

# Earth-Fed Plants Feed All Mankind

By LYDIA KING FREHSE  
Special Writer for The Birmingham Eccentric

Summer or winter, our trees are the grandest aspect of our North American flora—  
Now in a snow-covered world they make a background for whatever else we see; a squirrel's bumpy nest, a lively bluejay or chickadee, flocks of circling crows against a winter sunset.

But what I see of a tree as I walk in the empty woods or along a city street is only a part of its complete structure.

In the deep rooted species there is hidden, under ground almost as much growth as is visible above ground. Here, in a system of roots, the chief food ingredients are gathered from the soil and here, in winter, much of the life of the deciduous tree retreats. It loses its leaves as a protective measure as an animal hibernates to bridge the season's cold.

THE MORE primitive conifer does not need this protection. Its leaves are small and sturdy needles immune to frost and cold. They are less porous than those of the broadleaf tree and are better fitted by nature to prevent the escape of water. Too the bark

By this they also accommodate themselves to varying degrees of soil and moisture, thus extending their range of growth.

In all trees the raw food gathered by the root hairs, is carried to the trunk through the root system. Thence it is borne upward to the leaves through the cells of the trunk and branches. Here, when the sun shines on the green leaf, it is turned into starches and sugars by a process called photosynthesis.

THE FOOD is then carried to every living part of the tree while

the surplus is stored in the dead cells which make up the heartwood. The living cell can not be used for this purpose for it is made of protoplasm which consumes food at once for its own growth. It is the discoloration of the dead cell walls which gives the heartwood of the tree its particular color: black in ebony, mahogany, red cedar, chocolate in walnut, yellow in osage, orange and red in mahogany.

In winter the work of the root system slows down like a factory working at half time. But when spring comes, it once more puts into motion a food chain which is

elaborated by nature's processes and transmuted by many mediums. In the end it feeds all that is alive today. By the same token each one of us stands a silent debtor to the hidden but efficient root systems of the plant world.

These latter are at the very end of the "branches" and through them all food must enter. As the tree grows, the root hairs keep reaching out into the soil to find new sources of food supply. When a seed germinates they are the first part of the new plant to be formed.

IN TRANSPLANTING, it is very important that they be kept intact since they are directly responsible for the plant's growth. The larger roots act as conductive channels for transporting the raw food to the trunk.

Some trees such as the beech, hemlock and balsam-fir have very shallow roots. These are poorly anchored to the soil and must grow where the surface layer is moist and rich in humus.

In contrast, trees with a deep rooted system can withstand great stress and are less dependent upon surface moisture and humus. They often send down a taproot, reaching into soil or rock crevices to a depth of 20 or more feet for their raw mineral food.

Such trees continually deepen and fertilize the soil by bringing up minerals in solution. These nourish the growth of the tree whose leaves and twigs are dropped with the seasons to make fresh layers of humus.

THE HICKORIES, oaks, chestnuts and locusts of our own woods and the mesquite, greasewood and chaparral of the west are all typical of the deep-rooted trees.

Such species as maples and birches are able to adjust their root structure to varying depths.



Mrs. Frehse

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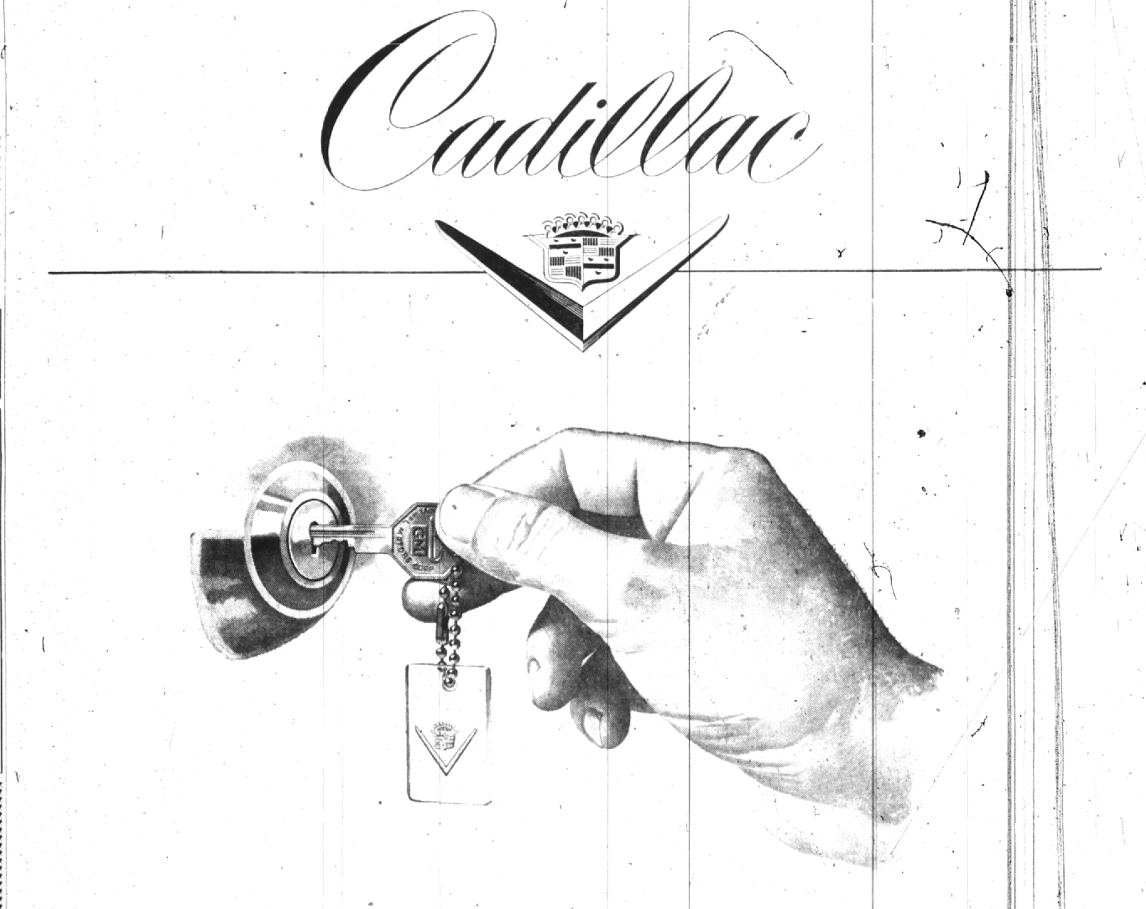
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