sery's particular needs. All are manpower saving features.

"To be successful in the sod industry you *must* mechanize," Nunes stresses.

In the matter of service, all NUnes Turf is delivered in the nursery's own trucks.

"This is extremely important," Nunes said. "You're dealing with a perishable, and your product is only as good as your service. You can have the best product in the world and if you can't service it, what value is it?"

NUnes Turf truck drivers are highly skilled, not only in delivery and handling, but in all phases of the sod growing operation. Often, they are the only contact between NUnes Turf and the contractor, and must be able to answer most any question asked of them.

To foster a good first impression in the customers' minds—and a lasting one—Nunes insists on a strict code of dress for his truck drivers.

"They arrive in white shirts and clean slacks, with shoes polished. Even though they might not return that way, the customer will remember us as a professional outfit rather than a ratty one," Nunes insists.

The truck driver is responsible for unloading the material, too. He tows a forklift—equipped with wide flotation wheels to prevent grade damage — behind the delivery truck to the unloading site. He spots the pallets for the customer, thus rendering further service, and sod protection.

Nunes's entrance into the sod industry was a deliberate one. His nursery is ideally situated in the Central San Joaquin Valley, 90 miles distant from 4 large cities—San Francisco, Sacramento, San Jose, and Fresno. Also, at the nursery location the soil is good sandy loam, Nunes has a 200-foot well for irrigation.

Previously, he farmed very specialized vegetables for seed and market here. But regardless of quality, he always found himself at the mercy of the buyer, forced to accept what was offered for his product.

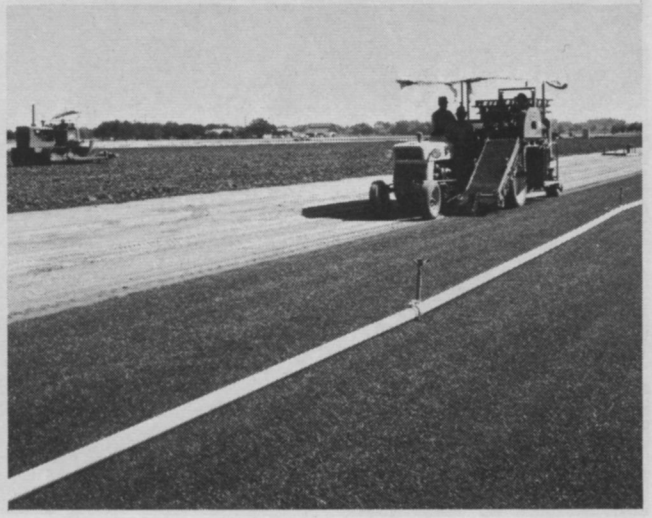
He determined to get into something where he could have more say-so over his margin of profit, and learn the overall business—market, cultural practices, and sales.

He felt sod growing was the answer. For here was a new industry, specialized, one few growers might attempt, and with good management, it conceivably would offer more profit and reasonable control.

Nunes made his first planting in June 1962, putting 18 acres into bluegrass, 3 varieties of hy-

Land leveler is used to float soil base, knocking off the high spots and filling low areas for level seedbed.

Special vacuum sweeper developed by Nunes is equipped with flotation wheels and own power plant for hydraulic and vacuum.



NUnes sod harvester is produced for sale. Developed by John Nunes, it allows three men to harvest 8000 square feet per hour.

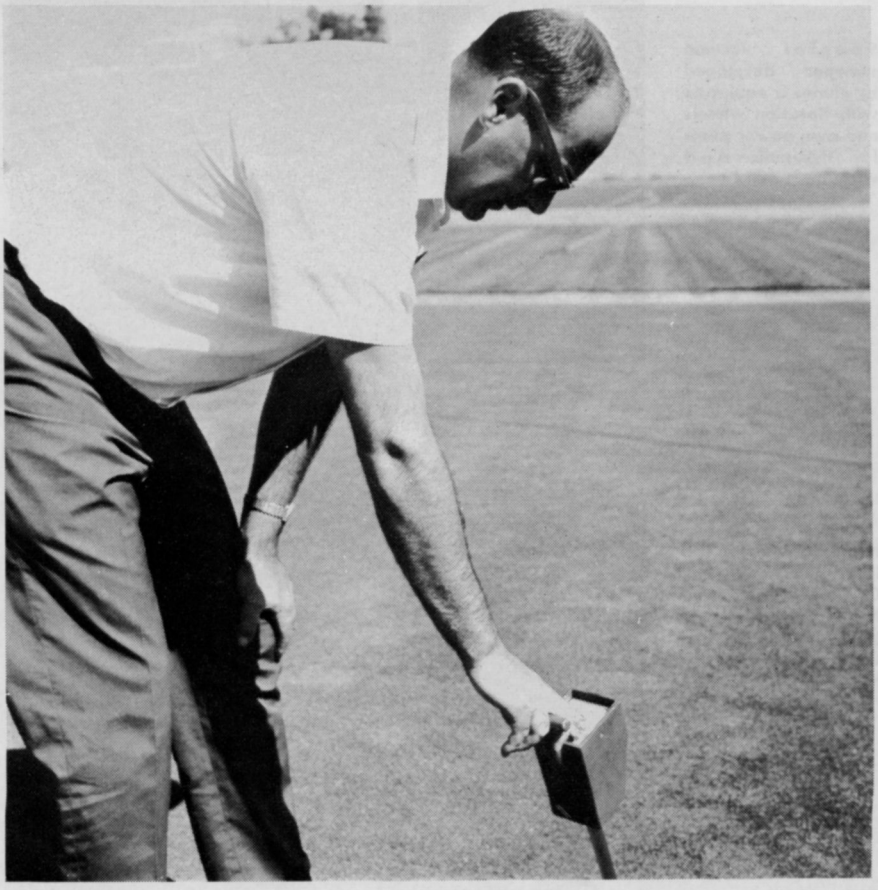
Turbine booster pump is one of three used by Nunes. Sprinkling system opens off 8-inch mainline with 3- and 4-inch laterals.

brid bermudas, bentgrass, and dichondra.

Today, besides still maintaining his vegetables and orchards, he is cultivating 160 acres planted in bluegrass mixtures, hybrid bermudas, and dichondra.

This diversification is unusual compared to some nurseries that grow straight bluegrass or other varieties. But California's climatic changes, ranging from coastal, to mountainous, to intervallies, necessitate it.

John Nunes, below, keeps constant check on sod moisture with electronic Aquatron Moisture Meter. Precise irrigation saves water, and helps produce quality turf.



NUnes Turfgrass Nurseries operate 5 diesel delivery trucks and maintain a stable work force of 35, including office staff, a sure measure of Nunes's conviction that the sod industry will grow.

He has one constant competitor, though, which bids to keep him in check—the weather. California's mild, year-round growing season encourages homeowners and prospective contractors to plant their own seed.

"Practically anyone can buy a package of lawn seed and plant it here almost any day of the year and get something green," Ed Mutoza, Sales Manager and Vice President of NUnes Turfgrass Nurseries states. "And that's my job—to educate the public on the benefits of sod, and increase our sales."

In doing this, Mutoza, who joined Nunes in 1963, and previously spent 16½ years in agriculture banking, travels many miles, speaking at public meetings, attending conventions, participating in county fairs, trade shows, extolling the virtues of instant sod.

In addition, never taking sod sales for granted, NUnes Turf employs a public relations firm on a retainer basis.

"Merchandising or marketing would not be a big problem," Nunes says, "if I wanted to stay where I am at 160 acres the rest of my life. But I desire a healthy growth for my company, and the industry. And to have growth, we *must* go out and develop the market."

The greatest percentage of NUnes Turf sod is sold direct to professional landscape contractors. NUnes Turf does no installations itself.

"If we did," Nunes explains, "we'd be competing with our biggest customers."

Credit problems? A few. Again Ed's job. All new orders are C.O.D. until credit is checked, then accounts are followed closely even after credit is established.

Tony Mello, left, and John Nunes demonstrate two manpower saving features of Nunes operation. Mower, of standard carrier design is equipped with 17-foot cut to eliminate mowing time, and to relieve compaction. Pipe mover efficiently shifts pipe ahead of mower.

better penetration for nutrients and moisture, and aids in disease prevention. There is little room for fungus breeding in clean turf.

While Nunes has eliminated fungus problems, he still has an insect one. Crews spray regularly in the summertime to control sod web moths. A commercial chemical is applied with a ground spray boom.

Weed control is taken care of before all seeding. Crews fumigate every square foot of the sod ground. Menthyl bromide is injected into the soil under controlled moisture and temperature conditions with a Tri-Cal fumigator. The soil is then covered with a plastic tarp and left a minimum of 48 hours. Fumes kill all fungus, weed seeds, anything that might be in the soil.

Fumigating is an expensive operation—$400 an acre—but again

(Continued on page 38)

Although his acreage is small compared to some Eastern sod farms, Nunes is quick to point out his dollar value is that of a 1,000-acre farm.

The year-round growing season has its benefits as well as drawbacks. Nunes gets double use from his land. He can harvest a crop every 12 months, compared to 18 to 24 months in some areas. And by planting at the proper time, he can sometimes even make good sod in 9 months.

To achieve this, NUnes Turf must push their crop heavily with fertilizers. They use some organics, a lot of nitrogen, phosphate, and some potash, programming them upon the type of sod and growing season.

This heavy fertilizing produces an abundant upright growth. Mowing must be done regularly every 5 days, and clippings are cleaned up each time with the special self-powered sweeper Nunes has developed. If clippings were left lay, the turf would smother, and the customer would end up with a thatchy sod.

Regular sweeping also gives

Moving irrigation line allows mowing and maintenance. Sod here is Windsor Blue. John Nunes developed pipe mover.

Tree Care

Business and Beautification

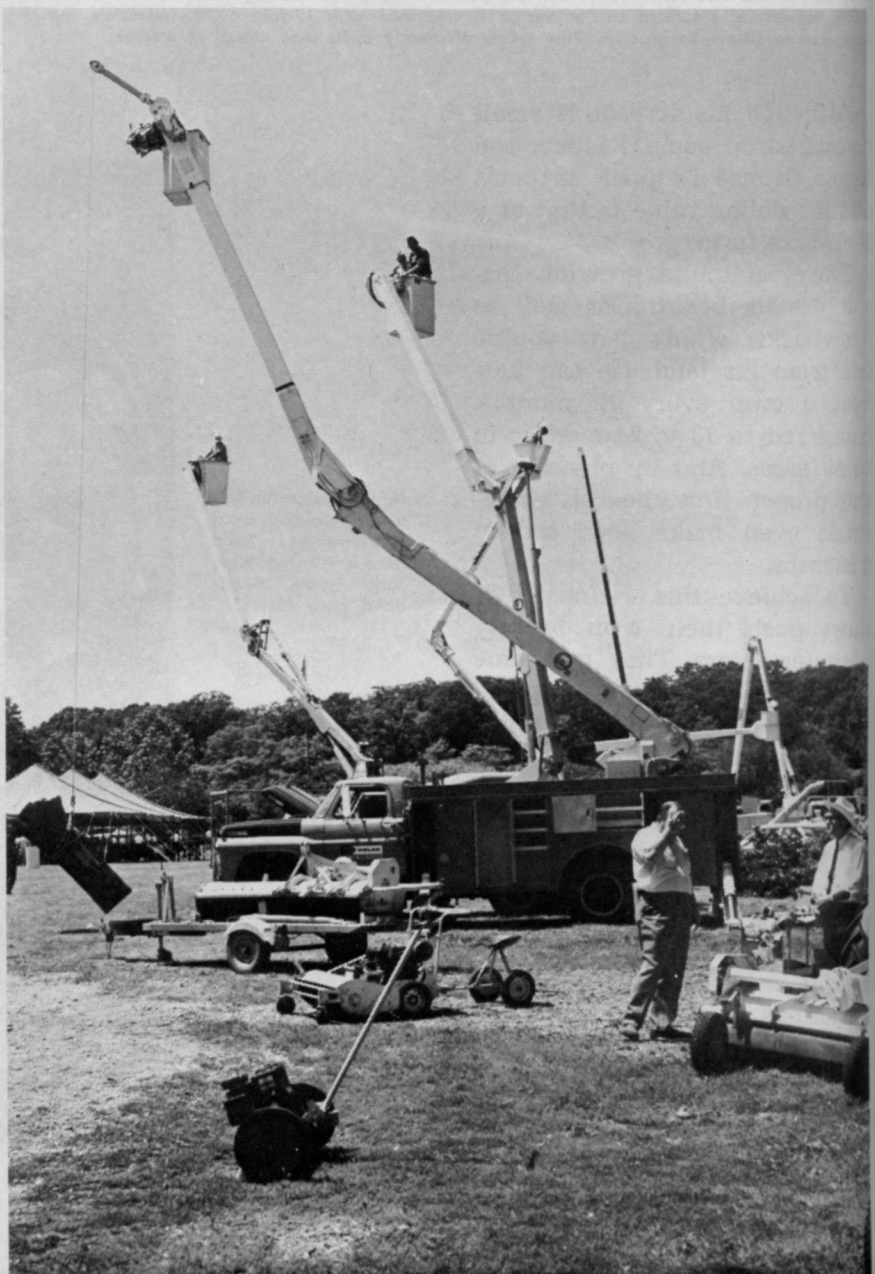
PLAUDITS are due the Chicago group who hosted the 44th International Shade Tree Conference. Chairman Noel B. Wysong, Golconda, Ill., and his co-chairman, Leonard Hammerstone, Rite Landscape Co., Crystal Lake, Ill., with their committees helped make this an efficient and pleasant session for members.

Despite an intense heat wave, the field trip at Morton Arboretum generated more than normal interest among arborists. Luncheon featured a professionally done beef barbecue followed by roast corn and cold drinks during the afternoon field demonstrations. Equipment exhibited by suppliers completely encircled an open field demonstration area. A tent with chairs provided shade for guests but exhibitors braved the heat and kept their equipment working.

ISTC officials were somewhat dismayed that registration was down noticeably this year, with only about 500 persons on hand. Especially noticeable was the lack of wives and children in attendance. Though little discussion was to be had on the subject, the current wave of civil unrest in Chicago and similar cities may have been a prime factor in fewer attending the Conference.

The smaller attendance, however, did not affect what proved to be an excellent educational program. Facilities were excellent for the sessions and the host committees produced a well organized event.

In fact, as is usual at an ISTC event, the program resembled a 3-ring circus. The National Arborists Association, the municipal and utility arborists, and the consulting arborists, all had their formal and educational sessions as a part of the Conference. Educational programs included management, cultural practices,



technical information, research, and numerous experiences on practices in the industry.

Mayor Daly On Hand

Mayor Richard J. Daly, Chicago, welcomed the group with a message direct to the ISTC. He said that trees make every neighborhood a better community. Daly stated that the City of Chicago was making a major effort to plant trees in the city, even to the urging of residents to add trees to their backyards. He said the City has planted trees around the city hall. Further, the City, he said, works to encourage private industry to include trees in plans for new buildings and grounds. Tree filled plaza areas are becoming a vital phase of new construction in the City, according to Daly. The Mayor said he found nothing more relaxing than spending time in the shade of trees with family loved ones.

Mott Corporation's territory manager, Joe Berdyclt, left, discusses Mott's super heavy duty Model 74 at ISTC field demonstration with Richard Scrymiger, WTT representative.

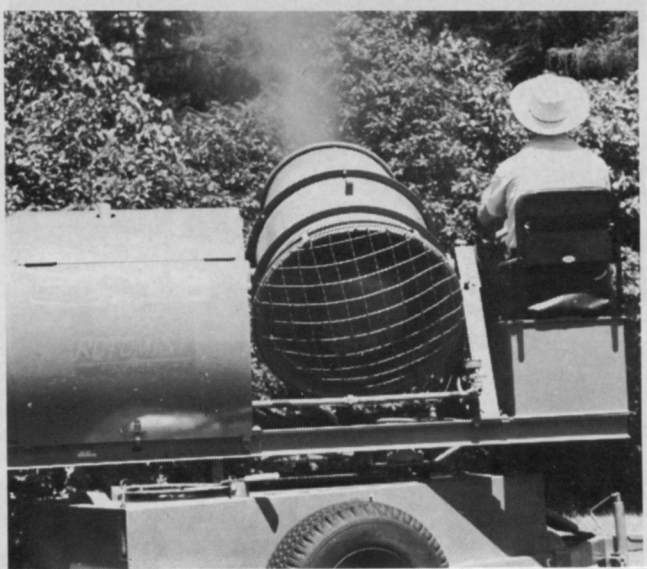
Stephen Allen, Consulate of Canada, speaking informally to the group following Mayor Daly, spoke of the unique beauty of Chicago and of his personal "wholesome respect and admiration for a group such as the ISTC who helps Mother Nature." His appreciation, he said, stems from his home area near Bath, Canada, where few trees can be grown. Allen congratulated ISTC'ers on their selection of Montreal, Canada, for the 1971 Conference.

ISTC leadership, represented by Keith L. Davey, San Francisco, Calif, new president for 1969, left; Dr. L. C. Chadwick, Columbus, O., executive director, center; and Freeman L. Parr, Hicksville, N. Y., outgoing president. President-Elect for the coming year is Richard E. Abbott, Canton, O.

Wood Chips As Compost

Compost from wood chips and excess topsoil have furnished the city of Los Angeles, Calif., about 80,000 cubic yards of plant propagation and landscaping material. This single program alone has been worth almost a million dollars to the city over the 10-year period.

Basing figures on today's costs, Raleigh E. Dowell, Principal Park Foreman for Los Angeles, said that previously dumped wood chips and topsoil are stockpiled separately. Chips are left undisturbed for two years and then watered for about 12 hours, three times during the summer.



Rotomist demonstrated by John Bean Division, FMC Corp., Lansing, Mich.

Mitts and Merrill's new model chipper and Baker Equipment Manufacturing Co. job-matched truck and boom.

Chain saws in action by McCulloch Corp., Los Angeles, Calif.

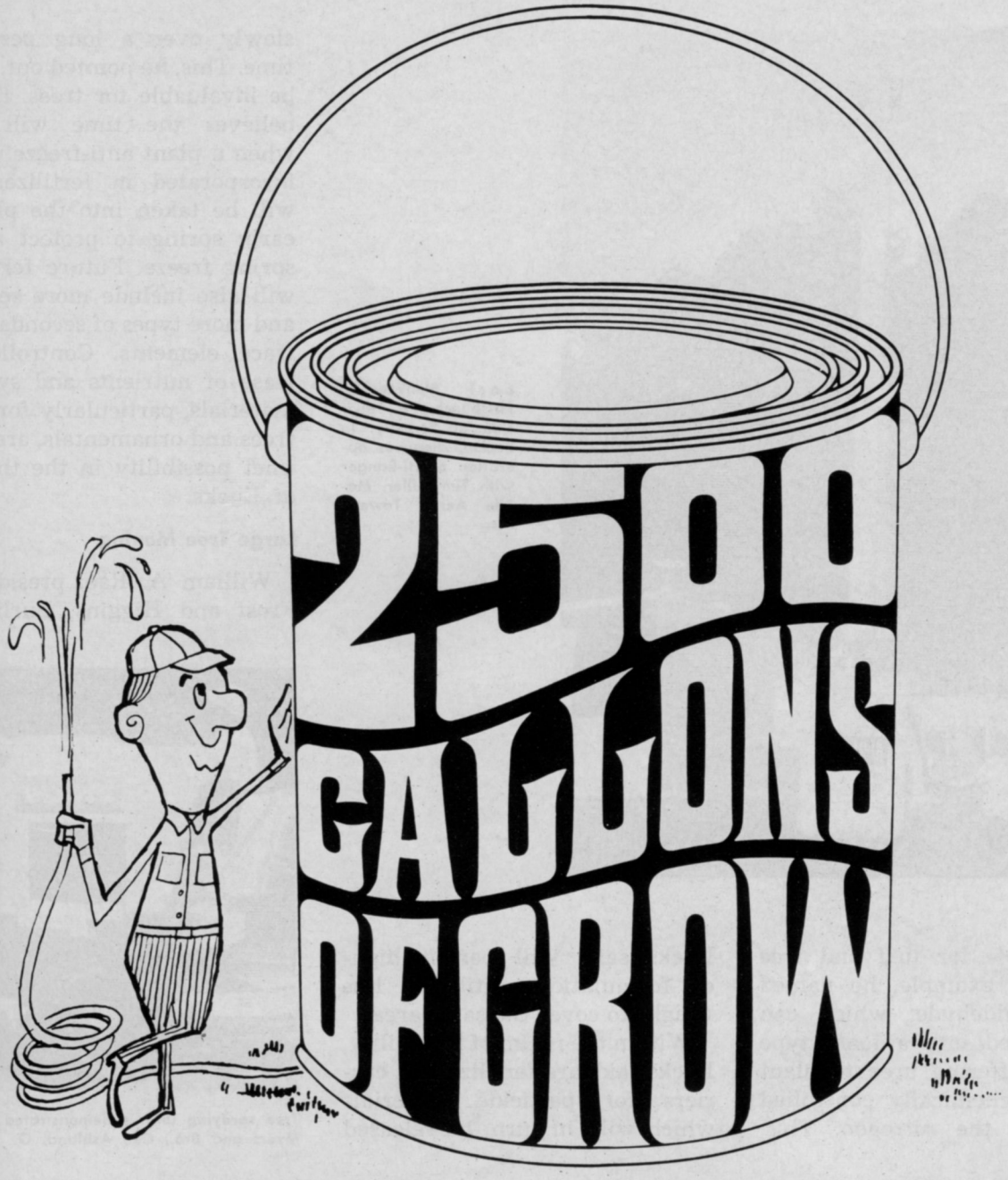
Fairmont Hydraulic power tools, Fairmont, Minn., a division of Fairmont Railway Motors, Inc.

The pile is turned with equipment and 150 cubic yards of cow manure added for each 10,000 cubic yards of chips. Chips are again turned the third year and 300 gallons of liquid fish fertilizer added. At the end of the fourth year, chips are again turned and one ton of ammonia sulphate added. Chips are allowed to compost the fifth year and then used. By this time, Dowell says, an original pile of 10,000 cubic yards will have shrunk to one-third, or 3333 cubic yards. But the value is now $10 per cubic yard of the residue. Total cost to the City has been $611 for fertilizer and $552 for bulldozer use. Net gain to the city has been more than $32,000. When projected over a 10-year period the quarter-million yards of composted material has been worth $800,000, and more than $187,000 in dumping charges have been saved.

Fertilizer Future

Looking at the future of the fertilizer industry, Hartl Lucks, Smith-Douglas Div., The Borden Co., Columbus, O., said that basic raw materials are about as purified as possible. Coming trends will be in areas other than increasing the nutrient content. There will be some increase in nutrient content, he said, but users can assume that present plant nutrient levels will be maintained in the immediate future.

Even with massive tank cars and storage facilities, bottlenecks in delivery of fertilizer still occur, Lucks said. He forsees cross-country pipelines which will carry nitrogen solutions directly from the point of production to the communities where they will be used. Lucks also expects more application of fertilizer by air, especially on forested areas. More than 500 million acres, he stated, was treated by air last season. Lucks also said that both new physical and chemical forms of plant nutrient material will



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Earl Blenkenship, Pittsburgh, Pa., division of Forestry, in bucket, discusses operation of Hi-Ranger with Tim Miller, Mobile Aerial Towers, Inc.

be available for turf and tree work. For example, he named urea-formaldehyde, which can be produced into a foam type material offering urea to plant life with chemically controlled release of the nitrogen. This, Lucks said, will permit higher formulations, utilizing less weight to cover the same area.

Within the realm of possibility, Lucks said, are fertilizers as carriers for pesticide materials which will, in turn, be released slowly over a long period of time. This, he pointed out, would be invaluable for trees. He also believes the time will come when a plant anti-freeze will be incorporated in fertilizers and will be taken into the plant in early spring to protect against spring freeze. Future fertilizers will also include more selective and more types of secondary and trace elements. Controlled release of nutrients and systemic materials, particularly for shade trees and ornamentals, are a distinct possibility in the thinking of Lucks.

Large Tree Moving

William A. Rae, president of Frost and Higgins, Burlington,

Tree spraying unit is demonstrated by F. E. Myers and Bro., Co., Ashland, O.

John Seubert, Seubert Tree Expert Co., Sioux City, Ia., demonstrates Stihl chain saw. ISTC guests watching proceedings at the left are Roy Stewart and Mr. and Mrs. Eugene K. Nyland, all of Smith Tree Service, Inc., Cleveland, O.

Alex Wynstra, Jr., left, city forester at Columbus, O., discusses tree root fertilization with Dr. and Mrs. M. M. Shihata of Prairie du Chien, Wis. Dr. Shihata handles S & D Products, a line of patented plant food products.

Mass., discussed large tree moving by using the frozen root ball method. Speaking on an NAA panel his definition of a frozen root ball is one that is not frozen solid, but has 4 to 6 inches of frost around the outer edge. Rae said that he believes that the deeper the frost penetrates, the more harmful the effect on the tree will be. Freezing of the tree roots, he said, can be harmful, especially so since one effect of freezing is drying. In elaborating on the advantages and disadvantages of this method of tree moving, Rae said that selection of the tree is important. Soft rooted trees, he said, do not usually survive frozen root balls. Trees which have a poor survival rate in the experience of Rae are Tulip, oak (especially red oak), dogwood, hemlock, sycamore, sweet gum, birch, and magnolia. Good risks, he stated, are maple, both white and red scotch pine, honeylocust, elm, linden, and crab. He says his company has also been successful in moving beech by the frozen root ball method, though this tree is known to be a high risk venture.

Rae pointed out that salt used for ice control on highways is harmful to trees. Salt, he said, absorbs moisture and if allowed to get on the tree during the transporting, can absorb the moisture from the tree, especially from buds and smaller branches. This can also happen to established trees, Rae stated.

In one instance of winter planting, Rae related, his company lost nine 5-inch caliper English elms. These had been tagged for the company by a landscape architect and then transported 900 miles. During the trip by open trailer, the driver experienced snow, sleet and slippery roads. Truck and trees alike were white with salt spray on arrival. Planting conditions were also poor at the time because of a November 15 storm in Rae's area. Result was that the trees completely dried out and were dead this spring.

Another factor important in frozen root ball moving is the amount of moisture in the soil when frost sets in. According to Rae, if the soil is dry the tree is more likely to be harmed by frost. Further, if the tree has had plenty of moisture and has heavy new growth, an early frost or cold snap in October or November can be harmful.

Biggest helps for moving trees by the frozen root ball method, according to a summation by Rae, are proper planning, experienced men, good equipment, good after-care and common sense. These are as important with winter tree moving as with trees moving during other seasons.

Contract Tree Moving

Also on the NAA panel for large tree moving was H. M. Van Wormer. He reviewed his company's step by step methods and also cautioned against bidding on large tree moving jobs. Negotiated tree moving contracts offer the only sound procedures, he said. He also suggested that the availability of consulting arborists on a fee basis offers a method for a purchaser to guarantee that each phase of the work will be successful.

Reviewing practices of moving and planting, Van Wormer said that he disagreed with some architects' specifications which call for using formulated soil for backfill. If the tree planting site is original soil, Van Wormer crews tap it securely around the base up to four inches from the bottom of the ball. Van Wormer prefers that they use clay for this strata because tree roots at this depth enjoy strong and rigid pressures. These, he said, are not true feeding roots, but are anchor and moisture securing types of root structure. Also, Van Wormer stated, no fertilizer is used in the backfill. No water is applied until the entire ball has been completed and ringed. An

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