Descriptions of Chestnut Cultivars for Nut Production in the Eastern and Midwestern United States

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Abstract. The Chinese chestnut (*Castanea mollissima* Blume) and other *Castanea* species (*Castanea* spp. Mill.) have been imported and circulated among growers and scientists in the United States for more than a century. Initially, importations of *C. mollissima* after 1914 were motivated by efforts to restore the American chestnut [*Castanea dentata* (Marsh.) Borkh.], with interests in timber-type characters and chestnut blight resistance. Chestnut for orchard nut production spun off from these early works. Starting in the early 20th century, open-pollinated seeds from seedlings of Chinese chestnut and other *Castanea* species were distributed widely to interested growers throughout much of the eastern United States to plant and evaluate. Germplasm curation and sharing increased quite robustly through grower networks over the 20th century and continues today. More than 100 cultivars have been named in the United States, although a smaller subset remains relevant for commercial production and breeding. The University of Missouri Center for Agroforestry curates and maintains a repository of more than 60 cultivars, and open-pollinated seed from this collection has been provided to growers since 2008. Currently, more than 1000 farms cultivate seedlings or grafted trees of the cultivars in this collection, and interest in participatory on-farm research is high. Here, we report descriptions of 57 of the collection's cultivars as a comprehensive, readily accessible resource to support continued participatory research.

Chestnut cultivation for nut production in the midwestern United States has experienced accelerated adoption in recent years, with the number of farms increasing 57% between 2012 and 2017, and more than 300 orchards

reaching bearing age (USDA National Agricultural Statistics Service, 2018). In the Midwest, a predominant reason for this growth is the steady progress made by dedicated growers to develop regional markets and germplasm. Since the early 2000s, germplasm development efforts have comprised an iterative evaluation and selection process to find clonal selections and seedling families that consistently yield adequate nut quality (Mori et al., 2017).

Currently, several midwestern states are each annually producing tens of thousands of pounds of chestnuts that meet the high-quality standards required for sale in local markets, with supplies rarely outlasting the holiday season (G. Miller and R. Smith, personal communication). Demand continues to exceed supply, even as mature orchards and plantings expand. In 2018, Iowa growers took 40,000 pounds of high-grade chestnut to

market through Prairie Grove Chestnut Cooperative. Production capacity from 59 Missouri farmers ranges upward from 10,000 pounds. In Ohio, growers of the Route 9 Cooperative have steadily increased production to 100,000 pounds, and the state had 75 farms of bearing age (USDA National Agricultural Statistics Service, 2018). Similar trends are observed in half a dozen other states in or neighboring the Midwest, and the number of bearing farms is more than 600 (USDA National Agricultural Statistics Service, 2018).

The growth of Chinese chestnut (*Castanea mollissima*) production in the midwestern United States is unique compared with most fruit and nuts because orchard cultivation currently favors seedlings rather than clonal selections. This is because *C. mollissima* seedlings from good parents outperform grafted trees at the orchard-level because of issues with delayed graft failure (Hunt et al., 2012). However, it is important to note the grafted cultivars can be maintained in moderate quantities to support curation and trialing. Consequently, germplasm improvement is ongoing, and dedicated growers are willing to integrate evaluation and selection into their operations. This structure has placed responsibility for developing improved selections mainly at the farm level, causing it to be decentralized and occurring in many different environments simultaneously. Although growers share information and plant materials, their efforts are spontaneous and not well coordinated. This participatory network of growers has matured to the point where better coordination is warranted. A first and critical step to coordinate efforts is publishing validated histories and descriptions of the many parent cultivars used by commercial producers throughout the Midwest.

Emphasizing the Benefit of Published Cultivar Descriptions

The participatory nature of chestnut genetic improvement, although highly constructive, can introduce ambiguity about the quality and performance of cultivars. There are at least five common ways that ambiguity or conflicting information about grafted cultivar performance is introduced: 1) rootstock effects, 2) environment effect, 3) genotype by environment effects, 4) time (age), and 5) cultivar identification loss or misidentification.

Based on climate, the potential cultivation range for *C. mollissima* includes much of the eastern half of the United States (Fei et al., 2012). However, knowledge of how to match existing germplasm with different environments or growing regions is lacking. This gap exists because attempts to adapt cultivated *C. mollissima* germplasm for nut production across the United States are young on the timescale of tree genetic improvement, occurring sporadically over the past 100 years (Anagnostakis, 2012).

Conversely, *C. mollissima* has been deliberately cultivated throughout China for more than 2000 years (Rutter et al., 1991; Wang, 2004). During that time, artificial selection

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was imposed for many of the same traits relevant to modern breeding (e.g., architecture, early bearing, high sugar content, yield stability, nut size, easy peeling, etc.). This long history of domestication makes China home to hundreds of cultivars that are categorized by cultivation region, province, or even growing zone within the province. Generally, *C. mollissima* cultivars are divided into five major areas, North China, East China, Central China, South China, and Southwest China, based on the climatic characteristics of China (Craddock and Perkins, 2019). This geographic range of Chinese production spans from 30° to 40° N latitude and United States Department of Agriculture (USDA) plant hardiness zones 10 to 5a. Regional differences in allele frequencies between *C. mollissima* from northern and southern regions provide some genetic evidence for local adaptation, with detected loci associated with putative traits like trichome density, lignin synthesis, and regional disease (LaBonte et al., 2018). Although the growing regions in China can inform germplasm development in the United States, the eastern United States climate from the 30° to 40° N latitude is not directly comparable to corresponding latitudes in China.

Chestnut for nut production in the United States has not undergone organized, successive generations of selection to develop cultivars adapted within the broad target growing region. Additionally, many of the cultivars used today have an unknown ancestry, meaning that the founder cultivars from China cannot inform U.S. trials.

Grower trials have been based on the sharing of plant materials. All too commonly, mistakes are made regarding the identification of cultivars (e.g., scions are mistaken for one another, mistaken for a rootstock, or mistaken for their offspring) (McCleary et al., 2013). Additional confusion can arise because of the renaming of cultivars after ramet evaluation and the trialing of open-pollinated seedlings from cultivars without careful record-keeping. Loss of replication and field-level variations also influence results.

Grower Germplasm Use

The University of Missouri's Center for Agroforestry (UMCA) (New Franklin, MO) maintains a repository of many of the predominant cultivars used by growers in the eastern and midwestern United States. This grafted cultivar collection was assembled between 1996 and 2005, and it consisted of 65 cultivars that underwent long-term evaluation into the 2010s (Hunt et al., 2004; Mori et al., 2017). The foremost objective of the evaluations was to identify individuals well-adapted to the mid-Missouri climate with nut quality traits suitable for commercial marketing (e.g., large, round, sweet, and low defects). Throughout the trial, seed and scion from preferred selections were made available to pioneer growers throughout the Midwest for trialing. Preferred selections were revised as traits revealed themselves over

time (e.g., interannual yield variability and disease or pest susceptibility), and growers began opting for half-sibling seedlings to allow for broader geographic testing and circumvent delayed graft failure. Wide dissemination of seedling stock from this collection also provided the robust infrastructure for the breeding of improved, recombinant individuals well-adapted to regions outside of mid-Missouri. The ensuing 15 years of on-farm evaluation led to many grower selections, where the best seedling trees were propagated and shared extensively through the eastern half of the United States. Currently, more than 10,000 offspring from this collection are growing in the eastern and midwestern United States, and growers and breeders alike would benefit from a validated, comprehensive list of cultivar descriptions.

Cultivar Descriptions

The following descriptions are not intended as a tool to inform grower adoption per se; chestnut adoption is occurring across many diverse environments where grafted cultivar performance remains to be determined. Instead, our aim is to compile known information regarding 57 cultivars still living in the UMCA repository into a single resource to be more readily accessible to university researchers and growers alike. The descriptions will be updated (on <https://centerforagroforestry.org/>) as partners evaluate ramets across different environments.

Phenotypic descriptions include species, origin, growth habit, aspects of phenology and bearing, notes about nut and kernel quality, and observations of resistance/susceptibility to pests and diseases (Table 1). The descriptions are interpretive reports from U.S.-based chestnut experts closely involved with sourcing and cultivating the original plant material (G. Miller, M. Nave, R. Stehli, and T. Wahl). Additional supporting details are derived from the University of Missouri chestnut repository located at the Horticultural and Agroforestry Research Center (HARC) (New Franklin, MO). McCleary et al. (2013) previously reported information about species ancestry. The descriptions are also adapted in part from various grower organization records (Metaxas, 2013; Miller, 2003, 2016; Nave, 1998, 2017).

'ABC Red' (*C. mollissima*) is an open-pollinated (OP) seedling selection made by M. Nave from the cultivar Honglizhi, the Nanjing Botanical Garden's red chestnut. The nuts were imported under the USDA permit from Liu Liu of Nanjing Botanical Garden and planted in California in Spring 1994. The tree is very vigorous, and new growth is red. Autumn leaves are also red, and stems and burs are reddish. Its nuts are small (10–12 g), but they have excellent flavor and good pelticle removal. Although 'ABC Red' is pollen-fertile, it does not have a heavy catkin set. It is a sibling of 'Liu' (Anagnostakis and Nave, 2015; Nave, 2017). 'ABC Red' was recently provided to UMCA by M. Nave and will be field-established in replicate in 2022. Seed

and scion wood have been circulated ad hoc broadly to growers throughout the United States over the past 20 years, but systematic evaluation of this cultivar has not yet occurred.

'Amy' (*C. mollissima*) is a G. Miller selection (72-400) from a 1972 planting of *C. mollissima* seedlings (Carrollton, OH), which is the same planting that produced 72-76, 'Gideon', and 'Peach'. Its mother was acquired from Ackeman Nursery, Bridgman, MI, in 1957. 'Amy' displayed greater cold hardiness than most other *C. mollissima* trialed in Carrollton, OH. It breaks bud relatively early in the spring (in Ohio). It consistently bears high yields. DNA markers reveal that it is approximately one-eighth Japanese, which is likely contributed by its unknown father (unpublished data). Its Japanese ancestry provides some explanation for its high yield and early phenology. The cultivar's nuts (small to medium) have an excellent flavor and peel well. 'Amy' matures earlier than 'Eaton' and 'Sleeping Giant'. Ramets at HARC produced first and mature yields 7 and 9 years from grafting (1998). The average nut size was ≈12 g during the early years of UMCA trials, but it decreased to 10 g or less with mature bearing. Blossom end rot was observed on 'Amy' in New Franklin, MO, in its 2013 crop. Mature yields varied moderately (2006–09), except for the complete crop loss during a double frost in Spring 2007. 'Amy' performed similarly in UTC trials (Metaxas, 2013).

'AU Cropper' (*C. mollissima*) was released by Auburn University in 1980. The cultivar produces heavy crops of decent quality, medium-size chestnuts (Nave, 2017). The average nut size can decrease moderately in larger crop years. In Missouri, consistent mature bearing began 8 years from grafting and incrementally increased from 2004 to 2010.

'AU Homestead' (*C. mollissima*) is a selection of a USDA cooperative planting established at Auburn University in 1954. It was released by Auburn University in 1980. 'AU Homestead' is late-ripening, has a long ripening period, and is considered better suited for household use than commercial plantings. This nut is considered by Hongwen Huang, Hongwen Huang, Director, South China Botanical Gardens, Chinese Academy of Sciences, to have an exceptionally fine flavor. The nut has a glutinous quality that is preferred in China. This quality refers to the temperature that starch gelatinizes in the nut (lower than 60 °C or 140 °F) in chestnut. In lay terms, the glutinous quality is probably best described by the term "mouthfeel," and it imparts a rich and complex texture. Based on years of taste testing, M. Nave hypothesizes that the higher-quality European and American chestnuts have a lower gelatinization temperature than most *C. mollissima* nuts, which plays a role in their excellent flavor. Furthermore, some of the *C. mollissima* (based on the Chinese standards) with better flavor seem similar to European and American nuts; these nuts, 'AU Homestead' included, taste much better roasted than raw (Metaxas, 2013; Miller, 2003; Nave, 1998).

Table 1. Descriptive characteristics of 50 chestnut cultivars of importance in the eastern United States.

Cultivar	Origin	States cultivated	Vetting Uses ^z	Growth	Phenology and bearing	Nut and kernel	Adaptation, pests, and diseases
ABC Red	M. Nave, 'Honglizi' OP seedling	CA	2 UE	Vigorous	Pollen-fertile, light catkin production	Small; excellent taste, good pellicle removal	—
Amy'	G. Miller, Ackerman Nursery	MO, OH	3 4,3,2	Semi-upright, intermediate crown	Early budbreak; consistent and high yields	Medium, smaller with age; excellent flavor, peels well	Cold hardy, BER observed
AU Cropper'	J. Norton, Auburn University	AL	3 4, 3, 2	Semi-upright, intermediate crown	Heavy, consistent yields in MO	Medium; decent quality	—
AU Homestead	J. Norton, Auburn University	AL, IA, MO, OH, TN	3 3, 2	—	Late but extended ripening period	Small to medium; exceptional flavor, glutinous	Adapted to moderate environments
AU Leader	J. Norton, Auburn University	AL, MO	3 1	Upright, tight crown	—	Medium; excellent flavor	—
AU Super	J. Norton, Auburn University	AL, IA, MO, OH	4 3, 2	Upright, intermediate crown	Late ripening; nuts can drop in bur incompatibility	Large, highly variable in MO Benton Harbor	Susceptible to serve cold, graft MSU OP germplasm
IA, MO, TN, MI	3 2	Upright, tight crown	Early ripening; high, stable yields (MI), nuts can ripen in burs	Dark red, purple; average taste, peels well, low defects	Stability in MI; poor performance in MO		
Bergantz	M. Nave, CA orchard seedling	CA	1 UE	—	Mid-season ripening; male-sterile	Extra-large during CA evaluations; excellent flavor, peels well	—
Beth	L. Wilmoth, Nolin River Nut Tree Nursery	KY	1 UE	Semi-upright, intermediate crown	—	Small to medium; good flavor and texture	—
Bouche de Betizac	'Bouch Rouge' OP seedling	MO, TN	2 2, UE	Upright, tight crown	Mid-season ripening; male-sterile	Large, dark brown, broad; peels well, good flavor	Tolerates heat well, gall wasp-resistant
Carr	H.F. Stoke, Tientsin, China seedlot	MO	3 3	Upright, intermediate crown	—	Small to medium; excellent flavor, some unique attributes	Delayed graft failure
Crane	—	MO	2 1	Strong central leader, upright, tight crown	—	Small to medium, good storage; average flavor	Blight susceptible
Eaton	F. Eaton, 'Sleeping Giant' OP seedling	OH, TN	4 3, 2	Semi-upright, intermediate crown	—	Medium; excellent flavor, a favorite	Delayed graft failure
Emalyn's Purple	M. Nave, Byron, GA OP seedling	CA	1 2, UE	—	Mid-season ripening	Extra-large during CA evaluations; good flavor, sweetness	—
Everfresh	MSU OP germplasm	MI, MO	2 1	—	Consistent but moderate yield	Excellent storage	Blight-susceptible
Gideon	G. Miller, Ackerman Nursery	OH, MO, TN	4 4, 3, 2	Semi-upright, intermediate crown	Mid-season ripening; consistent yield, good offspring	Medium to large, uniform shape	Progeny tested well, with a high frequency of

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Table 1. (Continued)

Cultivar	Origin	States cultivated	Vetting Uses ^z	Growth	Phenology and bearing	Nut and kernel	Adaptation, pests, and diseases
Gillet	M. Nave, CA orchard seedling	IA, MI, OH, WI	2 3, 2	Vigorous, compact orchard-type	Mid-season ripening; large crops	Extra-large; peel easily, store well, typical European flavor, sweetness	superior offspring Excellent cold tolerance
Hong Kong	M. Nave, Hong Kong, China seedlot	MO	3 2	Semi-upright, intermediate crown	Early- to mid-season ripening; fair productivity, nuts drop in bur	Consistently medium; peel well, good flavor, sweetness	BER observed
Jenny	M. Nave, 'Kintzel' OP seedling	MO	3 4, 3, 2	Tall, erect	Early ripening, narrow window; large crops	Medium to large, very flavorful	—
Jersey Gem	H. Hartman, 'Orrin' × 'Nanking'	MO, TN	2 2	Dwarfish	Narrow ripening window	Medium, occasionally small; exceptional flavor, store well	Blight susceptible
Kintzel	F. Kintzel, Gold Nursery in WV	—	2 1	Vigorous, semi-upright, intermediate crown	—	Medium; good, unusual flavor	—
Kohr	C. Kohr	MO, OH	3 3, 2	—	Ripens mid-season	Medium to large	Delayed graft failure
Kyoung	M. Nave, 'Bess' Sport	CA	3 2, UE	Very vigorous, tall, somewhat upright	—	Regular shape, consistently large; good flavor	—
Luvall's Monster	V. Luvall, seedling of Dallas City cultivars	IA, OH	4 4, 3, 2	Vigorous, open crown	Early leafing and ripening; exceedingly high yield, male-sterile	Medium; great flavor, pellicle detaches, splits	Bears well in some northern areas (NY)
Marigoule	French cultivar	MO, TN	2 3, 2	Spreading, open crown	Fair to low	Large, reddish, large hilum; good flavor, peel well	<i>Phytophthora</i> spp. resistant
Marsol	French seedling	MO, TN	2 2	Semi-upright, intermediate crown	Fair to low	Large, sizeable hilum scar; peels well	—
Meiling	USDA GA, South Central China seedlot	MO, OH, TN	2 2	Semi-upright, tight crown	—	Medium; unusual flavor, better roasted	—
Miller 72-76	G. Miller, Ackerman Nursery	MO, OH	3 3, 2	Semi-upright, intermediate crown	Consistently large crops	Medium, occasionally smaller	—
Mossbarger	L. Wilmoth, seedling selection KY	IA, MO, OH	4 4, 3, 2	Vigorous, semi-upright, intermediate crown	Early- to mid-season ripening; consistently large crops, precocious	Very good flavor, stores well	—
Nanjing Special	M. Nave, China seedlot	CA	2 3, 2	Erect	Early- to mid-season ripening	Small; excellent, sweet, complex flavor	—
Nanking	USDA GA, South Central China seedlot	IA, MO, OH, TN	4 2	—	Highly productive, can overproduce	Medium; average flavor, carrot-like	—
NC-8	R.D. Campbell, 'Skioka' OP seedling	MO, OH, NY, ON	2 1	Erect, semi-upright, intermediate crown	Ripens during mid-season, narrow-window	Moderate, one per bur	Blight-susceptible

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Table 1. (Continued)

Cultivar	Origin	States cultivated	Vetting Uses ^z	Growth	Phenology and bearing	Nut and kernel	Adaptation, pests, and diseases
Orrin	J. McKay, South Central China seedlot	MO, OH	3 2	Very erect, upright, tight canopy	Good productivity	Medium, dark mahogany; good flavor	—
Patterson	M. Nave, China seedlot	CA	2 4, 3, 2	Spreading, orchard-type, vigorous	Highly productive, fertile catkins	Large, medium in older trees; sweet when cured	—
Payne	M. Nave, Byron, GA OP seedling	MO, OH, TN	3 3, 2	Semi-upright, tight canopy	Mid- to late-season ripening	Small to large, climate-dependent; good flavor	—
Peach	G. Miller, Ackerman Nursery	MO, OH, TN	4 3, 2	Upright	Early to mid-season ripening; productive but delayed maturity, can fall flower	Medium to large, consistent; typical flavor	—
Perry	M. Nave, Byron, GA OP seedling	IA, MO, OH	3 3, 2	Upright, intermediate crown	Good productivity	Small to medium; good quality	—
Precoce Migoule	French cultivar	—	2 2	Vigorous, tight crotch angles	Productive, pollen-fertile	Medium to large; good flavor, multiple embryos	<i>Phytophthora</i> spp.-resistant
Qing	M. Nave, seedling selection KY	MO, OH	4 4, 3, 2	Semi-upright, open crown, small stature	Early to mid-season ripening, very late leafing; heavy producer	Large; good flavor, exceptionally sweet, great storage	Minimal BER, spring frost avoidance, graft failure
Schlarbaum	M. Nave, Byron, GA OP <i>C. crenata</i> germplasm	IA	2 3, 2	Tall, slender	Mid-season ripening; average production, male-sterile	Very large; easy pellicle removal	—
Shing	M. Nave, Yixian, China seedlot	MO, OH, TN	3 2	Vigorous, semi-upright, intermediate	Precocious, variable yields	Small; desirable taste	—
Simpson	—	OH, NY, ON	2 1	—	—	Many small nuts; ordinary flavor, multiple embryos	—
Sleeping Giant	<i>C. mollissima</i> × (<i>C. crenata</i> × <i>C. dentata</i>)	CT, MO, OH, TN	4 4, 3, 2	Upright, intermediate	Early to mid-season ripening, consistent yielding	Medium, smaller in the north; good-flavor	General adaptation, BER observed
Szego	M. Nave, 'Linden' OP seedling	IA, MO	4 2	Open crown, vigorous, upright	Late ripening; good productivity, nuts drop in the bur, male-fertile	Large; sweet, very flavor, easy peeling	Blight-susceptible, <i>Phytophthora</i> spp.-resistant, cold-hardy
Vancouver	M. Nave, Vancouver Canada seedlot	CA	1 UE	Vigorous	—	Large; flavorful	—
WC	W.C. Donaho, KY seedling selection	MO, OH	1 UE	Vigorous	—	Large, dark; sweet, stores well	—
Willamette	Dunstan population	MO, TN	3 1	Upright, tight crown	Good productivity	Small to medium, inconsistent year to year; unusual flavor	—
Yixian Good Flavor	M. Nave, Yixian, China seedlot	MO	3 3, 2	Upright, tight crown	Wide ripening window, early to late season	Medium to large; very flavorful,	—

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Table 1. (Continued)

Cultivar	Origin	States cultivated	Vetting Uses ^z	Growth	Phenology and bearing	Nut and kernel	Adaptation, pests, and diseases
Yixian Large Nut	M. Nave, Yixian, China seedlot	MO	3 4, 3, 2	Semi-upright, intermediate	Wide ripening window, early to late season	pellicle removes well Very large, variable according to the environment; very flavorful, pellicle removes well	—
Yixian Orange	M. Nave, Yixian, China seedlot	MO	3 4, 3	Upright, tight crown	Mid- to late-season ripening; pollen-fertile	Bright orange nut, medium to large; excellent flavor, good pellicle removal	—

^zThe “degree of vetting” is a relative term reflecting the level to which cultivars have been evaluated to date and across environments. Class 4 denotes well-vetted cultivars for which performance and attributes are well understood. Class 3 entails cultivars with some vetting, although further evaluation is needed across environments and time. Class 2 represents cultivars with limited vetting. Class 1 describes cultivars that are new or have unknown performance across environments. “Uses” describes the relevant utility of the cultivars at present: class 4 denotes scion cultivar, class 3 signifies value as a seed orchard parent, class 2 represents uses as a breeding parent, class 1 indicates the cultivar is obsolete, and UE notes that the cultivar is still under evaluation.

AL = Alabama; BER = blossom end rot; CA = California; CT = Connecticut; IA = Iowa; KY = Kentucky; MI = Michigan; MO = Missouri; NY = New York; OH = Ohio; ON = Ontario; OP = open-pollinated; TN = Tennessee; WI = Wisconsin; WV = West Virginia.

The nut size fluctuates with crop size and tree age.

‘**AU Leader**’ (*C. mollissima*) was released by Auburn University in 1980 (Norton et al., 1983). It produces medium-size nuts that range upward from ≈13 g, depending on location and year. They have an excellent flavor, raw or roasted, and store well (Nave, 1998). ‘AU Leader’ was quite unproductive in Missouri.

‘**AU Super**’ (*C. mollissima*) is from Auburn University, but it was never formally released as a cultivar. It was dubbed “AU-Super” by Hongwen Huang during his time at Auburn. It has relatively large nuts that ripen late during the season. Nut and tree morphology indicate that it is not related to the other Auburn releases (‘AU Cropper’, ‘AU Leader’, and ‘AU Homestead’). This cultivar has performed especially well in east-central Iowa. It tends to overbear in some years, significantly reducing the average nut size. However, it is vulnerable to severe dieback after severe winter low temperatures. Ramets grow quite vigorously, allowing them to recover well from cold dieback.

‘**Benton Harbor**’ (*C. mollissima*) is a seedling selection from the Michigan State University experiment station in Benton Harbor, MI. Its mother is described as the largest tree at the station. ‘Benton Harbor’ yields are high and stable, from 70 to 90 lb in Michigan, and it produces earlier than most *C. mollissima* selections. Its dark red and purple nuts lack double embryos and splits, peel well, and have an average taste. Nuts can drop within the heavy, thick burs. Field observations note blight resistance (Fulbright, 2021).

‘**Bergantz**’ (*C. sativa* Mill. × *C. crenata* Siebold & Zucc.) is an orchard seedling

(possibly of the cultivar Nevada) in the Sierra Nevada foothills. The seed source was Bob Bergantz. The cultivar produces extra-large nuts in California that peel easily and have an excellent flavor. The nuts fall during mid-season (2 weeks after ‘Colossal’). It is male-sterile. Greater evaluation in the East and Midwest is needed. ‘Bergantz’ ramets were introduced to the UMCA repository in 2020.

‘**Beth**’ (*C. mollissima*) is a seedling selection from Kentucky made by John Brittain at Nolin River Nut Tree Nursery. Its nut is small, but it has good flavor and texture (Nave, 1998). ‘Beth’ ramets were introduced to the UMCA repository in 2020.

‘**Bouche de Betizac**’ (*C. sativa* × *C. crenata*) is an OP seedling of the French cultivar ‘Bouch Rouge’ and a *C. crenata* pollen parent. It was introduced to the United States by Craddock and Pellegrino (1992). Grafted trees have been planted widely in the western United States, but not in the Midwest. The tree has vigorous, straight growth. It is noted to handle the heat of the California central valley very well, but it also performs well in cooler climates. Nuts fall mid-season in warm climates. ‘Bouche de Betizac’ is pollen-sterile. It produces very broad, dark brown nuts that peel well and have good flavor. Ramets in the UMCA repository have a nut size ranging from 20 to 25 g. Three nuts are standard per bur (Nave, 1998). Nuts in the center of burs are usually flat. ‘Bouche de Betizac’ displays field immunity to Asian gall wasp (Torello-Marini et al., 2018). Grafted trees have been planted widely in the western United States, but not in the Midwest. ‘Bouche de Betizac’ seedlings have been planted in the Midwest, but with tempered expectations because they were pollinated with *C. sativa*.

‘**Carolina**’ (*C. mollissima*) is a third-generation OP offspring selected in Alachua, FL, from the widely available Dunstan population. The population is derived from a putative and lost *C. dentata* tree (described as blight resistant) and three *C. mollissima* cultivars, ‘Nanking’, ‘Kuling’, and ‘Meiling’ (Note: Morphological characteristics and DNA markers indicate no *C. dentata* ancestry in the Dunstan population). ‘Carolina’ is reported as particularly sweet, but evaluations by M. Nave suggested that the cultivar’s siblings, ‘Carpenter’ and ‘Revival’, are sweeter (Miller, 2003; Nave, 1998).

‘**Carr**’ (*C. mollissima*) is a seedling that originated from a seedlot in Tientsin, China. The USDA (Beltsville, MD) sent the seed to R.D. Carr of Magnolia, NC, in 1915. ‘Carr’ was first grafted in 1932 by H.F. Stoke of Roanoke, VA, and was commercially introduced in 1935. Unfortunately, the cultivar is extremely difficult to graft and, despite wide distribution, only a few trees are still known to exist (Seligmann, 1994). The tree has a very upright growth pattern. It has small to medium nuts (10–12 g) with excellent flavor, although they are slightly different from the average *C. mollissima* nut (Nave, 1998).

‘**Crane**’ (*C. mollissima*) is a seedling selected from nuts sent by Peter Liu to the USDA in 1936, and subsequently evaluated in Philema, GA. It is from the same seedlot as ‘Meiling’ and ‘Nanking’, but it grows more upright, maintaining a stronger central leader. J.W. McKay named ‘Crane’ in 1963 to honor H.L. Crane, a chestnut researcher from the 1930s to 1950s. The nuts (10–12 g) are a distinctive reddish color and have good keeping quality. However, the nut flavor is average for a *C. mollissima* nut; therefore, it

is seldom planted today (Miller, 2003; Nave, 1998).

‘Dallas City River’ and ‘Dallas City Street’ (hybrids perhaps involving *C. crenata* and *C. dentata*) are of unknown origin and are likely products of the breeding efforts by E.A. Riehl (Godfrey, IL) or George W. Endicott (Villa Ridge, IL) at the turn of the 20th century. Both breeders used American and Japanese seedlings. Riehl used the cultivars ‘Dan Patch’ (*C. crenata* × *C. dentata*), ‘Boone’ (an 1896 Endicott *C. crenata* × *C. dentata* hybrid), and ‘McFarland’ (a Luther Burbank hybrid, probably *C. crenata* × *C. sativa* × *C. dentata* × *C. mollissima*), and originated many high-quality American hybrids such as ‘Rochester’, ‘Gibbens’, ‘Fuller’, ‘Champion’, ‘Progress’, and others (Colby, 1924). Dr. A.S. Colby once described some of these hybrids as combining “the size of the Japanese with the quality of the American parent” (Colby, 1936). It is also possible the Dallas City cultivars could be a product of Benjamin Buckman (Farmingdale, IL) or Dr. A.S. Colby himself, who taught at the University of Illinois, Urbana-Champaign (Nave, 1998).

‘Douglass 1A’ (*C. mollissima* × *C. dentata*) is a selection by Earl Douglas, who made many *C. mollissima* × *C. dentata* hybrids in New York in the 1950s and 1960s. Its nut size varies quite a bit within a single year’s crop. ‘Douglass 1A’ nuts also experience some defective traits such as splitting and multiple embryos, although they have good flavor and peel well (Nave, 1998).

‘Eaton’ (*C. mollissima* × *C. crenata* × *C. dentata*) is a “favorite eater” among chestnut consumers (M. Gold and M. Nave, personal communication). Its characteristics are predominantly of *C. mollissima*, and its nuts (12–13 g) have excellent flavor, raw or roasted. The cultivar originated from a seedling given to Frederick Eaton (Wallingford, CT) by Arthur Graves (Jaynes, 1970), and it is thought to be an OP seedling of ‘Sleeping Giant’. Delayed graft failure has been noted, even to a degree in Missouri.

‘Eaton River’ (*C. mollissima* × *C. crenata* × *C. dentata*) is presumably a seedling of ‘Eaton’ propagated and sold as grafted trees by John Brittain at Nolin River Nut Tree Nursery.

‘Emalyn’s Purple’ (*C. mollissima*) is a seedling descended from the USDA planting in Byron, GA. The seedling was grown out and evaluated by M. Nave in California. It ripens and drops its nuts during mid-season. The nuts are large (≈29 g) in the California climate and have good flavor and sweetness. Their pubescence is similar to ‘Jenny’ (Nave, 2017). The tree’s form and productivity have not yet been evaluated. Scion has been distributed to many growers, and ramets were brought into the UMCA collection in 2019. Greater evaluation in the East and Midwest is needed.

‘Everfresh’ (*C. mollissima*) is a selection from the Michigan State University experiment station at Benton Harbor. The cultivar displayed consistent (but not high) yields in Michigan and unique characters that enabled frost avoidance when most *C. mollissima*

cultivars experienced losses. The tree is a slow-growing tree and has heavy catkin sets. ‘Everfresh’ nuts, true to their name, have a uniquely long shelf life. Stored properly, nuts from this cultivar keep into the summer following their harvest (Fulbright, 2021). Unfortunately, ramets of ‘Everfresh’ were susceptible to blight in MO.

‘Gideon’ (*C. mollissima*) is a G. Miller selection (72-283) from the same seedlot that derived ‘Amy’ and ‘Peach’ (i.e., its mother was acquired from Ackerman Nursery, Bridgman, MI, in 1957). ‘Gideon’ has been a consistent bearer compared with most other *C. mollissima* trialed in Carrollton, OH, and its offspring have been consistently superior. The cultivar ripens during mid-season, slightly later than ‘Peach’. Its nuts (12–18 g) have a uniform shape and are appealing (Miller, 2003).

‘Gillet’ (*C. sativa* × *C. crenata*) also grew from seed provided by Bob Bergantz. Like ‘Bergantz’, it is expected to be a seedling of the cultivar ‘Nevada’. ‘Gillet’ grows vigorously but has a compact orchard-type form. The cultivar produces large crops (despite ample catkin sets) and large, single-embryo nuts that peel easily and store well. The nuts have a basic European chestnut flavor that sweetens with storage. Furthermore, the nuts drop mid-season, free from relatively compact burs. ‘Gillet’ is also grown in Michigan, Wisconsin, Ohio, Indiana, and Illinois, but replicated data regarding performance are needed.

‘Hong Kong’ (*C. mollissima*) is considered the best seedling selection from a seedlot from Hong Kong. The tree is pollen-fertile and drops its nuts during the early to mid-season. The nuts peel well, and the nut flavor is very good, with a nice sweetness. Grafted trees at the University of Missouri grew vigorously and had fair productivity without blight. Nuts from the ramets at the UMCA are consistently medium (Anagnostakis and Nave, 2015; Nave, 2017).

‘Jenny’ (*C. mollissima*), named by M. Nave, is an OP seedling of the old Ohio cultivar ‘Kintzel’ (also known as Byron 1-1 and 1-2). ‘Jenny’ is a tall tree with a very erect growth pattern, unlike most *C. mollissima* trees. It is male-fertile but productive, and the nuts are medium to large (depending on the climate), very flavorful, and a favorite to eat. Limited data show that nuts are regularly medium in Missouri. Despite their size, the nuts drop early during the season. Additionally, intra-tree nut ripening and drop occur within a narrow window (Anagnostakis and Nave, 2015; Nave, 2017). Scion of ‘Jenny’ has been provided to various growers across the eastern half of the United States. Because of unique morphologies, experts suspect ‘Jenny’ might have a complex ancestry that includes *C. dentata*.

‘Jersey Gem’ (*C. mollissima*) is a seedling of ‘Orrin’ × ‘Nanking’ developed by Henry Hartmann of New Jersey. The cultivar has a unique dwarfish growth pattern, and its nuts tend to ripen within a narrow window. Hartmann felt that the nuts (small to medium) stored very well and had exceptional flavor (Nave, 1998). Unfortunately, ‘Jersey Gem’

has exhibited some susceptibility to chestnut blight in New York.

‘Kintzel’ (*C. mollissima*) was grown by and named after Northern Nut Grower Association member Frank Kintzel. The tree is vigorous and large, and some suspect other *Castanea* spp. in its genetic background. The nut (13–14 g) has a good but unusual flavor. Two grafted ‘Kintzel’ trees (Byron 1-1 and 1-2) were in the Byron, GA, USDA orchard (Nave, 1998).

‘Kohr’ (*C. mollissima*) is a top-performer from the 2000-tree orchard planted by Clarence Kohr in Pine Grove, PA, in the 1960s. Nuts are medium to large in size and fall during mid-season. Productivity can be modest or low in some years. Grafts often experience delayed failure or poor growth.

‘Kyoung’ (*C. mollissima*) is a bud sport from the *C. mollissima* cultivar ‘Bess’. ‘Bess’ (an OP seedling of ‘Beth’) is not a very productive tree; it produces irregularly shaped nuts of variable size. ‘Kyoung’, however, has regularly shaped, consistently large nuts. ‘Kyoung’ nuts also have better flavor. Nuts and scion from ‘Kyoung’ have been provided to growers broadly. Grafts and seedlings of ‘Kyoung’ are exceptionally vigorous and somewhat upright (Nave, 2017). Multiple growers from different environments note that ‘Kyoung’ offspring are their tallest and most vigorous. Greater evaluations in the East and Midwest are needed. ‘Kyoung’ ramets were introduced to the UMCA repository in 2020.

‘Lindstrom #40’ and ‘Lindstrom #43’ (*C. mollissima*), also known as Byron 40 and ‘Musella’ and also known as Byron 43 and ‘LaGrange’, respectively, are selections from the Byron, GA, USDA orchard. Both selections heavily produced small to medium nuts. The ‘Lindstrom #43’ nut size is variable and often small in Missouri.

‘Luvall’s Monster’ [*C. mollissima* × (*C. crenata* × *C. dentata*)] is a first-generation seedling of one of two old, putative Japanese × American hybrids growing on the Mississippi River in Dallas City, IL. Its pollen parent is unknown. The cultivar grows vigorously and with a preferred open crown architecture. It is also pollen-sterile, which makes ‘Luvall’s Monster’ exceedingly high-yielding. The nut is twice as large as that of its mother. It also has a great flavor, raw or roasted, and the pellicle often comes off the kernel in one piece. However, the nut is quite wide, does not store well, and has frequent double embryos and splits. There is also a tendency to develop a “hollow heart,” which is typical of Japanese and American nuts. Scion and OP seedlings have been widely circulated among Northern Nut Growers Association members. Grafts of the tree were tested in Byron, GA, to determine gall wasp resistance and the effects of climate on nut size. According to B. Caldwell, the tree does bear well in upper New York state, with good-size nuts for that area. More testing is needed in short-season areas (Hunt et al., 2004; Miller, 2017; Nave, 1998).

‘Marigoule’ (*C. crenata* × *C. sativa*) originates from France. It was introduced to

the United States by Craddock and Pellegrino (1992). It has a high level of resistance to *Phytophthora* spp. and a reputation for producing good offspring. Its nuts (18–22 g) have a pretty reddish color and large hilum. Their flavor is good, and they peel well (Nave, 1998). Yields are fair to low in Missouri.

‘Marsol’ (*C. sativa* × *C. crenata*) is also a French seedling. Its nuts have a large hilum scar and peel well (Metaxas, 2013). Yields are fair to low in Missouri.

‘Meiling’ (*C. mollissima*) was selected from seed imported by Peter Liu from south-central China, the seedlot of ‘Crane’ and ‘Nanking’. ‘Meiling’ was also introduced commercially by the USDA in 1949. In Missouri, nut size varies from small to medium. The nut has an unusual flavor that is better roasted than raw (Miller, 2003; Nave, 1998).

‘Miller 72-76’ (*C. mollissima*) is a G. Miller selection from a 1972 planting of *C. mollissima* seedlings (Carrollton, OH), which is the same planting produced ‘Amy’, ‘Gideon’, and ‘Peach’. Its mother was acquired from Ackerman Nursery, Bridgman, MI, in 1957. It bears consistent large crops of medium-size nuts. However, nut size is smaller during light crop years.

‘Mossbarger’ (*C. mollissima*) is a 1983 selection from Kentucky. The cultivar is presumed to be pure *C. mollissima*, but other species might be in its genetic background. Although the tree looks predominantly like *C. mollissima*, ‘Mossbarger’ and its offspring have unusually thick stems and branches. Nuts have a very good flavor, raw or cooked (Nave, 1998). ‘Mossbarger’ consistently yielded large crops in the UMCA and UTC trials. Ramets are quite vigorous and precocious compared with most *C. mollissima* selections.

‘Nanjing Special’ (*C. mollissima*) is a seedling selection of M. Nave originating from a seedlot from the Nanjing Botanical Garden collected in 1993. It produces small nuts with superb flavor, and M. Nave describes it as one of the best tasting *C. mollissima* nuts available in the United States. Its profile is only mildly sweet, but it has a very rare complexity of flavors. Nuts drop early and continue into mid-season. The nut color is dull brown and fades quickly and unevenly; therefore, it is not a pretty nut after a few storage days. The tree is an erect grower (Nave, 2017). Greater evaluation in the East and Midwest is needed. ‘Nanjing Special’ ramets were introduced to the UMCA repository in 2020.

‘Nanking’ (*C. mollissima*) shares a seedlot and history with ‘Crane’ and ‘Meiling’. It is highly productive, sometimes overly so, such that nut size goes down. Its nut flavor (13–15 g) is average for *C. mollissima* nuts, and it has a reputation for producing good seedlings (Nave, 2017). However, its offspring often have an off-flavor that is difficult to describe and referred to as a carrot-type flavor. This flavor is found in many *C. mollissima* nuts in the eastern United States, including many Dunstan seedlings (M. Nave, personal communication) (Miller, 2003).

‘NC-8’ (*C. mollissima*), also known as ‘Campbell NC-8’, is a second-generation OP seedling of ‘Skioka’, the reputed *C. mollissima* × *C. sativa* hybrid of J.U. Gellatly (Gellatly, 1964). Morphologically, ‘NC-8’ appears primarily *C. mollissima*; however, some traits suggest *C. sativa* and *C. dentata* are in its genetic background. Its growth is erect, and nuts ripen mid-season within a short period. Burs often contain single nuts. The tree was selected by Doug Campbell in Ontario, Canada, for its large nuts, but the nut size is moderate to small (10–11 g) in Missouri. However, the nut size might increase in southern or western climates (Nave, 1998).

‘Orrin’ (*C. mollissima*) originated from an orchard belonging to Orrin Good of Lock Haven, PA, and was named by J.W. McKay in 1963. It probably originated from Peter Liu’s 1935 importations from seedlots with origin similar to ‘Kuling’, ‘Meiling’, and ‘Nanking’. The tree has a very erect growth pattern. The nuts are quite small based on Missouri evaluations, although the tree is productive. They have a distinct dark mahogany color and a good flavor (Miller, 2003; Nave, 1998).

‘Patterson’ (*C. mollissima*) is an M. Nave selection from seed collected at the Nanjing Botanical Garden (provided by Nanjing Botanical Garden scientist Liu Liu). The selection has morphologies that differ from those of other *C. mollissima* trees cultivated in the United States, like its wide leaves. ‘Patterson’ also has a spreading, orchard-type architecture; however, it grows quite vigorously. The cultivar is highly productive despite setting fertile catkins, and its nuts vary in size (from medium to large) and become very sweet when cured (Miller, 2017; Nave, 2017). Greater evaluations in the East and Midwest are needed. ‘Patterson’ ramets were introduced to the UMCA repository in 2020.

‘Payne’ (*C. mollissima*), also known as Byron 3-3, was selected from the old orchard at the Southeastern Fruit and Tree Nut Research Laboratory in Byron, GA. ‘Payne’ was selected for its large nuts during evaluations at Byron. Interestingly, grafted trees have not reproduced the nut size of the ortet in some cases. In Missouri, nut size decreases from 19 to 10–13 g as trees mature. According to Metaxas (2013), ‘Payne’ was one of the largest-fruited and highest-yielding *C. mollissima* cultivars in the UTC trial. The nuts drop during the mid-season to late season and have good flavor (Nave, 2017).

‘Peach’ (*C. mollissima*) is a G. Miller selection from a 1972 planting of *C. mollissima* seedlings (Carrollton, OH), which is the same planting that produced 72-76, ‘Amy’, and ‘Gideon’. Its mother was acquired from Ackerman Nursery, Bridgman, MI, in 1957. Its main attribute is consistent production of medium to large nuts with a distinct ‘peach fuzz’ on the shell. The tree tends to fall flower, which tends to reduce the next year’s yield. Its flavor is typical (Miller, 2003).

‘Perry’ (*C. mollissima*), also as known as Byron 93, was also selected from the old orchard at the Southeastern Fruit and Tree

Nut Research Laboratory in Byron, GA. The tree is attractive, has good productivity, and good-quality small to medium nuts (Nave, 2017).

‘Precoce Migoule’ (*C. sativa* × *C. crenata*) is a vigorous, productive French cultivar. It is pollen-fertile, but heavy crop loads make tight crotch angles vulnerable to breakage. Its nuts (≈17 g in California) have good flavor and peel well, but some have multiple embryos (Nave, 1998). Field resistance to phytophthora root rot is noted (Craddock and Perkins, 2019).

‘Qing’ (*C. mollissima*) was discovered as a yard tree in Hickory, Kentucky, where it was planted sometime between the late 1950s and early 1960s. Its origin is unknown, but it may have originated from trees distributed by the Tennessee Valley Authority. In 1998, it was named by M. Nave and propagated by G. Miller. Compared with adjacent *C. mollissima* trees, it is a much smaller tree. The tree is a heavy producer and has a desired “loose” canopy architecture. Nuts (medium to large) fall during the early to mid-season and are shiny and dark brown. Some burs have more than three nuts, which decreases the average nut size slightly. ‘Qing’ nuts have good flavor and are exceptionally sweet; they are sweeter than most *C. mollissima* nuts growing in the United States. Multiple embryos are minimal or absent, and the nuts store very well, even for a *C. mollissima* nut (Miller, 2003; Nave, 1998). ‘Qing’ shows minimal blossom end rot. Grafts often experience delayed failure or poor growth. ‘Qing’ has performed highly consistently in UMCA trials, showing the best spring frost avoidance (Gold and Hunt, 2002).

‘Schlarbaum’ (*C. crenata* × *C. mollissima*) is a M. Nave selection. The tree is tall, slender, and drops nuts mid-season. During the late 1990s or early 2000, Dr. Schlarbaum of the University of Tennessee grafted Japanese chestnut trees at the experimental station in Byron, GA. M. Nave collected and evaluated large seeds from these *C. crenata* grafts, and ‘Schlarbaum’ is a selection from that seedlot. The pollen parent was probably a neighboring *C. mollissima* tree with a large nut, and experts suspect that tree may be the cultivar Shandong (Byron 4-2). ‘Shandong’ had very large nuts (the second-largest nuts at Byron). ‘Schlarbaum’ has few male flowers that are mostly sterile, but its productivity is just average. Its nuts are very large, with an easily removeable pellicle (Anagnostakis and Nave, 2015; Miller, 2017). ‘Schlarbaum’ ramets were introduced to the UMCA repository in 2020.

‘Shing’ (*C. mollissima*) is a seedling selected from Yixian, China, and originated from the same seed lots as ‘Yixian Large Nut’. It is a very vigorous tree and a precocious but variable producer. The nuts are small but very tasty (Metaxas, 2013; Nave, 2017).

‘Simpson’ (*C. mollissima* × *C. sativa*) is a cultivar with a moderate nut size. Its flavor is not remarkable and is lesser than that of the Gellatly hybrids. Many of the larger nuts have multiple embryos, which is problematic

because they produce many small nuts (Nave, 1998).

‘Sleeping Giant’ (*C. mollissima* × *C. crenata* × *C. dentata*) is a seedling derived from a *C. mollissima* × (*C. crenata* × *C. dentata*) cross at the Connecticut Agricultural Experiment Station in 1937 (Nave, 1998). It ripens during early to mid-season. Nuts with a good flavor are ≈11 to 12 g in northern environments and 13 to 16 g in New Franklin, MO. Yields and nut size are relatively consistent, and some growers indicate that ‘Sleeping Giant’ shows good transferability between environments (Miller, 2003). Blossom end rot susceptibility has been observed in Missouri.

‘Szego’ [*C. crenata* × *C. pumila* (L.) Mill.] × *C. mollissima* hybrid} is an OP seedling of the California hybrid ‘Linden’ (*C. crenata* × *C. pumila*), and the Dunstan hybrid ‘Revival’ is speculated to be the pollen parent. The cultivar, named after New York Northern Nut Growers Association member Al Szego, is very vigorous and upright. It has a “loose” crown architecture that allows for preferred light penetration into the canopy. This architecture contributes to the cultivar’s good productivity, despite producing ample male flowers. Nuts from ‘Szego’ are uniformly large (>20 g), easy to peel, and slightly less dense than typical *C. mollissima* nuts. They are also some of the best cultivars for eating, with a sweet and very flavorful taste. The nuts drop during the late season and store very well. In northern environments (like Iowa), the nuts do not drop from the burs. The tree is resistant to phytophthora root rot. However, ramets undergoing long-term evaluation at UMCA recently developed severe blight cankers; this cultivar is susceptible to blight. ‘Szego’ is very cold-hardy, more so than many *C. mollissima*. Growers in Iowa, Michigan, and Ohio note that ‘Szego’ has survived winter conditions that have killed many other *C. mollissima* cultivars (Miller, 2017).

‘Vancouver’ (*C. mollissima*) is an early selection of M. Nave’s grown from a seed that originated in Vancouver, Canada. The tree is still young, but its large, flavorful chestnuts make it stand out. Ramets have been incorporated in the UMCA repository. Greater evaluations in the East and Midwest are needed. ‘Vancouver’ ramets were introduced to the UMCA repository in 2020.

‘WC’ (*C. mollissima* × *C. pumila*) is named after W. C. Donoho of Louisville, KY, a member of the Kentucky Nut Growers Association. The tree is possibly a sibling of ‘Qing’. Its large, dark nuts resemble those of ‘Qing’ because they are similar in size and sweetness and store well. ‘WC’ is more vigorous than ‘Qing’ and may graft more easily (Nave, 2017). ‘WC’ ramets were introduced to the UMCA repository in 2020.

‘Willamette’ (*C. mollissima*) is another OP offspring selected from among the widely available Dunstan population. The population is derived from a putative and lost *C. dentata* tree (described as blight-resistant) and three *C. mollissima* cultivars ‘Nanking’, ‘Kuling’,

and ‘Meiling’ (morphological characteristics and DNA markers indicate no *C. dentata* ancestry in the Dunstan population). The tree has an upright growth habit and matures during the mid-season to late season in Missouri. The flavor of the nut is slightly unusual, and the nut is better cooked than raw, which is a characteristic it shares with one of its probable ancestors, ‘Meiling’. Its nuts usually have double embryos and were inconsistent in size in Missouri, where they are often very small (Gold and Hunt, 2002; Nave, 1998).

‘Yixian Good Flavor’ (*C. mollissima*), also referred to as ‘YGF’, originated from a seedlot from the region of Yixian, China, in the southern tip of Anhui Province. The tree grows upright, and the nuts drop over the course of an extended time, from early season to late season. ‘Yixian Good Flavor’ produces a very flavorful, medium to large nut. Its nuts are some of the larger *C. mollissima* nuts grown at the University of Missouri chestnut planting in New Franklin (Nave, 2017). More evaluations in the East and Midwest are needed.

‘Yixian Large Nut’ (*C. mollissima*) is a selection made in 1993 by M. Nave. The seedling originated from a seedlot of large nuts from Yixian, Anhui Province, China, in the southern tip of Anhui Province, and it is possibly a sibling of ‘Shing’. True to its name, the cultivar produces a large nut (≈20 g in Missouri) with good flavor, although nut size varies by environment. The pellicle removes well, and the nuts drop over a long period, from early to late season (Anagnostakis, 2015; Nave, 2017). More evaluations in the East and Midwest are needed.

‘Yixian Orange’ (*C. mollissima*) is also a selection made in 1993 by M. Nave. The seedling originated from a seedlot of small nuts from Yixian, Anhui Province, China (a different source than that of ‘Yixian Large Nut’) (Nave, 2017). It is pollen-fertile and not a heavy pollen producer. Its bright orange nuts are medium in size, drop during mid-season to late season, exhibit good pellicle removal, and have excellent flavor (Anagnostakis and Nave, 2015). More evaluations in the East and Midwest are needed.

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