

INCREASED DIVERSITY NEEDED IN LANDSCAPE TREE SELECTION

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A new monthly series intended to provide objective information on weaknesses and strengths of current and new urban plant materials.

A tree is often selected for planting with aesthetics or emotions playing the major role, rather than a clear understanding of the tree's potential or growing requirements. Similarly, a large number of trees are used because of familiarity, such as birch and elm, with little consideration of their maintenance requirements. In making planting decisions, one should understand the cultural requirements; disease, insect, and air pollution resistance or susceptibility; and site requirements. With these concerns playing a co-equal role with aesthetics, there would be an increase in diversity of trees utilized in cities and home landscapes.

Many people have suggested Silver Maple (*Acer saccharinum*) is a "weed tree." This is not only an erroneous conclusion, but shows a clear lack of knowledge as to how the tree fits into our landscape. For many years, seedling Silver Maples were grown in the nursery for two years, then cut off, and allowed to grow back. This technique resulted in straight, high, well-branched specimens. Further, horticulturists who knew the requirements of this fast-growing, high maintenance tree pruned it every two to three years, resulting in smaller pruning wounds and less structural problems.

Presently, silver maples are pruned in five to eight year cycles, which often results in heartwood rot and structural damage. This clearly indicates that if Silver Maple is used on city streets, it will require constant preventative pruning and care rather than after-the-fact cosmetic pruning. The severe storm which hit the Central Michigan area during 1975 demonstrated that trees correctly pruned (this includes Silver Maple) were not as severely damaged from ice storms. The advantages of Silver Maple are obvious. It is fast growing and highly adaptive to urban conditions, with some selections developing outstanding fall color.

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The American Elm (*Ulmus americana*) also adapts well to urban conditions and is a rapid growing tree, but is extremely weak wooded (falling apart in every storm), attacked by many insects (entire publications are devoted to its insect problems alone), and, of course, is subject to Dutch Elm Disease. The elm has been considered a highly desirable urban tree because of its familiarity to the general public. A study by Kalmbach and Kielbaso shows large trees (canopy over the street) were preferred by the majority sampled. The general public, as well as the professional forester, is willing to accept the millions of dollars spent on keeping the elm in a healthy, vigorous state. Contrast this with the Silver Maple — a tree with many of the same desirable characteristics, few insect or disease problems, yet is considered a "weed tree."

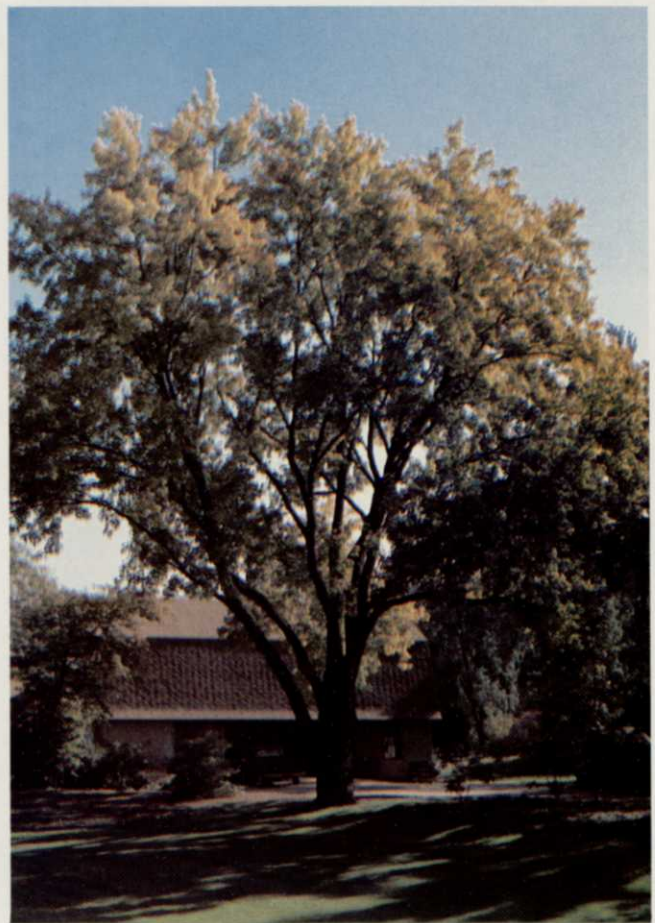
Selection of many landscape trees should be based on disease resistance or susceptibility. The crab apple, with its 600-800 available cultivars, is an outstanding tree when in full flower or heavily laden with fruit, but it is susceptible to apple scab and fireblight. There are some 80 cultivars showing good to exceptional resistance to these two diseases and these should be selected and grown.

When one completely reviews the literature, outstanding varieties, such as Malus 'Snowdrift,' 'White Angel,' 'Candied Apple,' 'White Cascade,' *M. tschonski*, and *M. floribunda*, should be high on the use list. When reviewing what trees are readily available in the trade, one sees *M. 'Eleyi'*, 'Van Eseltine,' 'Radiant,' 'Red Jade,' and others which are extremely susceptible to one or both disease problems. Many valuable trees are resistant to severe problems — White Oak (*Quercus alba*) to oak wilt, Norway Spruce (*Picea abies*) to cytospora canker, Ruby Red Horsechestnut (*Aesculus carnea* 'Brioti') to bacterial leaf blight — and should predominate a list of low maintenance trees.

The homeowner and commercial applicator should use tolerance or resistance to insect attack as a consideration in making a planting decision. With today's understanding of use and limitations of pesticides, one should be diversifying the landscape rather than making planting decisions which require a continuous insecticide application. In the Central Michigan area, White Birch (*Betula papyrifera*) is almost deitized, being used in 60 percent of the landscapes, yet only recently has there been extensive research to replace this outstanding native with borer and miner resistant trees; i.e. Monarch Birch (*B. maximowicziana*), River Birch (*B. nigra*), and Japanese White Birch (*B. platyphylla japonica*). There is still a place for White Birch in the landscape, not only in the more northern areas of the Northeast but in southern areas. The planter should know that this is a short-lived tree and requires constant applications of insecticides to protect it against the ravages of these two insects. If one is clearly informed as to how a tree responds in a part of the country, then knowledge-



Norway maples (left) adapt better to urban soils than sugar maples.



Sugar maple (left) requires fertile, well-drained soils.

Silver maple (above) requires constant pruning and care.

able decisions to plant River or Paper Birch (*B. papyrifera*), elm, or hackberry can be made.

The plant's ability to tolerate air pollutants, such as sulfur dioxide, ozone, or sodium chloride laden air, is an important factor when making decisions



on plant types. Austrian Pine (*Pinus nigra*), a two-needle pine, tolerates pollutants much better than the five-needle pines, i.e. White Pine (*P. strobus*) and Bristlecone Pine (*P. aristata*).

Planting sites should also be considered for their impact on trees. The native Sugar Maple (*A. saccharum*), which thrives on fertile, well-drained soils, does not adapt to the poorly drained, heavy clay urban soils as well as Norway Maple (*A. platanoides*). If one has a large open site with fertile, well-drained soil, Sugar Maple, for its habit of growth and fall color, is clearly more exciting than Norway. Site not only dictates tree size and shape but also adaptive type. Many trees are planted on droughty soils on outlawn conditions with little regard to their ability to withstand this rigorous environment. Sugar Maple collapse and beech predisposition to borer attack make these trees less desirable to White Oak, English Oak (*Q. robur*), Silver and Red Maple (*A. rubrum*), 'Bradford' Callery Pear (*Pyrus calleryana* 'Bradford'), and cultivars of Honey Locust (*Gleditsia triacanthos*).

One should also consider plant compatibility. Rhododendrons are exciting when growing among pine trees, yet quickly die when planted among maples. It is akin to the frustration of trying to grow a quality turf under a Sugar Maple or the ease of cultivation under Honey Locust.

Every tree has conditions which make it the outstanding selection. It should be paramount when making landscape plant choices to increase the diversity of trees grown while eliminating the classification "weed trees." A tree is only a "weed tree" when we don't understand the maintenance requirements, where or under what conditions the tree thrives, or aren't able to provide the correct level of maintenance. Each tree from Tree of Heaven (*Ailanthus altissima*) to Silver Maple, crab apple, Ruby Red Horsechestnut, or White Oak has different maintenance requirements but each fills an important niche in our total overall landscape.

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Aesthetic value (above) is only one of many considerations in plant selection.

Eighty crab apple cultivars out of 800 show resistance to apple scab and fireblight.

