variety of desirable vegetation. Access to and along the right of way was adequate for men and power-driven equipment to accomplish their job with little difficulty. Finally, the areas surrounding the right of way were mainly crop lands and pasture areas. These existing conditions on the right of way dictated the selective basal approach.

Approximately 100 acres of the same right of way traversed remote, steep, mountain ridges and slopes supporting dominant, tall, stands of black birch (*Betula lenta*) and black locust (*Robinia pseudoacacia*). Access was limited with the population of the surrounding area being sparse. In this situation the helicopter application was a very useful and economical tool to be used without the public disapproval that may have occurred in a more populated or agricultural area.

By using this approach to vegetation management on this particular right of way, as well as others, Penelec has achieved an effective control of tree species without the public disapproval that may result when we disregard all other factors and base an entire spray program on the economic aspect alone. Although economics enters the picture, other factors must be considered so that in years to come chemical brush control will not be government regulated or prevented all together.

Reference

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SHADE TREES—THE FRIENDS OF THE POOR AND OF THE CITY-DWELLER

by Francis W. Holmes

1. Public shade trees give even-handed, hard-working service to *everyone* who lives or visits in the community where they grow. They do not "know" who is rich and who is poor.

2. Shade trees *save fuel* in winter. They raise winds above houses, and thus slow the loss of heat. This can save 30% of the fuel cost for a house in open areas and 10% of the fuel cost even for a house in a city crowded with nearby buildings that break winds and leak heat.

3. Shade trees, by their shadows, *cool buildings* (especially attics and upper floors), also walks, roads, recreational areas, bus stops, parking lots, etc. They make summer heat tolerable where there is no air-conditioning machine. Yet when winter comes, the foliage falls from deciduous trees, letting sunlight through to warm house roofs when they need warmth.

4. Shade trees in summer *cool the air* itself, since many calories of heat are used by evaporation of water from leaves during transpiration. This cooling is most effective in cities, where cooled air does not rapidly blow away. It is also most needed in cities, where fewer breezes cool our skins.

5. Shade trees *reduce glare*, which otherwise can be unbearable to the eyes, as well as harmful. In cities glare is multiplied by reflection from buildings and windows.

6. Shade trees and shrubs, especially evergreens, *absorb noise*. Intense noise (130 decibels, as in a jet plane takeoff) is painful; lower

levels gradually cause permanent hearing loss; constant sound of highway traffic does physical harm by raising blood pressure; irritations and interruptions from noise lead to sad human interactions. Noise absorption by trees and shrubs provides theequivalent of distance, for those who cannot own enough land to insulate themselves from noise sources by distance.

7. Shade trees *screen views.* They can hide a particular spot, like a junkyard, or generally screen whole areas, softening rigid outlines of rectangular buildings and obscuring damages in old buildings. This is needed most in cities.

8. Shadetrees *clean the air.* Soot and other particles adhere to moist leaves, especially to leaves with natural plant hairs, and then are carried down to earth during rainfall.

9. Shade trees (and other green plants) *remove excess carbon dioxide* from air (building carbon into their wood) and release into the air the oxygen we breathe. This helps most in cities, were industry and automobiles dump the largest amunts of noxious fumes, and where other plants re few.

10. Shade trees *provide beauty* equivalent to flower gardens, but require less open space (trees do need some space for air and water to reach their roots). Trees do not require the weeding that gardens do. A single tree can have 10,000 flowers in spring; it can have beauty of leaf form and leaf color in summer; it can have dramatic foliage color in autumn; it can show characteristic bark color and texture, as well as branching patterns, in winter. Some tree species bloom in summer or in fall.

11. Shade trees *decrease stress* by giving peace of mind. The tree stands calmly, day by day, despite all vicissitudes. It does not hurry or worry. It reminds us of our relationship to total nature. It makes us look far beyond our momentary and contrived troubles.

12. Shade trees give *inspiration.* They have been subjects of prose and poetry. They are used for metaphors and similes in great literature. They are subjects of paintings in every culture.

13. Shade trees are *memorials of history.* They commemorate famous occasions, or are beloved for our recollections of parents and grandparents. Trees have been used to memorialize the fallen in war, and as symbols to protest against social wrongs or the inhumanities of humanity.

14. Shade trees heighten *religious perceptions.* Venerated individual trees or tree species occur in Christian, Judai, Hindu, Buddhist, and other religious traditions. Early human religious awakenings on many continents were related to the idea of spirits in trees (remember the Druids?).

15. After their deaths, shade trees also provide a *form of self-expression* to every human being, regardless of wealth, who has enough muscular control to handle a borrowed jack-knife. Carving and whittling are famous American pastimes which sometimes reach high levels of artistry . . . and without formal tutoring. The beauty of wood grain and of wood colors is property of everyone, in polished furniture and sculpture.

16. Shade trees, after their deaths, also give us wooden boards, from which ordinary people can build *dwellings* without special tools, without special skills, without access to unusual materials like steel, reinforced concrete, or the like. Hammer, saw, nails, and willingness to work are all that are needed. People also make many of their own wooden tools from trees.

17. Shade trees, even if they die from an accident or a disease that has crippled their serviceability for boards or carving, give us *fuel* to keep us warm and to cook our food. This will become more important as more of us find that we cannot afford so much expensive "fossil fuel" from the trees of ancient geological eras.

For these and other reasons, the people love the public shade trees; and love and respect those who plant and care for them. Each one of us benefits to the same degree from the shade trees we stand under. Whoever serves the trees, serves humanity. Whoever plants a shade tree is planting for future generations, and is testifying to faith in humanity and to love of all other people. Have there not always been many poor and few rich? Then, whoever cares for public shade trees in towns and in cities, is the servant of the poor.

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