnuts: note the rounded end