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Florida's 'Super Forests' Yield Select Seedlings

By C. Winn Upchurch

BEAUTIFICATION and conservation in Florida promises to get a big boost from a state Forest Service tree program which is just beginning to "take seed."

A planting program launched in 1959 by the state Forest Service has made Florida the tree planting leader of the 50 states for five consecutive years. State foresters hint that state commercial forests of the future may become "super forests."

Florida nurserymen, landscape architects and others will continue to benefit. They are now

buying seedlings at less than \$8 per thousand. One firm which has taken advantage of the state program is Manatee Seed & Sod Co. and its parent firm, Pursley Zoysia Grass Co., both of St. Petersburg.

The Pursley firm, owned by Walter L. Pursley, bought some 10,000 Arizona cypress, sand pine and red cedar seedlings for transplanting on its 30-acre grass farm in Manatee County, just south of St. Petersburg.

In addition, Pursley's Manatee Seed & Sod Co. transplanted 5000 sand pine and oak seedlings,

Pictured above is a Florida Forest Service orchard where trees are bred with selected stock to achieve desired qualities. Seed from this orchard will be available for nursery use within a few years.

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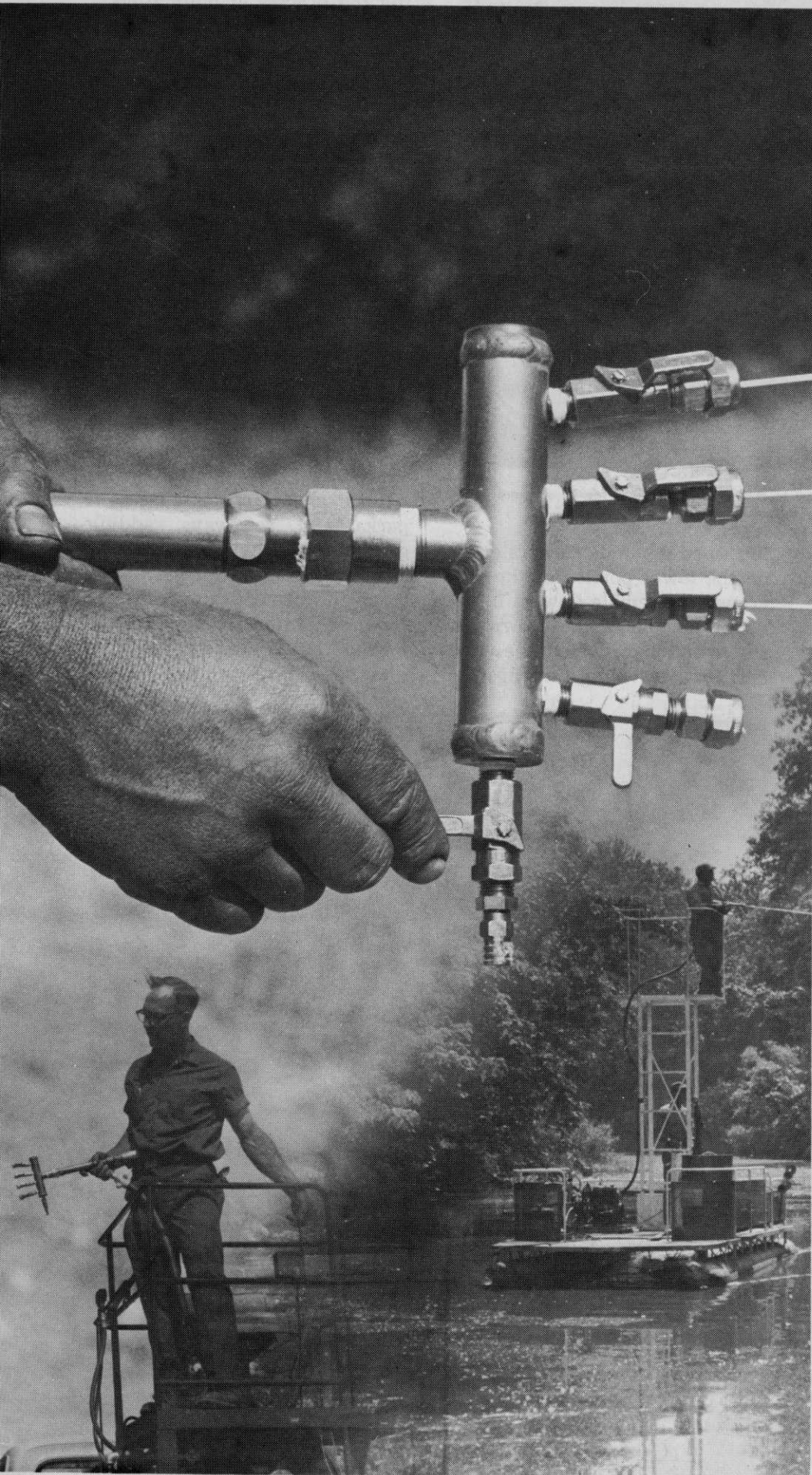
—Thick streams make accurate placement of the herbicide easy, and with Visko-Rhap you see where you've sprayed.

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HERCULES

SP68-4





Dewinged slash pine seed, which can be kept in cold storage at 20° F for 10 or more years, is ready for planting. One slash pine cone yields 50-75 seeds on the average.

purchased from the state, in its leased beds in the Everglades, near West Palm Beach. The latter project failed, however, when a hurricane washed out the seedlings. Manatee Seed's manager, James C. Boone is not discouraged, and plans to plant more state-obtained seedlings in the Everglades beds.

Industrial Plantings

Pursley's Zoysia Grass Co. does industrial planting and golf course planning. The firm landscaped the Magnolia 18-hole golf course at New Port Richey, 35 miles north of St. Petersburg, which is Pursley owned and operated. Many of the sand pines lining the course came from Florida Forest Service seedlings harvested some years ago.

The first seed from what the Forest Service calls "improved special seed orchards" was harvested one year ago, according to R. A. Bonninghausen, Forest Service management director at Tallahassee, Fla.

The Florida seed orchards are filled with selected parent trees, all grafted with the most promising branch tips. On the parent pine stock there is little inbreed-

ing since the male flowers occur on the lower portion of the tree crown, the female flowers in the upper portion of the crown. As the pollen is dispersed, the wind currents traveling among the

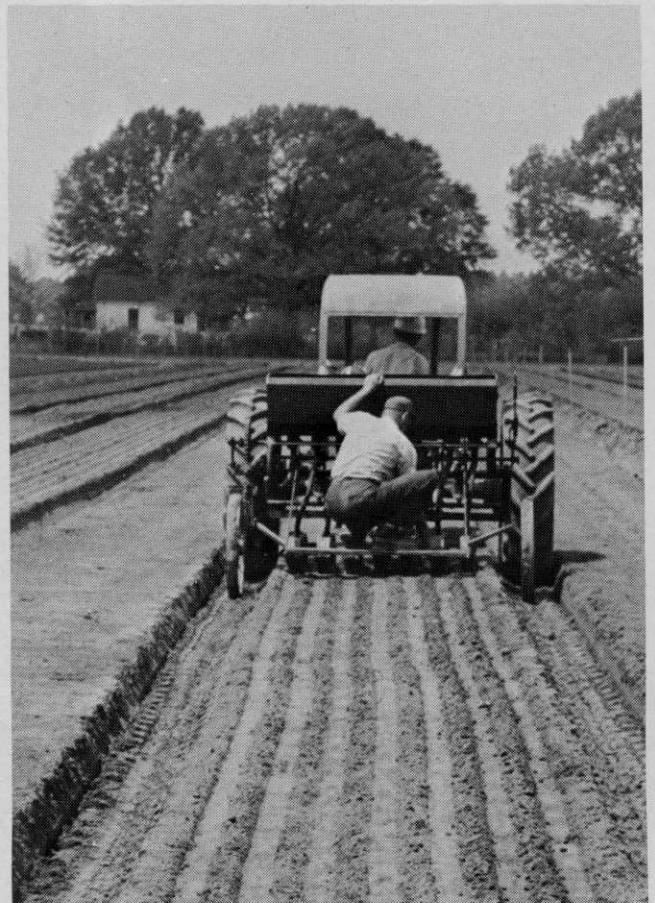
trees carry it to the female flowers of other trees, completing the process of pollination.

Pine A Prime Species

Forestry officials believe the pine is one of the more beautiful species in the Sunshine State. The state Park Service last year planted 10,000 slash pine, along with several thousand longleaf and loblolly seedlings on state property.

In addition, the state road department has on numerous occasions planted pine seedlings in such areas as worked-out borrow pits, roadside parks, medians, and other areas, and is continuing to do so. Both the Park Service and the state Road Department have preserved natural stands of pine trees in parks and roadways, adding greatly to aesthetic values.

Commenting on the state's efforts at beautification, E. R. Howard, information director for the Florida Board of Forestry said: "We have on state forests



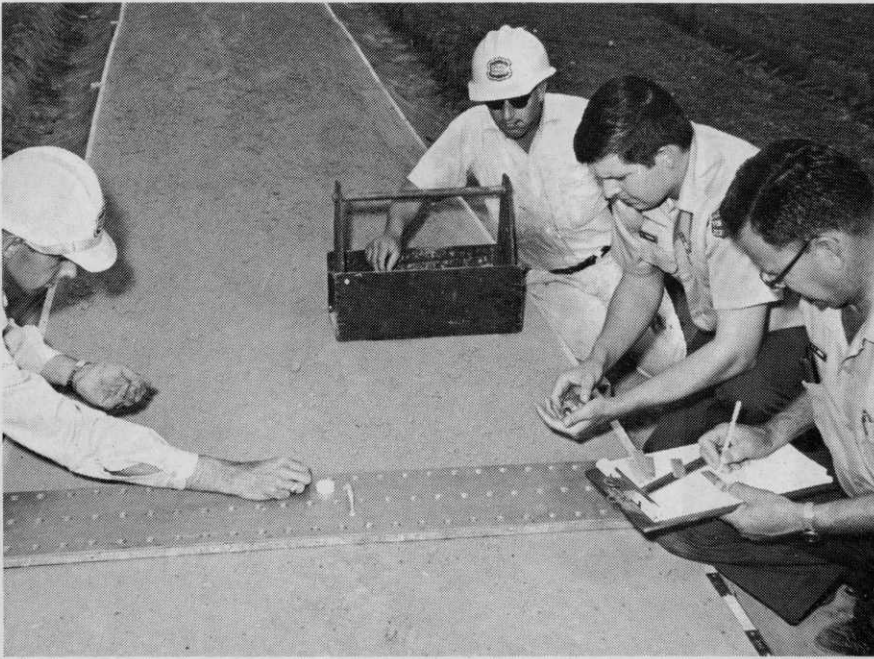
Pine seeds are not covered with soil when planted but are pressed lightly into ground. Planters sow from 1½ to 2 lbs. of seed per 100 linear feet, 7 drills per bed.

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Seed from "super forest" orchard being planted for progeny testing is placed same distance apart so that each has an equal chance of development in the seed bed. Seedlings will then be progeny tested under identical conditions at a later time; only those proven superior will remain in the orchards.

and privately-owned lands developed recreation areas in pine stands on lake and stream borders, which we think add a unique touch of natural beauty. It would be highly desirable, in our opinion, if some of the more unsightly areas such as junk car lots and the like could be bordered with pine trees."

While there are plenty of seedlings available to nurserymen and others from the state forest agency, it will be about four more years before seedlings from the "super forests" will be plentiful. R. A. Jordan, reforestation supervisor, reports it will take this period of time before sufficient seed is produced to make the super seedlings plentiful.

Even then, Jordan said, these improved-strain seedlings will be available only in limited quantity. He believes that eventually all seedlings produced in the state nurseries will be from the seed orchards and will be of genetically improved quality.

State Operated Nurseries

Tens of millions of pine seedlings come from nurseries operated by the state agency and by forest industries. As one massive crop of slash pine seed-



Preferred height of seedlings shortly before removal from beds for packing, shipping and transplanting is about 18 inches. Muriate of potash is applied in late fall to toughen the seedlings.

lings is moved out, skilled nurserymen prepare for the next, to supply the increasing demand for these "tiny trees with the big promise."

Removal of seedlings from beds starts in mid-November and continues through February. Areas in the nurseries are rotated with a cover crop being planted every other year.

Early in March, sawdust and fertilizer are applied to the

cover crop area from which seedlings are lifted. Cow peas or field corn serve equally as well, but Jordan prefers corn on the 50 acres at Munson Nursery in northwest Florida and the 80 acres at the Andrews Nursery at Chiefland, Fla. Nurseries gross \$8000 from sale of corn each year which is used against seedling production costs.

Seed bed areas are fumigated in March to control nematodes

and root rot fungi. The fumigant is allowed to remain in fallow soil from two to four weeks before the beds are prepared and seeded.

Pine seed when planted is not covered with soil. Seed is pressed into the top of the soft earth with a roller. Beds then are covered with chipped pine straw which serves as a mulch and helps to keep the seed moist and at ground temperature.

Seed Is Tested

To get the maximum number of plantable pine seedlings from the minimum linear footage of narrow beds, seed is tested for germination. Seeding is at a rate to produce 12,500 plantable trees per 100 linear feet of bed. If seedlings are planted too thick, they tend to be stunted and too spindly for commercial use. If seeded too thin, they develop large and are hard to handle. When seedlings are removed from beds for transplanting during late fall and winter, a 16 to 18-inch overall height is desirable, according to Jordan.

Once seeding starts in March or April it becomes necessary to protect new seed beds from birds. A "bird patrol" is on duty from dawn to dusk, one or two men patrolling beds constantly. A single bird may consume 400 pine seeds in less than a day, Jordan says. The bird watch keeps control by means of a 12-gauge shotgun until seeds sprout and the seed coats fall away. Normally this period is about six weeks.

When germination begins, beds are sprayed with a fungicide to keep down sporous infections. Grass in the bed is controlled chemically, as are such insect enemies as red spiders.

All Florida nursery beds are equipped with irrigation facilities. Fertilizer is applied as needed through the growing season, with formulas based on soil test recommendations. Before removal of seedlings, an application

of muriate of potash is used to "harden" the young trees. This is usually done in mid-October, to prepare the trees for lifting, grading, packing, shipping and transplanting.

Industrial Weed Control (from page 7)

made during the fall and winter, using a preemergence chemical. Spring and summer months are used for checking back on the degree of control. Two checks are made on each application site, and three checks on many. Follow-up spot treatments are made as needed. Graham operates largely in Oklahoma, northern Texas, the Texas Panhandle, Kansas, Illinois, and Kentucky.

Contract Procedure

Yearly open-end contracts (a set rate per square foot) are the rule. Graham generally charges one cent or more per square foot depending on conditions for the initial treatment. Maintenance charges for following years are one-half cent per square foot.

Besides industrial weed control business, Graham also serves as distributor for industrial chemicals and equipment. He represents DuPont, Dow, Allied, John Bean, Diamond Shamrock, and Amchem. Besides the main headquarters at Oklahoma City, he operates a branch office at Fairfax, Okla., in order to better serve outlying fields. This office is managed by Dale Lance.

Graham occasionally accepts a power line right-of-way contract but has in the past sublet these to an operator with helicopter equipment. His early jobs in the business were plant or industrial sites, farm fence rows, salvage yards, bottling works, and small airports. Once in the business, he moved into more extensive oil field contracts with major companies.

Latest phase of the business has been a growing need for aquatic weed control. Flood con-

trol dams in the area have created more lakes and ponds which develop weed problems. He has established Aqua-Trol, a water weed service, as a special division of the company. In a normal year, the company will treat 40 to 50 ponds and club lakes, many of which range from 75 acres up. A big factor in treating fishing lakes according to Graham is to strip treat over a period of time. He has found that this reduces oxidation and the threat to fish. To aid lake and pond owners and those responsible for keeping them free of weeds, Graham has published an information folder on aquatic weed control and the type service rendered by his company.

Up-to-minute Data

Keeping up with the industry requires constant effort. Graham says he depends on manufacturer representatives and individual plot work and trials for information. Most producers and formulators have their own weed control specialists who work directly with professional pesticide applicators.

In the business management area, Graham depends on a registered certified public accountant. He gets a monthly P and L statement from his CPA which has proved a great help in setting rates for service calls and application work.

Graham is a veteran in the business of industrial weed control. He has experienced the phenomenal growth in this phase of the pesticide use industry over a 20-year period. His feeling is that the non-crop areas of weed control will face increasing demands for service. People today expect more in the way of beautification and companies are image conscious. The aquatic weed control field is just beginning to open up, he believes, and promises to become a major segment of weed control throughout the country.



Awards Chairman John Gallagher, Amchem, Ambler, Pa., left, presents certificates for outstanding papers to Henry Wilson, Virginia Truck Experiment Station, Painter, Va., center, and Oscar Schubert, West Virginia University, Morgantown.

Scientists Present New Findings At 23rd Northeast Weed Conference

Chemical residue from crabgrass control efforts may also kill dandelion and chickweed. This is a finding of John A. Jagachitz, University of Rhode Island, Kingston. Speaking at the 23rd Northeast Weed Control Conference, a major weed control report session held every year at the Hotel Commodore, New York City, Jagachitz said that residues kill dandelion and chickweed plants as they grow from seed.

In his University research, he said that several chemicals were applied to the soil surface. Weed seeds which were sown in these treated soils at time intervals were killed up to eight weeks after chemical use. Establishment of dandelion and chickweed was greatly reduced. Two chemicals in general used for crabgrass control, he said, gave excellent results. These are siduron (Tupersan) and Dacthal. Another chemical which produced excellent results was picloram (Tordan). Tests are being

continued under actual lawn conditions, Jagschitz reported.

On hand for the early January Conference were 636 registrants. Eighty-three papers were presented. A new feature this year was a special program for biology teachers in the metropolitan New York area. Appealing to this group was Dr. Charles C. Drawbaught, Rutgers University.

He suggested subject matter be taught in the classroom on weeds and weed control. He pointed to the value of teaching weed science from an ecological approach through the use of scientific principles. Learning experiences, he said, could be functionally helpful to students and their families.

Dr. Boysie Day, California Ex-

Outgoing president of NEWCC, John A. Meade, Rutgers, center, visits with W. B. Ennis, Agricultural Research Service, USDA, Beltsville, Md., left, and Mason W. Gross, president, Rutgers University, New Brunswick, N.J.



periment Station and president of the Weed Science Society of America, challenged opponents of herbicide use to examine the facts. Dr. Day stated that the public is unduly alarmed over use of herbicides. Popular generalities are not based on fact, he stated; the only thing that all herbicides have in common is that they kill weeds. Those that are toxic to anything else are few and little used, he said.

Careful Herbicide Use

Herbert J. Cran, Jr., landscape architect for The Connecticut Light and Power Company, reported that his company had contributed to a clearer understanding of the need for the judicious use of pesticides and herbicides in utility operations.

He said that CL&P conserves desirable low-growing woody plants along its rights of way and is now placing 242 acres of red pine trees around its hydroelectric generating stations in the northwestern part of the state under a forest management

program. Under this program, he stated, undesirable deciduous plants are being controlled by the use of selective oil basal herbicides.

Desirable plants, such as mountain laurel, members of the dogwood, viburnum and berry species, juniper, witch hazel, shadbush and native azaleas are preserved since they are good colonizers, provide refuge and food for wildlife and blanket out the growth of trees potentially harmful to power lines, Cran said. He told the group that CL&P's operations cover about 75 percent of the state's area and that the company maintains more than 11,500 miles of pole lines.

Charles J. Slatt, Bonneville Power Administration, agreed with Cran that there are some very worthwhile and special benefits from "esthetic right-of-way clearing."

Slatt said that some of the benefits from BPA's esthetic right-of-way clearing include (1) the amount of land taken out of use-

ful timber production is considerably decreased, (2) the efforts against erosion and stream pollution due to sudden periodic run-off are dramatically improved, (3) the areas that have to be treated with herbicides are reduced, (4) situations where irreparable damage is done at the time of original construction are avoided.

Slatt said that selective herbicidal treatment properly programmed and managed offers the most promise with respect to initial and future brush control measures. "We believe there is real merit in this matter of appearance," he stated, "and that it is truly significant when treated as a total concept. We are a utility dedicated not only to serving the region's low cost power requirements, but we are also dedicated to the conservation of natural resources."

Brush Control

Both liquid and pelleted herbicides, applied to low-grade white oak trees, are effective in

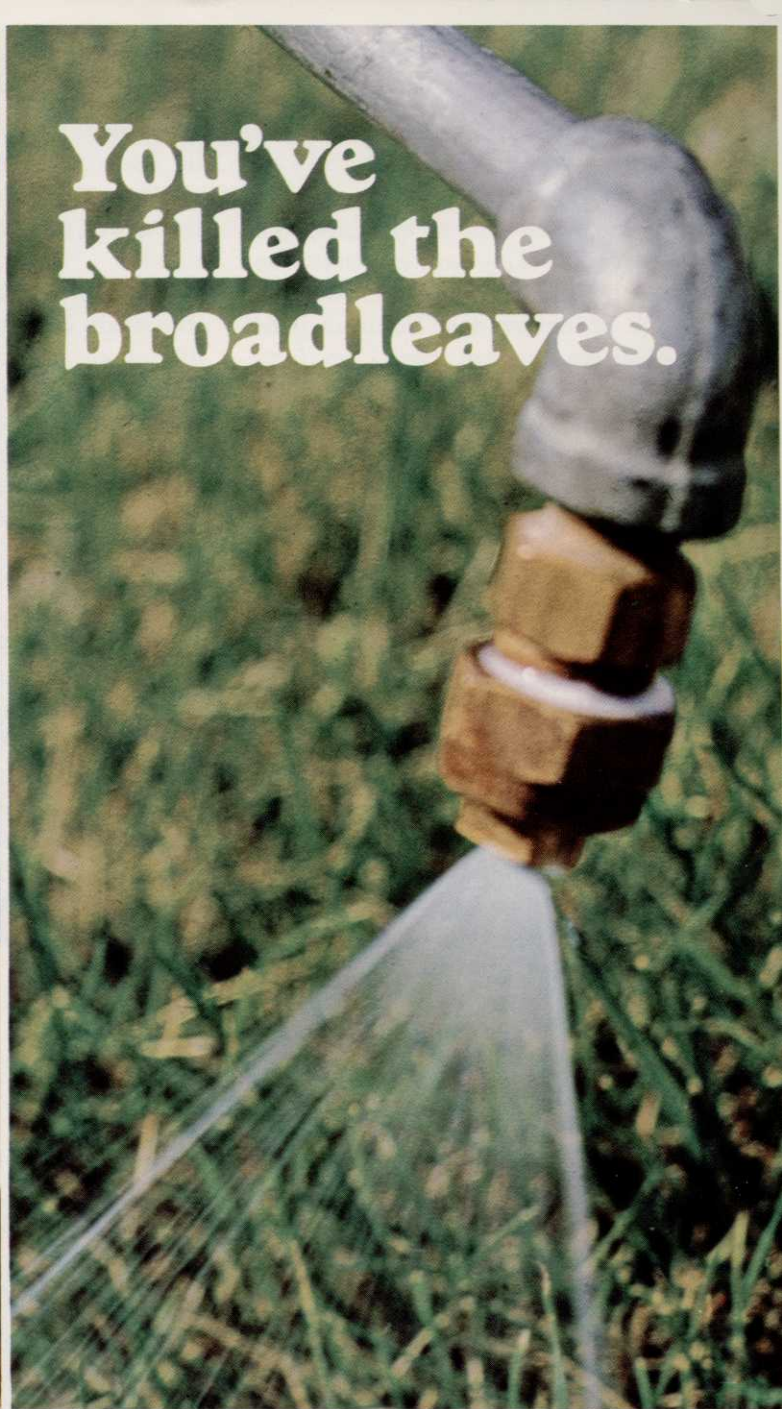
Officers and executive committee chairman for 1969 for the Northeastern Weed Control Conference, left to right: Joe Cialone, Rutgers, program committee; Richard Otten, Amchem, education committee; Charles Middleton, Asplundh, sustaining committee member; John Ahrens, Univ. of Connecticut, vice-president; Homer LeBaron, Geigy, president; John Meade, Rutgers, outgoing president; Richard Feeny, American Cyanamid, publication relations committee; Richard Schwartzbeck, Gulf, representative to Weed Science Society; Arthur Bing, Cornell, secretary-treasurer; and George Bayer, Agway, research coordinator.



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