'Dress Up' Your Course

Trees and shrubs simply and inexpensively can transform a course into a beauty spot

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HAVE you ever seen a golf course in western Kansas or Nebraska, or even in southeastern Colorado that looked really dressed up? You ask, "What do you mean by 'dressed up'?" Simply this: the grace and beauty of all women is enhanced by wearing proper clothes—style and color. And Mother Nature has a dress—in fact she has millions of dresses. They are the trees and shrubs and grass covered areas that adorn the earth.

A golf course without trees and shrubs is only half-dressed. The fairways may be thick bluegrass and the greens, velvet carpets of bent, and yet it is only a half-dressed course. Endless miles of green paths without a break with a shady grove of trees, without a massed grouping of shrubs with fine green foliage and a few flowers—a monotonous trek after a small white ball in the blazing sun.

If the above picture were true, golf would never have achieved the popularity it holds in the sporting world. We heard over our radios during the 1941 PGA tournament, this often-mentioned phrase, The tree-lined fairways of Cherry Hills."

We need Mother Nature dressed up in her best togs on the golf course; not because of the difficulties and hazards she provides for the players, but because of the quiet, private, contented atmosphere and feeling a well landscaped area tends to build up within the player on the course. The city man feels as though he were out in the country.

What Is Pruning?

Pruning is merely the removal of certain definite branches of a tree. Butchering a tree is not pruning. You take great pains when you prune your fruit trees but very few people realize that ornamental trees also require pruning if they are to remain in a healthy state. There are four fundamental questions that must be kept in mind when pruning. They are: why prune, where to prune, when to prune and how to prune.

First, it is obvious that dead limbs are of no value to a tree. They are unsightly, they become hibernating places for insects and infection areas for fungus spores, and they are dangerous if the tree is close to a house or near the sidewalk or street. Prune to remove dead wood.

Second, the removal of other branches other than dead ones increases the vigor of the tree. Food materials are stored in the limbs and branches. If portions of these branches are removed the carbohydrate nitrogen (c/n) balance is distributed. The result is an increase in vigor, because now there is more nitrogen than carbohydrate material. The increase in nitrogen stimulates the production of proteins which are assimilated in growth.

Maintaining Shape Is Important

Third, the maintenance of shape is an important pruning practice to the commercial man as well as the landscape artist. The commercial man doesn't permit his fruit trees to get too large. They are kept at a size that is most convenient for working. He thins them out in the center so light penetrates into the inner regions of the trees. The suckers are removed so there may be a concentration of food materials at the fruiting spurs.

The landscape gardener prunes for effect. He removes the lower branches so a view may be observed under the boughs. The plant material is often pruned in a vertical fashion to produce skyline effects. Topary and pleach pruning are practiced. Formal areas are often set off by hedge pruning and shearing. The commercial and landscape men both have some definite objective in mind when they prune for shape.

Fourth, pruning to increase the size of the flowers is usually practiced on ornamental plants. If all the shoots of a flowering quince were allowed to grow and reproduce, the flowers would not be very large. As with hybrid tea roses, the canes

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are removed so that only three eyes remain on each cane. Thus, there is a concentration of growth energy in these branches and the largest and best quality roses are obtained.

Fifth, the balancing of the tops to the roots is a pruning practice which every tree mover should understand. Many roots are cut off when the tree is dug and thus some upper branches must be removed to compensate the loss. It is just common sense that a reduced root area can not supply enough water for the existing leaf surface.

Fall Pruning Is Best

Generally speaking the best time to prune deciduous trees is in the fall. However, there are some exceptions to the rule. Those trees which have a tendency to bleed, such as elm and maple, should be pruned in late winter or early spring. Pruning at any other time of the year has more disadvantages and harmful effects than fall pruning. Spring pruning usually results in cambium injury. Climbing up and down through the branches loosens the soft bark and often crushes the cambium cells. Summer pruning produces the greatest degree of dwarfing. Done at this season pruning becomes a more difficult job due to the foliage. Cuts that are made during the winter often crack and the cambium is killed back.

Callus growth is most rapid in the spring and early summer. Thus the wounds will heal over more quickly at this time. Although this practice is employed on those trees that bleed badly the majority of other trees can stand fall pruning. The rate of callus growth depends on several factors. Some species of trees are more rapid growers. Natural pruning wounds heal over more readily.

Nutrition plays an important part. Those trees that are growing in rich fertile soil, having sufficient moisture are in a more healthy growing condition. The larger the cut the longer it takes for the wound to heal over. The callus has to grow a greater distance. Then a young tree is growing more rapidly than an older tree. Generally the older the tree the more time it requires for the healing of the wound. Those cuts which are more towards the top of the tree will callus over more readily than those made down on the trunk. Naturally, one reason for this is the apparent difference in size of the limbs. However, if two limbs of approximately the same size were cut off at relatively high and low positions in the

tree, the higher cut would probably heal over first. This cut gets the first chance to use the food that is produced in the leaves. Thus, this cut has an advantage over the lower cut. With these facts in mind we can consider the question of where to prune.

Size Up the Situation

In deciding where to prune, the pruner must size up the tree and determine whether it needs only thinning or cutting back. Those who are beginners in pruning should use a dendrascope. This is a piece of cardboard 4 inches wide and 8 inches long cut out in the general shape of a tree. The operator stands a distance away from the tree that is equal to the height of the tree. By sighting through the cut out section of the cardboard he can determine which branches should come off.

Then depending on the age of the tree the rest of the unnecessary limbs should be removed. In young trees the length of the branches should equal about 1/3 the total length of the tree. In middle age trees (15 years old) the top naturally begins to flatten out. This makes for too dense growth. The tree should be thinned out towards the outside at the third or fourth branch. On old trees, only prune those that are more capable of recuperating quickly. Cutting back branches increases the thickness of the head of the tree while thinning out results in a prolonged length. However, the total growth might be less. To prune a tree and only cut back some of the branches results in malformations of the trees and an increased degree of dwarfing. The lower limbs of street trees should be left on until they begin to interfere with traffic.

How to prune involves the position of the cut. The cut should be made flush with the trunk or on a slight slant. Never cut a limb off 3 or 4 inches away from the trunk. These stubs are unsightly and make the tree appear knobby. Stubs do not heal over readily and become ideal areas for fungus infection and insect attack. The removal of large limbs should be done with a rope or prop or by making an under cut and then cutting off the limb a short distance out from the undercut.

There is a logical sequence of operations in pruning any tree. Begin at the top of the tree and work down. In large trees where the limbs are far apart every limb might be an aid in attaining a position in a tree from which to prune. Thus, if the limbs are cut off as you climb up the topmost region of the tree might be inaccessible. Even if you did get up high enough there is always the problem of getting down. The next step is the cut. The important point here is don't be in a hurry and be sure to have a firm footing before you begin to cut. It is a job that is accomplished the easiest by working steadily. After the cut is made it should be painted. Any tar roofing paint is satisfactory providing it doesn't contain too much creosote or any turpentine. The wound should be covered completely. Large cuts may require more than one coat of paint and they should be gone over at least once a year until completely healed.

Pruning evergreens. Certain genera must be pruned at certain seasons of the year. Chamacyparus and Taxus can be pruned at any time but the Pinus and Abies group should be pruned in June. As a general rule evergreens should be pruned during the active period of growth usually in May. The growing power of evergreens is not as strong as deciduous trees, there-

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fore only slightly cut back the young twigs and branches.

Root pruning is merely the severing of some of the roots to introduce a more fiberous system. In the nursery it is done by shoving a spade down its full length around the tree. It results in earlier maturity of the top of the tree and in many cases stimulates fruit development.

When pruning, look for weak crotches. Those crotches which are very narrow and V shaped are weaker than those that are more U shaped. The cells making up the body of the limb in a V shaped crotch are more thin-walled. There is a constant slough-off going on due to the rubbing action of the limbs when they sway in the wind. This is not the case with a U shaped crotch. There is no rubbing of cell against cell; the amount of sloughing is reduced and a thicker, stiffer cell wall is built up. Weak crotches should be supported by cables. The location of the cable in the tree depends a great deal on the tree but a good rule to follow is to place the cable about 2/3 the distance between the crotch and the end of the branch to be supported.

Fertility IS Exhaustible

It is absurd to believe that the fertility of the soil is inexhaustible. After a tree has been growing in one location for 50 to 100 years the nutrient elements are bound to become diminished unless some natural means is provided for maintenance of soil fertility. Of course, we have living trees that are 500 years old but they are not growing under city street or lawn conditions. Trees in these locations will in time require artificial fertilizer. The important facts to know about feeding are what to apply, when to apply, how to apply and in what dosages.

At present a complete fertilizer seems to be the most satisfactory. Experiments have been conducted to determine whether or not phosphorous and potassium are essential elements for tree growth. In the first season of running the experiment, phosphorous and potash deficiencies did not show up. However, they became evident the second year. As a precaution then a complete fertilizer is recommended. This is just another case of where an ounce of precaution is worth a pound of cure. From these experiments it is obvious that trees respond most readily to application of nitrogen.

Fertilizers have been applied at all seasons of the year, but in most instances fall and spring applications have been practiced most. Winter fertilization is not advocated because the nitrogen is leached from the soil during the winter months. However, there is some absorption in the roots during the winter, therefore fall applications can be made. Spring fertilizations are recommended because plants at that time are in a more active growing state. It has been observed that the best results from fall feeding are obtained after a dry summer and in wet seasons spring applications have proven most satisfactory.

Methods of Applying Fertilizer

The most commonly used methods of applying commercial fertilizers to trees are the bar-hole method, broadcasting, and area-fertilization process in which a blast of air is employed.

The bar method consists of punching holes to a depth of 12 to 18 inches about the tree and pouring in the fertilizer. The outer ring of holes should be placed two feet apart and located just under the outer spread of the branches. The circular rows are spaced about one foot apart and the holes staggered. Thus, the outer row of holes are two feet apart in the circle, the next row one foot apart and the next row of holes six inches apart.

The broadcast method is merely the distributing of the material evenly over the ground area under the tree. This is the quickest means of doing the job, but the results are not so commendable. For best results the material should be worked into the soil.

The area-fertilizer was developed by Charles Irish and employs a blast of air from an air compressor, about 400 lbs.

Another example of the wartime ingenuity of greenkeepers in cutting costs. A Toro Park Special is shown being used in cutting sod at the Biltmore Forest CC, Biltmore, N. C., where W. A. Bostic is supt.

The same pump works a pneumatic auger. Holes are bored in the ground as in the bar method and fertilizer is poured into the hole and tramped about the edge. When the valve is released 400 lbs. of air hits the side walls of the hole. The soil is broken up and the fertilizer forced into the recesses. Thus, two operations are accomplished in one performance. The fertilizer is distributed more evenly and the soil is aerated. The air gun also can be used to counteract gas injury by purifying the soil air.

Rates Are Variable

The rates of application are variable. However, they should be based on a fair standard. This is possible by stating the amount of any fertilizer to be applied in terms of pounds of available nitrogen. At planting time, incorporate 5 to 10 lbs. of phosphorus and 2 lbs. of potash per inch diameter of tree to be planted. For small established trees less than 6 inches in diameter apply ¼ lb. of available nitrogen per inch diameter of tree. Thus a 4 inch tree needs 1 lb. of available nitrogen. If you use a 10-6-4 fertilizer you divide the 1 lb. into the 10% or 1.0+0.10=10 lbs. of 10-6-4 fertilizer required to give 1 lb. of available nitrogen. Larger trees require ½ lb. available nitrogen per inch diameter. Thus a tree 10 inches in diameter requires 5 lbs. available nitrogen. If we use a 12-6-4 fertilizer we have a 5.0+0.12=41.6 lbs. of 12-6-4 required.

Mr. Bealman of the St. Louis Botanical Gardens has devised a new method of determining the amount of fertilizer to be applied. Take the height of the tree in feet plus the spread of the branches in feet plus the circumference of the trunk in inches and the sum will equal the number of pounds to be applied. A comparison of both methods shows them to be about the same. It is doubtful if Bealman's method would prove satisfactory for small trees.

An important question to ask at this point is, 'where are the feeding roots of a tree?" About 96 to 100% of the roots are in the first 24 inches of depth. If we break this up into shallower depths we find about 79% to 98% of roots in the first 18 inches and 17 to 47% in the first 6 inches. The spread of roots horizontally varies with the type of tree but in general about 50% of the roots are within the first 4 feet radius from the tree. This means that the holes should not be deeper than 15 to 18 inches and that the biggest percentage of holes should be within a certain given radius. For small trees (up to 6 inches) the radius of the hole area in feet should be 1½ times the diameter in inches. Thus, a tree three inches in diameter would have a 4½ feet radius area of holes.

The number of holes is a matter of choice but a good rule to follow is 15 to 25 holes per inch diameter. Remember this, fertilizer elements move only short distances from place of application with the exception of nitrogen. Phosphorus moves about 1 inch from place of application in about 3 years, while potassium (potash) moves about 4 inches to 6 inches from place of application in about 3 years.

Notes on Spraying

It is unbelievable how much damage to ornamental plants is due solely to insect and fungus attacks. Every year thousands of dollars worth of plant material are destroyed. These pests can be controlled,