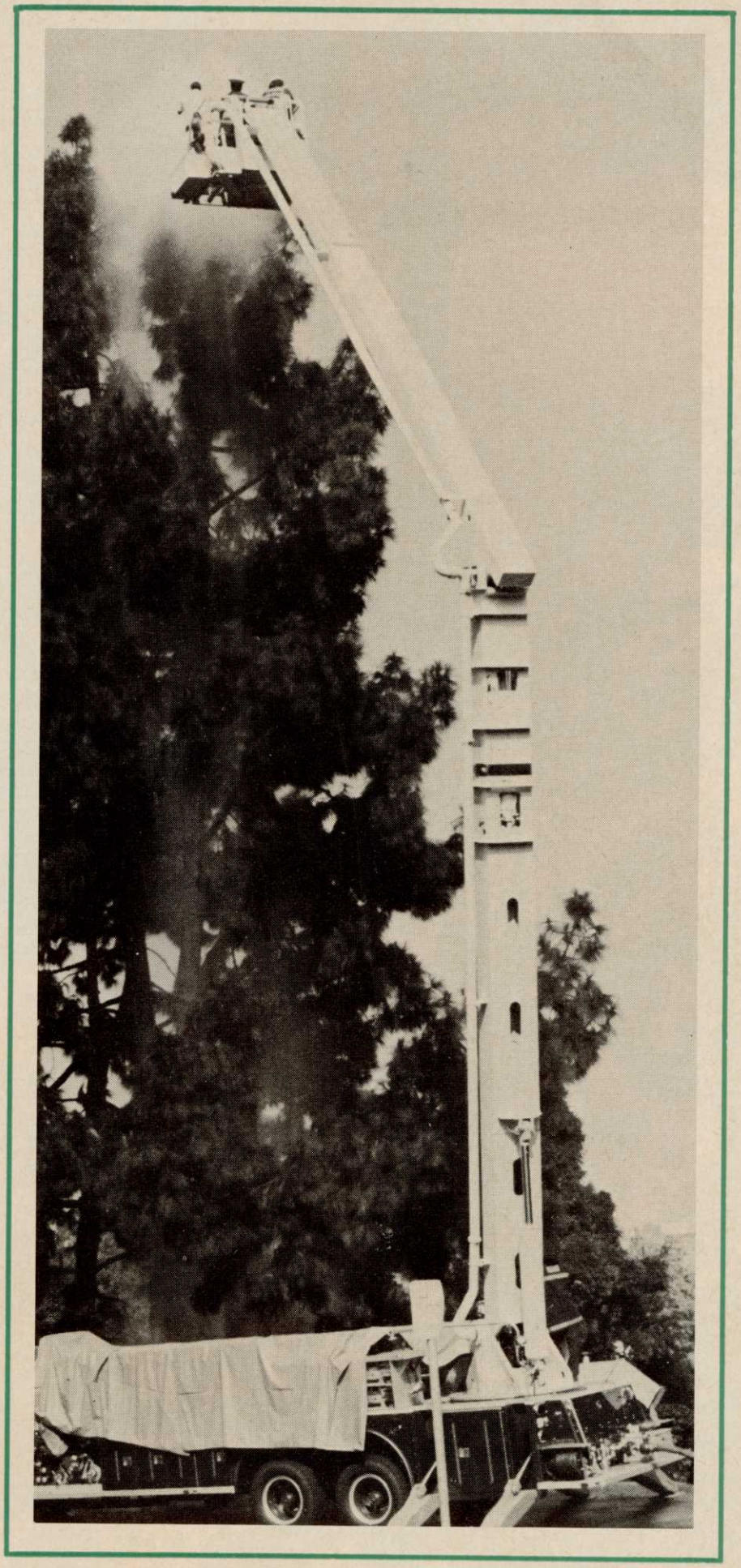
PINE TREE RINSE



DIMINISHING PINES in Southern California is a direct result of pollutants. In mountain areas of Los Angeles and San Bernardino, smog has damaged or killed many native pines. The toll will likely rise as air contamination increases.

Pollutants are less severe in the San Diego area than in other sections, but still adversely affect ornamental pines.

In San Diego, contaminates are generally carried away by prevailing marine breezes, then dispersed in the atmosphere over the mountain ranges to the east of the city. This same breeze is responsible for carrying exhaust fumes from the freeway interchange across Presidio Park. Since the completion of this interchange, problems with Presidio Park pines have increased.

Ornamental pines most severely affected in San Diego have been

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THE HIGHWAY TREE

SELECTION AND MAINTENANCE

By ROBERT A. BARTLETT

TREES represent practical values on the highway beyond aesthetic considerations. They offer the driver a sense of psychological ease. They help eliminate highway hypnosis, a cause of numerous accidents; they reduce driver tension.

Trees are our most dominant and important plant and must be conserved, preserved and maintained for a better environment and world. When planted along highways, they must possess certain qualities if their existence is to be economically and ecologically practical. First, the general growth pattern of the tree must not interfere with the functions or design of the highway. It should have a root development which does not damage shoulders, sidewalks and pavements. Its stem should be straight, clean and have a bark covering that is not easily damaged by abrasion. The foliage should be pleasing to the eye and not continually dropping. The tree should also be as free as possible of "being dirty" (fruit, leaves, bark, branches and other parts falling to the ground).

Secondly, it must be adaptable to the soil and environmental conditions in which it must grow, and be resistant as possible to insects, diseases, windstorms, reflected road heat and drought.

Lastly, the species chosen should be one of long life and should improve as it ages. Those best able to endure conditions along highways include the Norway maple which has a compact crown, casts dense shade, is hardy and also quite beautiful.

The sycamore combines many of the features most desired from highway trees. It grows rapidly, is resistant to attacks by insects, and provides a medium shade cover.

The scarlet oak also possesses most of the features of the sycamore with the added benefit of providing a spectacular display in the fall.

The honeylocust is also suitable for highway planting, but should be used only when light shade is required.

Some species of Eucalyptus are very desirable highway trees, while others are brittle and have a tendency to snap off. Eugenia is often recommended as a street tree while many of our evergreens can and should be used for shade trees in

Pictures at left and above illustrate damage done to trees by the changing water level and drainage patterns resulting from highway construction, these resulting directly from cuts by blasting. Trees at top of cuts should have been removed since they will die anyway. In the meantime, they will require maintenance and are a hazard to highway below.

Trees nearest road are dying because of soil piled on top of root area during construction. These should have been removed.

areas where they have a tendency to grow well.

The shad bush, tung-oil tree and tupelo have done well along the coast states and also on the West coast.

Much research should be done before using native trees for planting and maintaining along the highway right-of-ways. Also, existing trees along new highways often have the soil around their roots compacted during the road construction. Roots may also be cut or damaged. Such conditions may cause death of trees. Often, it is advisable to plant new trees in place of those whose survival or suitability is in question.

If a highway is to pass through a heavily wooded area, proper consideration must be given during design and construction phases. This will protect and conserve desirable trees so the road does not destroy the natural beauty of the scene, but becomes an integral part of the environment it serves.

Two considerations concern water. One is availability of water and the other is the problem of polluted runoff. Road runoff often contains oils, salts and other compounds that represent a potential threat to trees. For this reason, road runoff should be prevented from collecting near the root zone of trees. If a storm sewer is used, the drainage system should direct the water away from the tree's roots. If drywells are used, they should be located in the clear areas between the trees so ground filtering can remove most of the pollutants.

It is often very difficult for highway trees to receive an adequate supply of water for their root system. The highway itself tends to act as a large waterproof ground cover which lowers the area water table. This situation imposes serious limitations on the flow and amounts of water necessary to support healthy tree growth, thus making it necessary to provide a greater space between trees in order to allow more ground area from which each tree can draw water. This space will also serve to make work on the trees a more easily accomplished task.

Economic Realities

For the past 35 or 40 years, highway departments have instituted tree planting programs, but they have generally failed to allocate the necessary maintenance funds. This has resulted in the loss of many trees and a waste of dollars.

During the last 10 years, many states have contracted tree planting programs at a cost ranging from one-quarter of a million to $2½ million per year. In most cases, a similar sum should have been appropriated to maintain these trees during the seven to 10-year period following planting.

Maintenance Factors

Once trees have been planted along the highway, an adequate maintenance program must be maintained if they are to endure and flourish.

A feeding program must be initiated to provide the tree with the nutrients it requires to insure its survival. Trees existing naturally in the forest are provided with the necessary nutrients as plant material decays. This process does not usually occur along the highways.

Also, trees should be sprayed whenever infection or infestation occurs or is imminent. Pruning must be done regularly to eliminate the danger of falling limbs and remove unwanted growth. In addition, tree

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— Announcement —

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The PERFECT BROADLEAF WEED CONTROL

IS IT POSSIBLE?

BY J. S. SKAPTASON
Director of Research
Gordon Chemical Corporation
Kansas City, Kansas

PROFESSIONAL TURF MEN have had many fine herbicides made available to them. These professionals have learned what potential problems to avoid and what advantages to exploit in these materials. But the search goes on for a perfect herbicide, while we fail to put together all existing information on chemicals, practices and equipment for best use of what is available. The opportunity for near perfect weed control is at hand and all but a few have failed to recognize the potential.

The perfect herbicide for turf would control all vegetation except the particular species of grass planted. The more we expect from a single chemical in the way of selectivity, the more difficult it is to visualize what it might be or how it might work. Rather than expect one chemical to do all things, it is much more realistic to use a combination of two or three compatible chemicals working together, properly applied, with the proper wetting agent where needed.

In the late 1950's, the Research & Development Department of the Green Cross Products Div. of Sherwin-Williams Company of Canada, Ltd., began attacking broadleaf weed problems, not by looking for new chemicals but rather by working with existing materials in such a way as to amplify the good features of each product and minimize any detrimental factors. To use this approach, it was necessary to understand the good and the bad of each chemical.

One, 2,4-D, was an effective herbicide, but it did not control chickweed, clover and many weed species which were resistant. The logical approach to the resistant weeds was not to discard the 2,4-D, but rather add a chemical which would control them. For example, Silvex or 2,4,5-T was added to the 2,4-D and control of chickweed and clover was obtained. This gave a product of wider spectrum of control, but occasionally some injury to sensitive grasses occurred and still some weed species were left uncontrolled.

When MCPP became available, it was evaluated for its safety to grasses and control of clovers and chickweed. This material was safe on grasses and also had no human toxicity problems. Green Cross researchers noticed that with certain combinations, unusual things were happening. When they added 1 pound of MCPP to 2 pounds of 2,4-D rather than a herbicide effect equal to 3 pounds of chemical, they were amazed to find a herbicidal effect equal to several times the amount of chemical applied. Other scientists were reporting the same "more than additive" effect. Not only was the second chemical bringing control of weeds susceptible to that chemical, but now a third group of weeds was being controlled which were resistant to both chemicals individually.

When dicamba was introduced to the turf market, it brought control of the polygonous weeds which was not possible before. Researchers found that adding BANVEL D (dicamba) to 2,4-D that again "more than additive" effects were demonstrated. The combining of dicamba and 2,4-D made it possible to reduce the dicamba dosage down from 1 pound per acre to ¼ pound or ½ pound per acre. The "more than additive" effect was so great, a patent was issued to the manufacturer covering the mixture of 2,4-D and dicamba.

The Green Cross Products researchers went one step farther. They added dicamba to 2,4-D and MCPP. Confirming research conducted by a Canadian University showed the dramatic effect possible from this three-component mixture. The amount of chemical required to give 90% control of a number of weed species was carefully determined in field tests. The three chemicals were applied individually and then were applied as one treatment containing all three chemicals. The difference in the total amount of chemical required per acre was very great.

The word "synergism" can be applied to this type of relationship between chemicals. Synergism is a much abused word, but a dictionary of biology defines it as follows: "Synergism: Combined activity of (chemicals) . . . such that an effect is produced greater than sum of effects of each (chemical) acting

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Florida Pilot Project

New Formula May Open Door For Deep Root Tree Injection

DAWN MAY break for direct, deep root injection in fertilizing plants and trees in South Florida; some predict it is the destined feeding procedure.

A special formula, called Dine-A-Mo "S," is injected into the roots system by a hydraulic unit. It is being watched carefully by landscape contractors, nurserymen, and government research personnel.

Right now, focus is on a pilot project of the Florida Department of Transportation involving a mile of expressway and city street interchange (SR 836 and Northwest 27th Avenue, Miami). Should this test succeed, Arnold Ramos, District Four Engineer, Fort Lauderdale, is hopeful the method can be used to develop other interchanges in the District.

Nearly 7,000 trees and plants, and 20,000 square feet of Bitter Blue Sod have been planted, and subsequently fertilized by the deep root injection method.

The DRIF (Deep Root Injection Feeding) formula was developed by Howard C. Bardsley, horticulturist for the FEC Fertilizer Company, at Homestead. It includes DuPont's Uramite, a slow-releasing material to which plants respond quickly, but which continues to supply nourishment for six or more months.

Formerly Charlie Johnson (Charlie P. Johnson Spray Co. of Miami) explored the root feeding technique in South Florida some 15 years ago. He was hindered by inability to get a proper nutrient balance. But his staunch belief in the method helped inspire Bardsley to research numerous formulas, finally resulting in Dine-A-Mo "S."

Johnson then received the first commercial try with the "recipe" which is generating enthusiasm for its compatability with and stimulating effect on plants and trees. He is using it regularly on South Florida ornamentals.

At the Interchange project, response is being checked for the thousands of plants and trees, including 24 Ficus Benjamina trees, 20 feet tall with 20-foot spreads.

These trees were moved untrimmed, but had been root pruned for almost sixty days prior to the move by the contractor, Ken Lones of L & G Landscaping in Miami.

Trees were deep root fed five days after moving. It is believed that this has contributed to the high percentage of success by providing immediate food directly to the new feeder roots, thus gaining a quicker response to foliage. Only two of these 24 massive trees show possible signs of nonsurvival.

Other highway test projects being observed by Carl Higgins, Florida Department of Transportation, is the palm-lined Julia Tuttle Causeway (I-195) over Biscayne Bay. This area is constantly swept by salt-laden winds. Higgins expects to

evaluate results for feasibility and economical feeding of such highway trees and plants. The Dine-A-Mo "S" formula is a complete major-element fertilizer, plus an additive containing chelated minor elements.

Briefly, Bardsley summarizes the system as follows:

1) The injection unit (probe) is assembled by FEC Fertilizer Company from a "pistol grip" quick acting valve, a 4 ft. length of threaded ¾" aluminum pipe and a injection point with splash shield developed by FEC. The entire unit or separate parts can be purchased from FEC Fertilizer Co.

2) Any size sprayer or tank can be used as long as it has mechanical agitation. Mechanical agitator is necessary because the Dine-A-Mo "S" tree and shrub fertilizer is primarily a suspension mix similar to wettable sulfur rather than a liquid or water soluble fertilizer.

3) Each "shot" is two quarts of liquid which contains the correct amount of Dine-A-Mo "S" tree and shrub and FEC Claw-El minor element mix.

4) The number of injections per shrub or tree varies depending on the size of the plant. Basically, small shrub hedging is injected one "shot" at 3-foot intervals. Large shrub hedging is two "shots" at 3-feet intervals and large shrubs and trees vary from 3 to 5 shots depending on size.

5) Dine-A-Mo "S" tree and shrub is 16-22-22 analyses suspension fertilizer mix that feeds for about six months. FEC Claw-El is a spectrum chelated minor element mix containing magnesium, iron, manganese, copper and sulfur.

In photos above: Charlie P. Johnson, left, Howard C. Bardsley and Ken Emerick; and at right, Emerick feeds a mango tree.

The Grass Seed Industry —An Oregon Empire

The commercial turfgrass industry today demands quality seed. Golf course superintendents, sod growers, park superintendents, and the professional responsible for factory lawns and similar areas expect seed to be weed free and viable.

The seed producing segment of the industry has made big strides in meeting this demand. A tour of the Williamette Valley of Oregon shows vividly just how far seed growers and processors go to guarantee that quality is maintained. They grow a product to sell. And they are rightly proud of progress made to date.

Last month the Oregon Chewings Fescue and Creeping Red Fescue Commission along with the Oregon Orchardgrass Commission played host to a cross section of their distributors and the press. Guests were on hand for opening of Grassland '71 at Eugene and then were bussed throughout the heart of the Oregon turfgrass seed producing area.

(Continued on page 22)