



Shade trees contribute in many ways to make our lives more comfortable, interesting and enjoyable. That's why they should be chosen and located with care and judgment. Here are some pointers and suggestions to help.

by Margherita Tarr

FROM THE standpoint of comfort and beauty, trees are the most important plants in our Iowa landscape.

Trees provide shade for man and beast in his home surroundings and along country lanes and busy thoroughfares. Trees purify the air. (As a result of scientific research it has been determined that for every automobile there should be at least 10 trees to help correct air pollution.) They form a canopy or ceiling for outdoor activities. They serve as a setting (background and frame) for buildings and other plantings. In fact, trees serve to supplement and complement all man's outdoor and indoor activities.

Trees add to the joy of everyday living by casting beautiful shadow-patterns on ground and building; by the variety and interest of their silhouettes against the sky; by the play of light on their waving branches when in leaf or when bare and encrusted with snow or frost; by providing shelter, food and nesting sites for birds which give delight through their song and flight; by their many voices made by wind moving gently or riotously across the land. Some add to the delight of living because of the fragrance of their blooms, and many contribute to the fleeting riot of color in the fall and the ethereal atmosphere they lend to late winter and spring.

One tree may contribute in all these ways to make life more com-

fortable, interesting and enjoyable. That is why the location and selection of each tree is important.

Street Trees . . .

Trees along a street may be set in the parking strip (the space between the curb and the sidewalk) or just inside the sidewalk on private property. If the trees are in the parking strip, then the community (by state law and local ordinance) may have control over them and responsibility for their location, selection, care and removal. If they are on private property, under existing laws, we need to keep in mind that property owners may cut them down, top them or do anything they choose to them. Street trees serve not only those who live on the street but everyone who passes by.

Street trees should be located from 40 to 100 feet apart, depending on conditions such as building and drive locations and the mature spread of the trees. They should be located so they will frame views of buildings. Avoid setting a tree directly in front of a building where it will block the view and possibly interfere with the natural flow of traffic to and from the building.

Finally, if there are utility poles and overhead wires in the parking, they must be considered in the location of the trees. A tree should never be planted directly under wires. The best solution is to put the wires underground. If this will not be done then the street trees should be planted inside the sidewalk on private property. If poles, wires and trees are already in the parking strip, make the best of it. The trees can be pruned so they will continue to be beautiful and *natural* in appearance. If street trees have been "butchered" by topping and lopping, so they now look grotesque, cut them down and put in new tree plantings.

Lawn Trees . . .

Shade trees should be located so they will provide needed shade and where they will fit in with the total design of the property. Large shade trees are our best air condi-

MARGHERITA TARR is extension landscape architect at Iowa State University.

tioners, indoors as well as outdoors, by providing shade for buildings and grounds. The closer a tree is to a building the less it will interfere with views from the building. Usually, however, shade trees close to buildings should be set about 20 feet diagonally out from the corners of the buildings. Never locate a tree on center line with a window. A tree trunk is no more interesting to look at than a utility pole or a post at a theater between you and the stage.

If a tree is not closely related to a building, it should be near a boundary planting or fence or close to a drive or walk. Do not set isolated trees out in the center of lawn areas. Trees are a part of the total design of a development. They, along with structures and other plantings, shape lawn areas.

In large scale developments such as parks and cemeteries, the shapes of large lawn areas are sometimes determined entirely by the location of the shade trees, singly and in groups.

The number of shade trees on a property depends on its size.

On small home grounds, there may be only one or two large shade trees while, on a large property, there may be many, planted singly or in groups.

Kinds of Trees . . .

Trees for shade along streets and highways and on public and private property should be those that are hardiest and that require the least maintenance. Avoid planting only one kind of tree. Plant a variety. Combine trees that look well together because they have several characteristics in common. Use one kind of tree as the dominant tree. Put in several of that kind. The kinds of existing trees and their locations in the neighborhood must be considered when deciding on new tree plantings. A single property is not an island, it is part of a whole landscape.

The list in the table is a selective one from which you can safely choose trees for shade. For more details on the listed trees and for a more complete list refer to Pamphlet 212, "Landscape Plants for Iowa," available at cost

(15c) from your local county extension office or from the Publications Distribution Room here at Iowa State. The plant numbers in the table with this article refer to key numbers in Pamphlet 212.

The following trees should *never* be planted as street trees and only seldom in a home grounds or in an urban situation unless the area is a very large park or a similar park-like development:

Soft Maple (*Acer saccharinum*), Boxelder (*Acer negundo*), Black Walnut (*Juglans nigra*), Poplars (including Cottonwoods, Lombardy and Bolleana), Willows (including Weeping Willow), Chinese Elm (*Ulmus pumila*), Catalpa (*Catalpa speciosa*), Tree-of-heaven (*Ailanthus altissima*), Mulberry (*Morus alba*), or Spruce, Fir and Hemlock.

The following trees are *not* recommended for Iowa:

Norway Maple (*Acer platanoides*) and varieties of it, Crimson King and Schwedler, because they often are not winterhardy which is indicated by their susceptibility to sunscald (cracking and loosening of bark on the south or

Key No.	Botanical name	Common name	Height in feet	Spread in feet	Adaptation	Growth rate	Foliage texture
301	<i>Acer saccharum</i> , *NEB(St)	Sugar Maple	80	40-50	General	Medium	Medium
302	<i>Fraxinus americana</i> , N(St)	White Ash	80	50-60	General	Medium	Medium
305	<i>Platanus occidentalis</i> , ND	Am. Planetree (Sycamore)	80-100	50	Moist	Medium	Coarse
309	<i>Quercus alba</i> , NBD	White Oak	70-80	60	Dry, acid	Slow	Medium
310	<i>Quercus borealis</i> , *NBD(St)	Northern Red Oak	70-80	50-60	General	Medium	Medium
311	<i>Ulmus americana</i> , °NBD(St)	American Elm	80-100	50-80	General	Medium	Medium
312	<i>Ulmus carpinifolia</i> var. B(St)	Christine Buisman Elm	75	40-50	General	Medium	Medium
320	<i>Acer nigrum</i> , *NB(St)	Black Maple	75	50-60	General	Medium	Medium
322	<i>Acer rubrum</i> , NB	Red Maple	60-70	30-40	Moist	Medium	Medium
324	<i>Celtis occidentalis</i> , *NDB(St)	Common Hackberry	60-70	50	General	Medium	Medium
326a	<i>Fraxinus pennsylvanica lanceolata</i> , N(St)	Green Ash	60	40-50	Dry, moist	Quick	Medium
327	<i>Gleditsia triacanthos inermis</i> var. *(St)	Honeylocust in var.	75	40-50	General	Quick	Fine
331	<i>Quercus palustris</i> , NDB	Pin Oak	70	40-50	Acid soil	Medium	Medium
335	<i>Tilia americana</i> , *NF(St)	Am. Linden (Basswood)	75	50-60	General	Medium	Coarse
346	<i>Betula nigra</i> , *N	River (Red, Black) Birch	60	40	General	Medium	Fine
349	<i>Ginkgo biloba</i> , HO(St)	Ginkgo (Maidenhairtree)	60	40	General	Slow	Medium
355	<i>Tilia cordata</i> , SF(St)	Littleleaf Linden	50	35	City, rich	Medium	Medium
205	<i>Pinus nigra</i> , *BW	Austrian Pine	60	40-50	General	Medium	Coarse
207	<i>Pinus strobus</i> , NDBW	Eastern White Pine	75	40-50	Moist	Medium	Fine
208	<i>Pinus sylvestris</i> , B	Scotch Pine	60	40-50	General	Quick	Medium

N, Native (grows wild) in some sections of Iowa.

D, Frequently affected by disease, insects or other growth inhibitors.

B, Fruits and seeds especially valuable for food for birds.

*, Hardy plant and one generally recommended where a plant of this size and type is desired.

F, Flowers fragrant.

E, Does best in northeast Iowa.

S, Southern Iowa only.

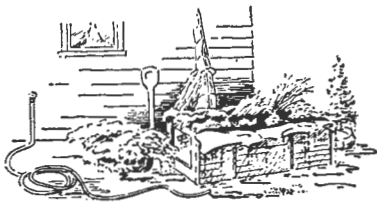
(St), Street tree.

W, Windbreak.

O, If possible buy non-fruiting trees, as fruits have an obnoxious odor.

°, Plant only if there is a community Dutch Elm Disease control program.

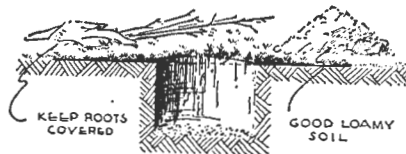
PLANTING . . .



Never allow roots of plants to dry! On receiving plants from nursery, give roots a good soaking and keep damp until ready for planting. Keep out of wind and away from heat.



For balled and burlapped evergreens dig hole a foot larger and deeper than the ball. Set evergreen at same depth it was in nursery row. Fill hole $\frac{2}{3}$ full, water, cut twine and turn back burlap. Fill and pack firmly.



For bare-root plants dig hole large enough to prevent crowding of roots. Loosen subsoil if very hard. Keep roots covered.



Put mound of soil in bottom of hole with roots spread to natural position over it. Set plant at same depth as it grew in nursery.



Work soil about roots by hand as hole is filled with soil or when hole is completely filled, by settling with water. After watering, settle plant by shaking gently.



Pack soil firmly. Leave basin to catch water. Put on layer of loose soil to act as mulch. Water deeply once a week for the first 2 years.

southwest side of the trunk in late winter).

Paper (canoe or clump) Birch (*Betula papyrifera*) and Cutleaf (weeping) Birch (*Betula pendula*) because, in Iowa, they always become infested with the bronze birch borer which eventually kills them.

Avoid using trees that have other than green foliage such as sunburst locust. These should only be planted when recommended by a landscape architect who has planned the planting very carefully and recommended their use for a desired artistic effect or atmosphere.

Planning for Trees . . .

Trees are the most permanent plants in a development. They are even more permanent than many structural elements. In addition, it takes time to grow mature trees. Fine, large, mature existing trees on a property increase its value. Their locations should determine the future location of structures, drives and walks, and the grading of the property. Only by careful, advance paper planning can they be saved.

It is also necessary to plan the locations of new tree plantings carefully in relation to a whole development. This means paper planning in relation to everything that now exists and that can be anticipated as being needed in the future. If trees are planted in the wrong places, later they may need to be moved or cut down. This will result in a great waste of time, energy and money.

For detailed information on the planning process, refer to the "Your Yard" series, LA-182 through 186, available from your county extension office or the Publications Distribution Room here at Iowa State.

If development of a large area — such as a park, cemetery, school grounds or subdivision—is being considered, consult a landscape architect for the over-all planning. He can plan the entire development, including the circulation, building and utility locations, grading and the tree locations and selections. If a home ground development is complicated by interesting topography or unusual requirements in a limited area, consult a landscape architect to help with this over-all planning, too.

Planting Trees . . .

Plant all trees where shown on the plans. Set them after the finished grade has been established. Early spring planting, after frost has left the ground and before growth starts, usually is best in Iowa. For best results, buy freshly dug trees or ones growing in tubs, rather than storage plants. They will be more expensive, but it will be worth the extra cost. Buy trees that are $1\frac{1}{2}$ -2 inches in caliper (diameter of trunk at breast height) except for the maples and the slower growing oaks which are more difficult to move. Buy these 6-8 feet high if they are not in tubs or balled and burlapped. Buy the trees from the nearest reliable grower of nursery stock. Set out the plants as soon as they are received.

Shade Tree Care . . .

Pruning: Prune out dead or diseased wood and broken twigs and branches as they occur. Prune out unruly twigs and branches that spoil the shape of the tree and also the poorer of two rubbing twigs.

Watering: Newly set trees

should be watered deeply once a week during the growing season for the first two years, unless there are rains that soak the soil to the full depth of the roots. Water slowly by laying the hose close to the tree with a tiny stream of water flowing from it. Do not sprinkle the surface or water lightly. Mulch newly set trees and leave the mulch for at least 2 years. This helps prevent grass from growing close to the trees.

During extreme drouths it may be necessary to water established trees. Water deeply so the ground is completely soaked. Do not do frequent surface sprinkling.

Fertilizing: Fertilizing trees grown under abnormal conditions—not under natural conditions in an undisturbed woods—is important to help keep them in a healthy, vigorous condition. Fertilizing will not prevent or cure diseases or insect invasions, but it will help the trees resist the ill effects of diseases and insects.

Fertilize trees with a complete fertilizer such as 10-8-6 or 10-6-4 or with well-rotted manure when available and where it won't be objectionable. For commercial fertilizer, apply at a rate of $\frac{1}{4}$ pound total nitrogen per inch of trunk diameter at chest height. If this is 5 inches and you're using 10-6-4, for example, use $12\frac{1}{2}$ pounds of fertilizer ($\frac{1}{4} \times 5 \times 10 = 12\frac{1}{2}$).

Fertilize trees starting 1 foot from the trunk (if less than 6 inches in diameter) or 2 feet from the trunk (if more than 6 inches in diameter) and out to the full spread or "drip line" of the tree. For smaller trees, the fertilizer may be spread evenly over the ground. For large trees of 12-inch or more trunk diameter, apply the fertilizer in holes 18 inches deep. Make the holes in concentric rings spaced about 2 feet apart. Slant them toward the trunk with a $1\frac{1}{4}$ -inch soil auger or crowbar. Fill the holes with fertilizer to within 6 inches of the top. Put topsoil in the top 6 inches and compact with your heel. Finally, water with a hose soaker or with a very slow stream

of water, moving the hose as each area becomes soaked.

Do not use more fertilizer than recommended and do not use commercial fertilizer closer to the tree than specified.

Sickly or Dying Trees: Diseases, insects and adverse physical conditions may be causes for an unhealthy tree. If there are *several different kinds of trees* in poor shape, first consider an adverse physical condition as the cause. In a city or town consider the possibility of a gas leak; smoke or other air contaminants; chemicals such as sodium chloride, road salt and 2,4-D damage; sewage line toxic chemical leaks; over-fertilization; changes in soil grade; soil compaction; etc. In the country or in large-scale developments, suspect chemicals or rabbit, rodent and gopher damage or a change in the water table. Tree

damage also can be caused by wind, ice and lightning. An individual tree may be strangled by a wire fastened around it or by girdling roots. On a farm, evergreens can be killed by barnyard runoff.

Trees deserve attention because it takes so long to grow them and because they are so important in our daily lives. Watch them and be aware of any unhealthy changes in their conditions. Learn what the trouble is. Quick action may save an important or many important trees. Extension specialists here at Iowa State and your county extension staff are always "at your service." Ask them, if you don't know what's wrong with your tree. Be sure to bring in or send in a representative cutting from the tree and package it so it is in good condition when it is received.

PRUNING MATURE TREES

Never top a shade tree. Prune to strengthen it and to retain its natural, beautiful shape. Each cut should be clean and as close as possible to the main stem. When larger branches are removed, cuts should be made in the order shown. Cuts No. 1 and No. 2 are made to prevent stripping of the bark.

When twigs and small branches are to be pruned, the cut should be made just above a bud.

A sharp-angled crotch will cause splitting and eventually decay. One branch should have been removed when the tree was young. One still should be removed as shown at left.

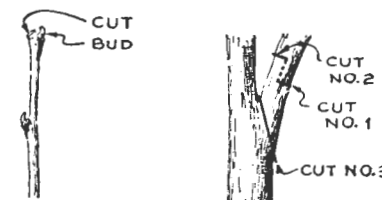
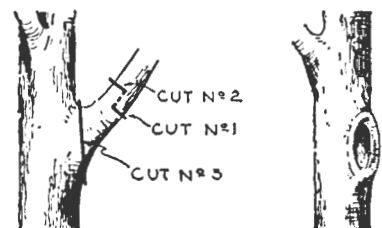
Treat a wound, 1 inch or over in diameter, with a material (tree paint) which will waterproof and disinfect it and serve as an anti-septic, but not injure the plant cells.

PRUNING YOUNG SHADE TREES

To balance top with remaining roots, remove about $\frac{1}{3}$ of top of newly transplanted trees by:

1. Removing weaker of sharp-angled and crowded branches.
2. Removing all but one leader if top is divided. Never shorten central leader which is left.
3. Cutting back side branches to just above a bud, retaining natural shape of tree, to accomplish the full $\frac{1}{3}$ reduction of top.

Note: As a young tree grows, remove lower branches each year while they are still small enough to be cut off with hand shears. This should be done until the lowest branch is the height you want it from the ground when the tree is full grown; for a shade tree, 8 to 12 feet from the ground, depending upon the tree's location. Also, continue to remove the weaker of sharp-angled, crowded or crossing branches while they are still small.



PRUNED TWIG WEAK CROTCH

