



Month by Month With the Trees

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“**A**PRIL Showers Bring May Flowers.” It can well be added that April showers bring May leaves. However, those leaves will not stay green, healthy and vigorous unless there is an abundance of food and water for the trees throughout the year.

It is really remarkable that trees grow on the lawns, golf courses and other wholly or partly developed sections of ground, especially when one remembers that the natural home of the tree is in the woods, where the soil is always loose and cool and damp. Outside of the woods the soil is usually hard and hot and dry. The dead leaves which make the protective blanket in the woods are either carefully raked and destroyed or blown away by the wind, so that little or nothing is added to the soil which soon becomes exhausted under such unusual conditions. To help the tree in its constant struggle for existence, it is necessary to develop artificially a soil condition which approaches as nearly as possible that which prevails in the woods.

Loose Soil Around Trees Holds Moisture

The first consideration in the fertilization of trees is to bring about a physical condition of the soil that will form a congenial home for the roots. If the soil is hard the roots will be cramped and almost invariably one finds them winding around one another and around the base of the tree is a truly strangulation process. When the soil is loose, this suicidal process is eliminated. Loose soil will hold moisture far better than compacted soil and the danger of the trees dying of thirst is to a large extent alleviated. Loose soil allows the air and water supplied by nature to permeate the area occupied by the roots. A constant weathering process is in operation which makes the food elements in the soil more readily available.

The materials ordinarily used for loosening the soil around trees are compost and manure. Of these, manure is, by most authorities, considered best. Of the various manures, cow manure is superior to any of the others. Manures in general are better than compost because of the fact that the breaking down processes have just commenced and the continued chemical action tends to break up the soil particles into finer and more readily available plant food. Cow manure is better than the others, because there is little or no danger of burning the roots as is the case when sheep or horse manure is used. If either of the latter is used, care should be taken to use only small amounts at one time or else the preliminary stages of rotting should have taken place so that the period of burning has to a large extent been past. The adding of either manure or compost does not supply any great amount of plant food to the trees. The primary purpose is for the improvement of the exceedingly unfavorable soil conditions existing around trees which are prized, first for their shade and the beauty which they give to the landscape they occupy. Food material has to be added in some other form.

Author is an Expert

Almost every greenkeeper has trees to take care of and loses a certain number every year. That's why we have enlisted the aid of Mr. Scherer, a nationally noted tree doctor, to tell us what happens to the trees through all seasons of the year. It's a precious work, saving trees, and we believe the greenkeepers of America will appreciate Mr. Scherer's contribution to our worthy cause.—EDITOR'S NOTE.

Trees Need All Food Elements

Just ten food elements are necessary for the perfect growth of any plant. First, there is nitrogen which the plant gets in the form of nitrate from the soil. Second, there is hydrogen and oxygen which also come from the soil as water, then there is carbon recognized by most of us in the form of charcoal, coke and similar materials, which comes wholly from the air through the leaves. Sulphur in the form of sulphates, and phosphorus as phosphates come from the soil. Besides these the trees need iron, calcium, magnesium and potassium, all of which are absorbed by the roots from the soil.

Of the ten plant foods, there are just three, the lack of which in most all cases, causes starvation in plants. These three are nitrogen, phosphorus and potassium. Thin and more or less yellow leaves are a pretty sure sign that the trees lack nitrogen and that the condition can be largely remedied by adding nitrate of some kind to the soil. An abundance of nitrate food material makes the beautiful, vigorously growing, green foliage, the kind that is a delight to every lover of plants. However, if nitrates alone are given, the foliage is very tender; the twigs are soft and watery and often times, especially in annual plants, the stem does not have enough strength to support itself.

Under such conditions, phosphorus in the form of phosphate has to be given in order to balance the abundant supply of nitrogen. Phosphates give the leaves and twigs the required material to make themselves sturdy and strong so that they can support themselves and mature properly. When there is enough food to allow for the rapid and vigorous growth there is an additional load placed upon the transportation system of the trees.

In some unknown way potassium aids materially in the transportation problem. In a way we might compare potassium to the traffic officer of the trees. In some unknown way, it keeps the transportation lines open and functioning at the highest possible efficiency so that plants securing an abundant supply of potassium in the form of potash can always do their work more quickly and can consequently mature more rapidly and more completely than those which are starving because of a meager supply of this most favorable food. It is because of this fact that potash fertilizers are always so effective in growing and maturing grapes because tremendous quantities of sugar have to be transported from the leaves where it is made, to the fruit where it is stored.

Fertilizer Values

There are various materials which supply each of the above mentioned three most necessary food materials.

The three most commonly used materials supplying nitrates are, dried blood, a byproduct from the meat packing industry, nitrate of soda and sulphate of ammonia. Of these dried blood, coming from animals already has been changed from the purely mineral and there is little or no danger of doing any damage with it. It is rather expensive, costing from sixty to seventy dollars per ton and does not supply as much nitrogen as does either of the other two materials. Nitrate of soda and sulphate of ammonia are purely inorganic chemical materials and when they are applied, care must be taken that the plants receiving the treatment are not killed because of an over-dose. The costs of the two materials are about the same, ranging in the neighborhood of seventy-five dollars per ton. Of the two, sulphate of ammonia carries

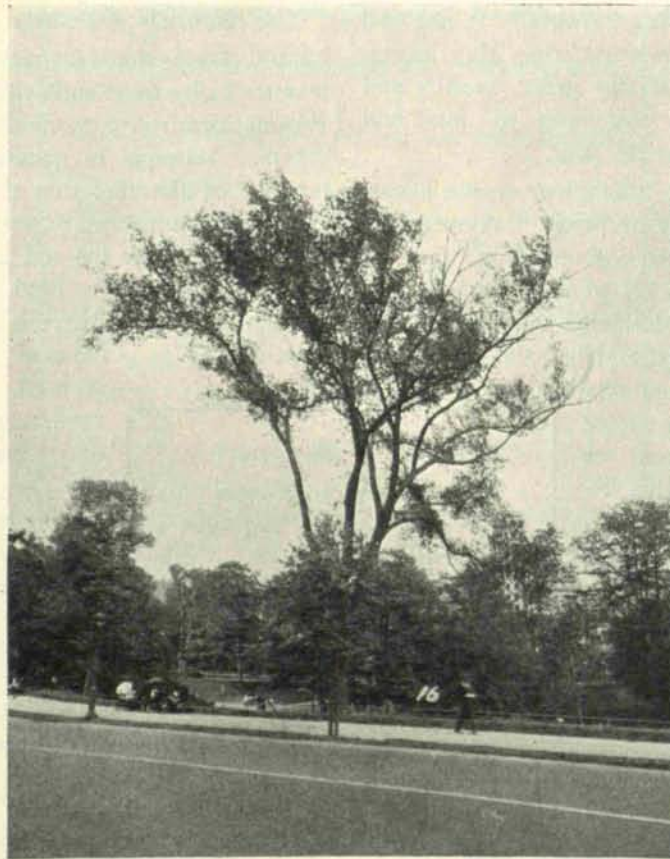
a little more nitrogen than does the nitrate of soda and is a little better to handle. Besides this each substance in the sulphate of ammonia, is valuable to the trees, while the soda part of the nitrate of soda is of no use to the plant.

Applying Nitrogen

In applying these materials as much dried blood as one cares to give can be applied without fear of danger. Ordinarily the amount will vary from two to three pounds for small trees up to as much as one hundred pounds for the largest trees. Nitrate of soda and sulphate of ammonia should be applied in amounts varying from three or four ounces in the case of the smallest trees up to as much as fifteen to twenty-five pounds in the case of the very largest trees. A tree having a diameter of three or four feet and whose roots occupy as much as one-fifth to one-fourth of an acre, can receive the maximum amount of these highly concentrated foods without much fear of damage.

Bone Meal Supplies Phosphate

Two materials are ordinarily used to supply phosphate to trees. One of these is bone in its various forms and the other is acid phosphate. Bone like blood is a byproduct from the packing industry and since it, like blood, has already been transformed from the mineral



BEFORE

Showing thin foliage, dead branches and unmistakable signs of dying. Photo on opposite page shows same tree one year after treatment

to the organic, it can be applied in any desired quantities without fear of damage. On the other hand acid phosphate is purely mineral and care must be used to prevent burning. Bone is by far the most expensive, costing from thirty to forty dollars up to as much as one hundred dollars per ton, while acid phosphate can be bought from twenty to thirty dollars per ton. However, the excellent results obtained from the use of bone and the lessened danger of damage often compensate for the additional money invested. In amounts the same rules apply as in the case of nitrates. Any quantity of bone can be applied, but usually from five to ten up to two hundred pounds is sufficient. With acid phosphate, a few ounces up to as much as one hundred pounds for the largest trees can be safely given.

No Organic Fertilizer Supplies Much Potash

Unfortunately there is no purely organic substance which supplies an abundance of potassium as plant food. The two most commonly used materials are muriate of potash and sulphate of potash. These are purchased and applied in quantities comparable to that of nitrate of soda and sulphate of ammonia. One of the common materials supplying large amounts of potassium, is wood ashes and it is because of this plant food that wood ashes sometimes produce such astounding results when applied to the soil around growing plants. Of course wood ashes are very difficult to obtain and consequently they are used in small amounts as a fertilizer.

In the fertilization of trees, exactly the same principles and practices apply as in the fertilization of other plants. First, it is always advisable to work and cultivate all the soil occupied by the roots of the trees. The only sure way to determine the extent of the roots is to dig into the soil and find them. In general the area occupied corresponds pretty closely to that covered by the branches.

Remove Sod and Cultivate Root-Bound Trees

If the owner has the courage to destroy the lawn which is too often under the trees, it is well to turn

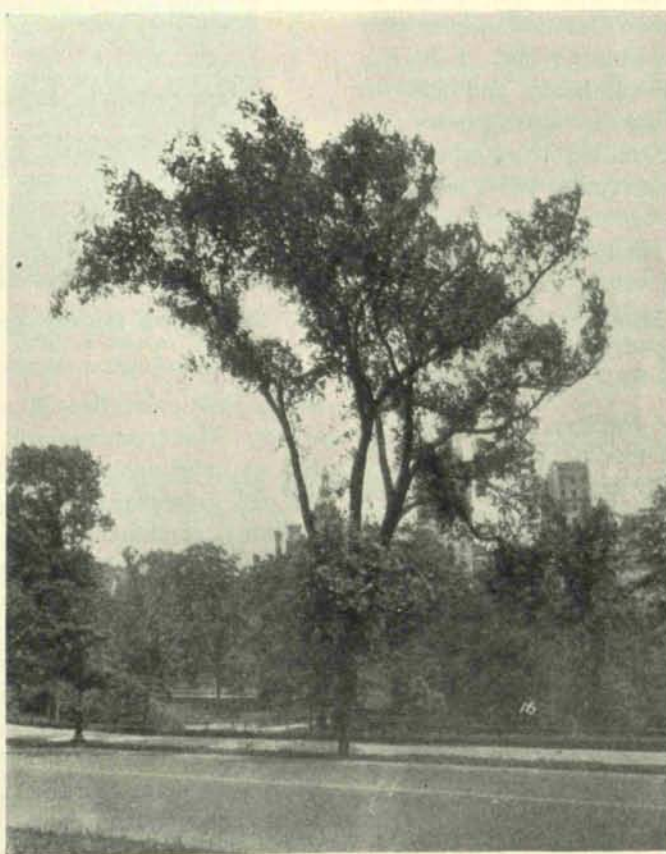
under the sod to a depth of as much as a foot, depending of course on the depth at which the roots of the tree are found. During the turning under process, manure or compost can be worked into the soil. About a ton of the material can be effectively used where the roots of the tree occupy a circle with a diameter of fifty feet and of course proportionate amounts can be used where the trees are smaller or larger. At the same time the concentrated food materials such as bone and blood, acid phosphate and the others mentioned before, can be worked into the soil in the proper amounts. When the operation is completed, the newly cultivated ground can be raked and smoothed and grass seed sowed to form a new sod. Sometimes when the sod is especially good it is possible to remove it and then when the various

materials have been added, to relay the sod and seeding is unnecessary.

Occasionally an owner does not desire to either destroy or remove the sod for the purpose of digging in the various food materials so necessary for the growth of the trees. Under such conditions it is possible to give the trees food by making holes into the ground with some sharp instrument, such as a spade or crowbar and putting into these holes small amounts of the concentrated foods. With this operation it is wholly impossible to improve the physical condition of the soil and as good and lasting results cannot be expected.

In the spring trees are making a rapid, vigorous growth. Large quantities of food materials are used and when the average tree owner recognizes the fact

that the trees are growing under unnatural conditions and in thousands of cases are starving to death, more attention will be given to feeding trees with the result that the well nourished ones will respond and pay the owner big dividends in added beauty and usefulness.



AFTER

Tree shown in opposite photo, one year after proper pruning and fertilization

This is the fifth article in this series covering the planting and preservation of trees. Order your back copies now while they last, as supply is limited. The National Greenkeeper, 407 Caxton Building, Cleveland.