

CHECKLIST OF CULTIVATED *PLATANUS* (PLANETREE)

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There may be 8 or 9 species in the genus *Platanus*, and most of them are native to North America. The eastern American species is *P. occidentalis* L. which occupies a broad range east of the Prairies from Maine and Ontario to Minnesota, Texas, and Florida. In the western United States, *P. racemosa* Nutt., is found from central to southern California while *P. wrightii* Wats. ranges from Arizona and New Mexico into southern California. All 3 United States natives are also found in portions of Mexico. In addition, there may be 3 or 4 poorly known indigenous species in Mexico.

Eastern Asia is home to *P. kerrii* Gagnepain, a rare, elusive, and hopefully not extinct species from Laos. This species, having long, unlobed leaves and up to 9 fruits per cluster, may not have been seen by Western botanists since 1932. It could be the last remnant of the ancestors of *Platanus* and is eagerly sought after for further study.

The only species in Europe is *P. orientalis* L., which ranges from southeastern Europe through western Asia, perhaps as far as Kashmir. It is especially well known in Greece and Turkey but the true extent of its native range has been obscured by widespread planting during ancient times. This species is part of various stories and legends involving Socrates, Xerxes, Hippocrates, and Napoleon (5, 6).

Even though there are few species in the genus *Platanus*, we should consider ourselves fortunate that only 2 species, the American *P. occidentalis* and the Eurasian *P. orientalis*, have been widely cultivated. The hybrid between these 2 species, however, has far surpassed its parents in horticultural utility and nomenclatural confusion.

The so-called "London" plane (*Platanus* × *acerifolia* (Ait.) Willd.) is a cross between the eastern American sycamore (*P. occidentalis*) and the Oriental plane (*P. orientalis*) that originated in the Oxford Botanic Garden in England about 1670 (3). That having been stated, let us examine

the situation in more detail.

First, as noted above, the common name in the United States for species of the genus *Platanus* is "sycamore." "Sycamore" in England is used as the common name for a maple (*Acer pseudoplatanus* L.) and the "sycamore" (sycomore) of the Bible is a somewhat second-rate fig tree, *Ficus sycomorus* L. (12). A reasonable compromise, which will probably not be totally acceptable to the growers and users of *Platanus* around the world, might be planetree. However, the use of the generic name, rather than any common name, could eliminate any problems of international communication.

What is a (the) "London plane?" In Great Britain, the London plane is considered to be a clone, propagated vegetatively by cuttings, and a full description is provided in the latest edition of Bean (1). In the United States, the term "London plane" is used to refer to any and all of the hundreds of thousands of seed-propagated trees that exhibit characteristics somewhat intermediate between the two parent species. If there is a recognized clone of "London plane," it should be considered as a cultivar, ('London') and this we have done in the present checklist. Perhaps, as more and improved cultivars become available in the United States, the term "London plane" will cease to have much credibility, although it will, no doubt, continue to be used for some time.

And what about the scientific name of this interspecific hybrid? Most American and British writers have used *P. × acerifolia* (Ait.) Willd., but there are other possibilities. Muenchhausen, in 1770, gave the name *P. hispanica* to the planetree that Philip Miller described as the "Spanish Planetree" in the 1759 edition of his *Dictionary*. The Portuguese botanist Brotero used the name *P. hybridus* (sic) in 1804 to designate a planetree that he considered could be a hybrid between *P. occidentalis* and *P. orientalis*. Both of these names have priority over *P. × acerifolia*, which was not published until 1805. The discus-

sion in Bean (1) to justify the continued usage of *P. × acerifolia* is not entirely convincing, but it is a decision in which we heartily concur. However, the name *P. × hybrida* Brot. was used in *Flora Europaea* (11), even though the hybridity of this taxon was still questioned.

As to the origins of these hybrids known as *P. × acerifolia*, the place (Oxford) and time (1670) stated by Henry and Flood (3) is a conclusion based on circumstantial evidence by botanists acting as detectives. It is certain that a tree believed to be a hybrid did exist in the Oxford Botanic Garden before 1700, but whether it originated there is open to question. For those of us who like our history tidy, the story given by Henry and Flood (3) is quite plausible and will suffice until a better documented hypothesis is proposed.

There may still be some botanists and horticulturists who are not convinced of the hybrid origin of the "London planes." Beginning in 1968, we made the first controlled crosses in *Platanus* (8) and have grown several hundred plants of first-generation and backcross progenies involving *P. orientalis* and *P. occidentalis* on to sexual maturity. And although we have not made a detailed study of variation in leaf morphology, we are absolutely convinced of the hybrid nature of *P. × acerifolia*.

Much of the nomenclatural confusion in *Platanus* that occurred in Western Europe was based on the fact that neither of the parent species was native or, in fact, adaptable to much of that region. Thus, the species' characteristics and the potential intraspecific range of variation in these characters was poorly understood. On the other hand, the climatic adaptability of the hybrids far surpassed that of the parent species, and the cultivation of *P. × acerifolia* became widespread.

In the eastern United States, *P. orientalis* is seldom cultivated. Trees of Turkish origin have remained free from cold injury within the urban area of Washington, D.C., but control-pollinated progeny from these trees were killed by cold in a rural area about 10 miles from the National Arboretum (10).

It is not surprising that some authors considered certain variants of *P. × acerifolia* as *P. occidentalis* and *P. orientalis*. Furthermore, the existence

of *P. × acerifolia* as a true species "native to the Levant" or elsewhere was postulated. Such problems have been encountered in monographs from Jaennike in 1899 (4) to the posthumously published work of Rivals (7) in 1980.

There may be greater natural variation within *P. orientalis* than in *P. occidentalis*, and numerous "varieties" have been proposed. The statement in Bean (1) that "Although several varieties of *P. orientalis* have been distinguished, it is doubtful if any merits recognition" is well founded. A similar statement may be made concerning the relatively few varieties named in *P. occidentalis*.

At the present time, there is one major reason for the selection and propagation of *Platanus* cultivars, and that is resistance to the anthracnose disease caused by the fungus *Gnomonia platani* Kleb. This disease is common throughout most of the United States and Western Europe and, although it seldom kills an entire tree, it can give rise to large dead portions of the tree crown which render the trees unsightly. The anthracnose resistance present in *P. orientalis* was strongly inherited in first-generation hybrids with *P. occidentalis* (9) and the new *P. × acerifolia* cultivars 'Columbia' and 'Liberty' are highly resistant.

There is one other destructive disease of planetrees that we have been unable to utilize in our disease-resistance screening programs. Cankerstain, caused by the fungus *Ceratocystis fimbriata* f. *platani* can kill trees within a few years after infection. It has been shown that man is the major vector of this disease, spreading the fungus through infected pruning tools, and a high level of control can be achieved by sterilization of these tools.

The listing that follows is a hodge-podge of names that have been used to denote species, hybrids, varieties, or cultivars. We have tried to make it sufficiently comprehensive (although not exhaustive) to include any names that have been or could be construed as cultivar names. We have recognized relatively few names as being valid. As in previous checklists, **VALID CULTIVAR** names are shown in boldface capitals and **INVALID CULTIVAR** names in lightface capitals.

ANGUSTIDENTATA (*P. Rivals, Trav. Lab. Forest. Toulouse, Tome III, Vol. II, 1980, p. 3-93*)—as a new variety of *P. × acerifolia*; not a cultivar.

- ANTIQUORUM (P. Rivals, Trav. Lab. Forest. Toulouse, Tome III, Vol. II, 1980, p. 3-93)—gave recognition to *P. orientalis* var. *antiquorum* of Tenore (1856). Name not used in the sense of a cultivar, and probably not important as a botanical variety.
- ARGENTEA VARIEGATA** (W. J. Bean, Trees and shrubs hardy in the British Isles, Ed. 8, Vol. III, 1976, p. 269)—tree with white-variegated leaves "raised by Messrs. Russell, then of Richmond"; won an Award of Merit from the Royal Horticultural Society in 1897. Similar to 'Suttneri', and the "the two may have become confused." A cultivar f *P. x acerifolia*.
- AUGUSTINE HENRY** (W. J. Bean, Trees and shrubs hardy in the British Isles, Ed. 8, Vol. III, 1976, p. 270-271)—as a new and valid cultivar name for the *P. x acerifolia* selection considered by A. Henry and M. Flood, Proc. Roy. Irish Acad. 35 (B): 9-28, 1919 to have been represented by trees received as *P. californica* Hort. at Kew Gardens, England.
- AUREO-VARIEGATA** (F. Jaenicke, Abh. Kaiserl. Leop.—Carol. Deutsch. Akad. Naturf. 77(2):113-226, 1899)—as a synonym for *P. occidentalis* var. *Kelseyana*. Best considered as equal to *P. x acerifolia* **KELSEYANA**.
- AUSTRALIS** (P. Rivals, Trav. Lab. Forest. Toulouse, Tome III, Vol. II, 1980, p. 3-93)—gave recognition to *P. orientalis* var. *australis* of Tenore (1856). Name not used in the sense of a cultivar, and probably not important as a botanical variety.
- AUTUMN GLORY** (Duncan & Davies Nurs., New Plymouth, New Zealand, Cat. 1973, p. 42)—as *P. c(ashmeriana)* Autumn Glory, "selected for the intensity of its autumn colours." A valid cultivar of *P. orientalis*. Very susceptible to powdery mildew in California.
- BLIGHT PROOF**—Name found in records of Plant Sciences Data Center of the American Horticultural Society. Plant under test at the Saratoga Horticultural Foundation, Saratoga, California obtained from Coolidge Rare Plant Garden. Probably *P. x acerifolia*; not resistant to anthracnose.
- BLOODGOOD** (Cole Nurs. Co., Circleville, Ohio, Fall, 1970 Trade List, p. 44)—as "Bloodgood Strain" of *P. x acerifolia*, grown by them since 1964, and reported as "virtually immune to anthracnose." This cultivar was probably first grown at the Meehan Nurs., Germantown, Pennsylvania (ca. 1900), and subsequently by Messrs. Flemer and Foulk and descendants at Princeton Nurs., Bloodgood Nurs., and F & F Nurs. Propagated as a clone by cuttings for many years previous to naming. In recent years, there have been a number of reports of anthracnose on 'Bloodgood,' but in most cases the actual identity of the cultivar was uncertain.
- CALIFORNICA**—According to W. J. Bean, Trees and shrubs hardy in the British Isles, Ed. 8, Vol. III, 1976, a tree under the name *P. californica* received at Kew Gardens in 1878 from the Van Houtte (Belgium) nursery. A. Henry and M. Flood, Proc. Roy. Irish Acad. 35 (B): 9-28, 1919 described and figured the tree under the name *P. hispanica* Muenchh., based on the sketchy description of the Spanish plane by Miller. The cultivar name **AUGUSTINE HENRY** was validly applied to this particular tree of *P. x acerifolia* (in Bean, *op. cit.*), and all future propagations from this tree should bear this name.
- CAMBRIDGE** (H. P. Kelsey and W. A. Dayton, Standardized Plant Names, 1942, p. 487 = **CANTABRIGENSIS**, a selection of *P. x acerifolia* recognized by A. Henry.
- CANTABRIGENSIS** (A. Henry and M. Flood, Proc. Roy. Irish Acad. 35(B):9-28, 1919)—as "*P. cantabrigensis* A. Henry, *Hybrida nova*"; relegated to *P. x acerifolia*, and based on a single tree of unknown origin at the Cambridge (England) Botanic Garden. Leaves small, with 5 short triangular lobes, fruit balls 3 per peduncle. Listed as a cultivar (as 'Cantabrigensis') by G. Krussmann, Handbuch der Laubgehölze, Ed. 2, Vol. II, 1977, p. 437, but probably not extensively cultivated. Must be considered a valid cultivar name, however.
- CASHMERIANA** (Duncan & Davies Nurs., New Plymouth, New Zealand, Cat. 1973, p. 42)—as *P. cashmeriana*, with synonym Cyprus Plane; notched six-inch leaves, round habit. = *P. orientalis*; not a cultivar.
- COLUMBIA** (F. S. Santamour, Jr., HortScience 19:901-902, 1984)—a selection of *P. x acerifolia* developed from a controlled cross made in 1970. Tree highly resistant to anthracnose disease and a strong compartmentalizer of trunk wounds; leaves distinctly 5-lobed; fruits generally 2 to 3 per cluster.
- CUNEATA** (J. C. Loudon, Arboretum et Fruticetum Britannicum. London, 1836, Vol. IV, p. 2034)—as a variety of *P. orientalis*, based on *P. cuneata* Spach. Considered by A. Henry and M. G. Flood, Proc. Roy. Irish Acad. 35(B):9-28, 1919, to belong to *P. x acerifolia*. Leaves with cuneate bases, and bearing imperfect fruit. Probably best considered as a variant of *P. orientalis*; but not a cultivar.
- CUTLEAF** (H. P. Kelsey and W. A. Dayton, Standardized Plant Names, 1942, p. 487) = *P. orientalis* var. *laciniata*.
- CYPRUS** (Duncan & Davies Ltd., New Plymouth, New Zealand, Cat. 1971, p. 36)—with notched six-inch leaves, round habit. Later (1973) equated with *P. cashmeriana*; = *P. orientalis*; not a cultivar.
- DENSICOMA** (L. Dode, Bull. Soc. Dendr. France, 1908, p. 67)—as *P. densicoma*. Considered by A. Rehder, Bibliography of cultivated trees and shrubs, Arnold Arboretum, 1949, p. 221 as based partly on *P. occidentalis* var. *glabrata* Fernald and partly on *P. x acerifolia*. Much discussed by P. Rivals, Trav. Lab. Forest. Toulouse, Tome III, Vol. II, 1980, p. 3-93, but probably not worthy of further consideration; certainly not a cultivar.
- DIGITATA** (P. Lombarts (Nurs.), Zundert, Netherlands, Cat. 1962-1963, p. 79)—as *P. orientalis* 'Digitata' Janko, with leaves deeply 5-lobed. This could be the same tree described by G. Gordon, Garden 1:572-573, 1872 as *P. digitata*, native to the Caucasus. Should be considered a valid cultivar name, since it is in nursery production, but of uncertain origin. A. Henry and M. Flood, Proc. Roy. Irish Acad. 35(B):9-28, 1919 considered *P. digitata* to belong to *P. x acerifolia*.
- DORTMUND** (G. Krussmann, Handbuch der Laubgehölze, Ed. 2, Vol. 2, 1977, p. 437)—as a cultivar of *P. x acerifolia*, rapid growing with narrow conical crown. Tree in the Botanical Garden in Dortmund, Germany; originated in a shipment of seedlings from Italy. First noted in 1951. Probably = **TREMONIA**.
- ELONGATA** (L. Dippel, Handbuch der Laubholzkunde 3, 1893, p. 277)—as a variety of *P. orientalis*, based on *P. elongata* Ait., with the following in synonymy (*Plat. or. insularis* DC., *Plat. vulgaris vitifolia* Spach, *Plat. or. Reuteri*. C. Koch, *Plat. digitata, nepalensis, nepal. laciniata* and *cuneata* hort.) This name, and all synonyms,

- do not represent true cultivars, since the observed variants were well within the normal range of variation of *P. orientalis*, and it is doubtful if representative selections were widely propagated for planting.
- FASTIGIATA** (H. A. Hesse Nurs., Weener, Germany, Cat. 1962-63, p. 181, and perhaps earlier catalogs)—as *P. × acerifolia fastigiata* Hort., in synonymy of *P. × acerifolia* **PYRAMIDALIS**.
- FLABELLIFOLIA** (E. Spach, Ann. Sci. Nat. Bot., ser. 2, 15: 292, 1841)—as *P. vulgaris flabellifolia*. K. Koch, Dendrologie 2, part 1, 1872, p. 470 placed it in synonymy of *P. cuneata* Willd. Best considered as a variant, but not a cultivar, of *P. orientalis*.
- GLOBOSA** (K. Koch, Dendrologie 2, part 1, 1872, p. 468)—as a name used in some nurseries for **UMBRACULIFERA**.
- GRANDIFOLIA** (T. Rivers, Gard. Chron. January 21, 1860, p. 47)—as *P. acerifolia grandifolia*, although he considered *P. × acerifolia* as the "Occidental Plane." K. Koch, Dendrologie 2, part 1, 1872, p. 468, stated that the name was used in some nurseries to denote *P. hispanica* Lodd. and *P. macrophylla* Cree. Uncertain as to identity; name no longer used.
- HISPANICA** (G. Krussmann, Handbuch der Laubgehölze, Ed. 1, Vol. II, 1962, p. 221)—as a cultivar of *P. × acerifolia*, with synonym *P. × acerifolia* var. *hispanica* (Muenchh.) Bean; with 5-lobed leaves and 1 to 2 fruit per cluster. Since von Muenchhausen's description was not based on a living plant and was essentially a re-description of Miller's "Spanish plane"; and since no specimens of that tree can be traced, we consider the name spurious.
- HOWARD** (Plant Patent No. 5359, Nov. 27, 1984)—golden sycamore, a selection of *P. occidentalis* patented by D. Howard, Burgaw, North Carolina. New foliage lemon yellow, with more green in older leaves. Growth rate 60% to 80% of normal. Discovered in a bed of seedlings and patented at age 2. Disease resistance unknown.
- INSULARIS** (A. De Candolle, Prodomus 16, 2:159, 1842)—as a variety of *P. orientalis*, from Cyprus and Crete, with deeply divided leaves.
- INTEGRIFOLIA** (K. Koch, Dendrologie 2, part 1, 1872, p. 469)—as *Pl. integrifolia*, a name used in some nurseries for *P. occidentalis*. Considered to belong to *P. × acerifolia* by W. J. Bean, Trees and shrubs hardy in the British Isles, Ed. 1, Vol. II, 1914, p. 202.
- ISLAND** (H. P. Kelsey and W. A. Dayton, Standardized Plant Names, 1942, p. 487) = *P. orientalis* var. *insularis*.
- KELSEY** (H. P. Kelsey and W. A. Dayton, Standardized Plant Names, 1942, p. 487) = **AUREOVARIEGATA**, **KELSEYANA**.
- KELSEYANA** (F. Jaenicke, Abh. Kaiserl. Leop.—Carol. Deutsch. Akad. Naturf. Vol. 77(2):113-226, 1899—as *P. occidentalis* var. *kelseyana*, a new name for a new plant grown by F. W. Kelsey (Nurs.) New York (Broadway) as *Pl. aureo-variegata*; with golden-yellow spotted and dotted foliage. Best considered as a cultivar of *P. × acerifolia*.
- LACINIATA** (K. Koch, Dendrologie 2, part 1, 1872, p. 468)—as a name used in gardens for a variant of *P. × acerifolia*; of dubious synonymy, and best forgotten.
- LATIFOLIA** (P. Lombarts (Nurs.), Zundert, Netherlands, Cat. 1963-1964, p. 61)—as *P. orientalis* 'Latifolia' Hort., with large leaves. Must be considered a cultivar, but there may be some doubt as to whether this should belong to *P. × acerifolia*.
- LIBERTY** (F. S. Santamour, Jr., HortScience 19:901-902, 1984)—a selection of *P. × acerifolia* developed from a controlled cross made in 1968. Tree highly resistant to anthracnose disease and a strong compartmentalizer of trunk wounds; leaves remotely 5-lobed; fruits 1 or 2 per cluster.
- LIQUIDAMBARIFOLIA** (E. Spach, Ann. Sci. Nat. Bot., ser. 2, 15:291, 1841)—as *P. vulgaris liquidambarifolia*, with entire leaf margins. Best considered as well within the normal range of variation of *P. orientalis*.
- LITTLELOBE** (H. P. Kelsey and W. A. Dayton, Standardized Plant Names, 1942, p. 487) = **PARVILOBA**, a selection of *P. × acerifolia* recognized by A. Henry.
- LONDON** (W. J. Bean, Trees and shrubs hardy in the British Isles, Ed. 8, Vol. III, 1976, p. 265-266)—large tree more than 100 feet high; erect trunk with peeling bark; huge rounded head of somewhat contorted branches, pendulous at the ends in large trees; leaves variable, but generally shallowly cordate at base, 3 to 5-lobed, margin nearly entire; *fruit balls 2 to 4 on each peduncle*. We have chosen to recognize this well-known clone as a cultivar, since it has been widely grown in Britain and, indeed, may have served as the basis for the popularity of the genus *Platanus* throughout the West. Doubtful as to whether any authentic trees of this cultivar can now be identified in North America; Should be re-introduced. Definitely *P. × acerifolia*.
- MACROPHYLLA** (A. Henry and M. G. Flood, Proc. Roy. Irish Acad. 35(B):9-28, 1919)—as *P. macrophylla* Hort., apparently imported from France in 1856 by T. Rivers; placed in synonymy of *P. hispanica* Muenchh., as understood by Henry and Flood. May = *P. × acerifolia* **AUGUSTINE HENRY**, but there may be no way to verify the identity of this tree.
- MAGNIFICA** (P. Lombarts (Nurs.), Zundert, Netherlands, Cat. 1962-1963, p. 79)—as *P. orientalis* 'magnifica' Hort., vigorous grower with large leaves. There may be some doubt as to whether this should belong to *P. × acerifolia*. Cultivar name invalid because in Latin form after 1959.
- MINOR**—According to W. J. Bean, Trees and Shrubs hardy in the British Isles, Ed. 8, Vol. III, p. 268-269, the plant designated as *P. × acerifolia* var. *minor* by the Italian botanist Tenore, was not sufficiently distinct to justify varietal status.
- MIRKOVEC** (R. De Belder, J. Roy. Hort. Soc. 94:81-94, 1969)—presumably *P. × acerifolia*: found by the wife of the author in a lot of seedlings at Mirkovec Nurs. in Yugoslavia. Plant taken to Kalmthout Arboretum, Belgium, and propagated there. Leaves colored purple, becoming more intense toward the end of summer. Original tree was weak growing, but grafted plants were very vigorous.
- NANA** (K. Koch, Dendrologie 2, part 1, 1872, p. 470)—as *Pl. nana*, a name used in some nurseries for *P. cuneata* Willd.; but not a variety or cultivar.

- NEPALENSIS (K. Koch, Dendrologie 2, part 1, 1872, p. 468)—as *Pl. nepalensis*, a name used in some gardens for *P. orientalis*. See also ELONGATA.
- NEPALENSIS LACINIATA (K. Koch, Dendrologie 2, part 1, 1872, p. 468)—as *Pl. nepalensis laciniata*, a name used in some gardens for *P. orientalis*. See also ELONGATA.
- ORIENTALIOR (P. Rivals, Trav. Lab. Forest. Toulouse, Tome III, Vol. II, 1980, p. 3-93)—as *P. orientalis* var. *orientalior* Dode, with synonym *P. cantabrigiensis* (sic) Henry (?), Henry considered *cantabrigiensis* to belong to *P. X acerifolia*. Probably not valid as a variety or cultivar.
- PALMATA (T. Rivers, Gard. Chron., January 21, 1860, p. 47)—a *P. X acerifolia palmata*, one of several seed varieties imported from France. W. J. Bean, Trees and shrubs hardy in the British Isles, Ed. 8, Vol. III, 1976, p. 269 retained the name as a valid cultivar, but it is doubtful whether any tree can be so identified.
- PALMATA SUPERBA (T. Rivers, Gard. Chron., January 21, 1860, p. 47)—as *P. X acerifolia palmata superba*, with larger leaves than *palmata*, one of several seed varieties imported from France. W. J. Bean, Trees and shrubs hardy in the British Isles, Ed. 8, Vol. III, 1976, p. 269 retained the name as a valid cultivar, but it is doubtful whether any tree can be so identified.
- PARVILOBA (A. Henry and M. Flood, Proc. Roy. Irish Acad. 35(B):9-28, 1919)—Considered to belong to *P. X acerifolia*, based on a single, grafted, unlabeled tree of unknown origin at Kew Gardens, England. Considered a cultivar by some authors, but never extensively cultivated.
- PENDULA (K. Koch, Dendrologie 2, part 1, 1872, p. 468)—as a variant of *P. X acerifolia* known to him only in nursery listings. P. Rivals, Trav. Lab. Forest. Toulouse, Tome III, Vol. II, 1980, p. 3-93 listed *P. X acerifolia* var. *pendula* var. *nov.*, based on a tree in a park in Lyon, France. The Lyon tree may be worthy of cultivar status, but the name is invalid because in Latin form after 1959.
- PYRAMID (H. P. Kelsey and W. A. Dayton, Standardized Plant Names, 1942, p. 487) = **PYRAMIDALIS**.
- PYRAMIDALIS (T. Rivers, Gard. Chron., February 9, 1856, p. 86)—as *P. pyramidalis*, later placed under *P. X acerifolia* (Gard. Chron., January 21, 1960, p. 47) as "*pyramidata*," with erect, compact habit and very vigorous growth; obtained from France. According to W. J. Bean, Trees and shrubs hardy in the British Isles, Ed. 8, Vol. III, 1976, p. 276-277, only 1 or 2 of the 3 female inflorescences on each peduncle may develop. A good cultivar of *P. X acerifolia*, still available in some nurseries.
- REUTERI (K. Koch, Dendrologie 2, part 1, 1872, p. 467-468)—leaves glossy green, with lanceolate segments entire. Named for M. Reuter, a gardener in Sanssouci. As a variety of *P. orientalis*, similar to *liquidambarifolia*, but probably well within the normal range of variation and not cultivated.
- SPANISH (H. P. Kelsey and W. A. Dayton, Standardized Plant Names, 1942, p. 487) = *P. X acerifolia hispanica*.
- STELLATA (P. Rivals, Trav. Lab. Forest. Toulouse, Tome III, Vol. II, 1980, p. 3-93)—as a variety of *P. X acerifolia* Willd., based on *P. stellata* Dode; with a leaf form like *P. orientalis* var. *liquidambarifolia*. Should not be considered a cultivar, or a variety.
- SUTTNERI (H. P. Kelsey and W. A. Dayton, Standardized Plant Names, 1942, p. 487) = **SUTTNERI**, ARGENTEO-VARIEGATA.
- SUTTNERI** (Kew hand-list of trees and shrubs, Ed. 1, part II, p. 153, 1896)—as *P. X acerifolia* var. *Suttneri* Hort., without description, and with *P. occidentalis* var. *Suttneri* Hort. and *P. occidentalis* var. *argentea variegata* in synonymy. Best considered as a cultivar of *P. X acerifolia* with leaves blotched and speckled white.
- TORTUOSA (J. C. Loudon, Arboretum et Fruticetum Britannicum, Ed. 2, Vol. IV, 1844, p. 2043)—as a variety of *P. occidentalis* discovered in France in a bed of seedlings; "stem full of knots, which renders the fibres tortuous, and, consequently, difficult to split." Apparently an oddity that was never cultivated.
- TREMONIA**—Name found in a list of trees propagated by the N.A.K.B. (Nederlandse Algemene Keuringsdienst voor Boomkwekerij), the General Netherlands Service for the Inspection of trees. Correspondence indicates that the cultivar was selected in the city of Dortmund, Germany, by Gerd Krussmann (ca. 1950) from an avenue of *P. X acerifolia* which were then about 50 years old. Cultivar has a compact, pyramidal crown. Tremonia is the ancient Roman name for Dortmund, and it is also likely that 'Tremonia' and 'Dortmund' are identical. The cultivar 'Tremonia' was first propagated by Darthuizen Nurs. in Leersum and is being widely grown, whereas there is no record of plants being cultivated under the name 'Dortmund.' Therefore, we believe 'Tremonia' should be recognized as the valid name for this tree.
- UMBRACULIFERA (K. Koch, Dendrologie 2, part 1, 1872, p. 468)—as *Pl. umbraculifera*, supposedly cultivated by Andre Leroy in Angers, France. Koch was not able to assign this name to any species or hybrid, although P. Rivals (Trav. Lab. Forest. Toulouse, Tome III, Vol. II, 1980, p. 3-93) stated that it may be the same as *P. densicoma* Dode, which is itself confused.
- UMBRELLA (K. Koch, Dendrologie 2, part 1, 1872, p. 468)—as a name used in some nurseries for UMBRACULIFERA.
- UNDULATA (W. Aiton, Hortus Kewensis, Ed. 1, Vol. III, 1789, p. 364-365)—as *P. undulata*, the wave-leaved plane tree, native of the Levant. L. Dippel, Handbuch der Laubholzkunde 3, 1893, p. 277-278 considered it a variety of *P. orientalis* with the following in synonymy (*P. cuneata* Willd., *Plat. or. cuneata* Loud., *Plat. vulgaris flabellifolia* Spach). This name, and all synonyms, do not represent true cultivars, since the observed variants were well within the normal range of variation of *P. orientalis*, and it is doubtful if representative selections were widely propagated.
- VITIFOLIA (E. Spach, Ann. Sci. Nat. Bot. III 15:291, 1841)—as *P. vulgaris vitifolia*; best considered as a variant, but not a cultivar, of *P. orientalis*.
- YARWOOD** (A. H. McCain, Calif. Plant Path. 44, p. 4, December, 1978)—propagated from a select tree on the campus of the University of California, Berkeley, that was highly resistant to powdery mildew. Named for Cecil E. Yarwood, Professor Emeritus of Plant Pathology at Berkeley. A cultivar of *P. X acerifolia*.

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Abstracts

GRONDIN, BARBARA, 1985. **Working through the confusion of adjuvants**. Chemical Age 29(4): 6-8.

A start to understanding the adjuvant story is an examination of the characters. Adjuvants may be grouped into two categories; activators and special-purpose adjuvants. In this way, James Witt, an adjuvant expert at Oregon State University, simplifies the task of identifying what the many products do. The activator category consists of the following: wetter-spreaders, stickers, emulsifiers, emulsifiable oils, and plant penetrants. Special-purpose adjuvants would include foliar nutrients, compatibility agents, drift retardants, foam retardants, buffers, inverting agents, soil penetrants, stabilizing agents, feeding stimulants, washing agents, sinking agents, and protectant binders. "Remember, if the pesticide you are using is formulated adequately for a crop, using a wetter-spreader may not give better spreading or coverage, but rather runoff and less deposit. If the insecticide you are using is a systemic, you may get less pest control with a sticker, rather than more. If you are applying a pesticide close to harvest with a sticker, you may get better residual action and also end up over tolerance." Correct use of adjuvants, then, does require some homework. By knowing your needs and product's potentials, and by reading adjuvant labels with a critic's eye, adjuvants can be a profitable addition to the spray tank.

URBANO, CYNTHIA C. 1985. **Diagnosing and treating diseases**. Am. Nurseryman 161(10): 71-73.

A disease is a disturbance of the normal physiology, structure or function of a plant. Diseases can be broken into two categories: abiotic and biotic. Abiotic diseases include such things as air pollution, nutrient deficiencies, genetic abnormalities, and environmental constraints. Biotic diseases are caused by living organisms, such as fungi, bacteria, viruses, nematodes, parasitic seed plants, and mycoplasma-like organisms. There are six ways to control disease: protection, sanitation, exclusion, resistance, therapy, and avoidance. Protection practices prevent parasites from colonizing a plant. Sanitation practices include destroying diseased plant material. Exclusion or quarantine isolates diseased plants from healthy ones. Resistance is the genetic ability of a plant to resist parasites. Using disease-resistant plants is the best way to control disease. Therapy involves applying control measures to plants that are already diseased.