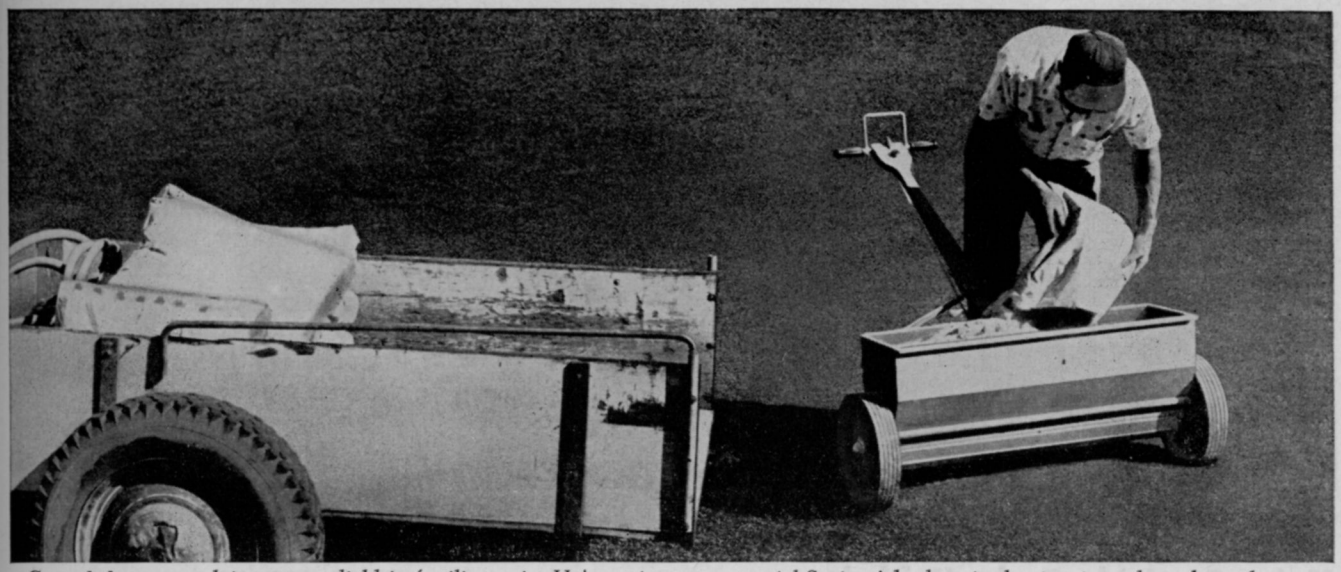

Grounds keeper *applying a new dieldrin-fertilizer mix. He's getting two essential Spring jobs done in the time it used to take to do one.*

WORK-SAVERS:

New dieldrin-fertilizer mixes give you season-long control of all major turf pests—save time and expense of special insecticide application

Dieldrin controls Japanese beetle grub, white grubs, sod webworm, ants and other pests that feed on grass roots, cut off moisture and nourishment, cause browning and bare spots.

Dieldrin also controls annoying, health-endangering surface pests such as ticks, fleas and chiggers. And now, getting this essential job done is easier than ever.

Now is the time to size up your turf insects problem and do something about it. If you cannot start healthy, vigorous grass growing in certain areas, or if you have bare patches, soil insects could be the cause.

Turn up some sod in these trouble spots and sift through the dirt. See if you don't find grubs or some other evidence of soil insects.

If these soil insects are your problem, you can control them with dieldrin.

A single application lasts for a year or more. It protects roots—lets them utilize moisture and nourishment.

No special application

Dieldrin is now available in ready-made fertilizer mixes. They let you get two essential Spring jobs done at once. You avoid having to make a special insecticide application, save time and money.

However, if you prefer, dieldrin can also be sprayed on turf as a liquid or applied in granular form with a fertilizer spreader.

Controls ticks, fleas and chiggers, too

Dieldrin also controls ticks, fleas and chiggers. These pests are not only annoying, but also are public health problems.

In addition to applying dieldrin to turf, to get maximum control of these above-ground pests, treat weeds, the ground around low-growing shrubs and buildings—anywhere these pests might take refuge.

Where to get dieldrin

Dieldrin is available from your local insecticide dealer under many well-known brand names. Accept no substitute. Check the label or the ingredient statement on the formulation you buy for the name *dieldrin*.

For additional information on turf insect control with dieldrin, write: Shell Chemical Company, Agricultural Chemicals Division, 110 West 51st Street, New York 20, N.Y.

SHELL

dieldrin

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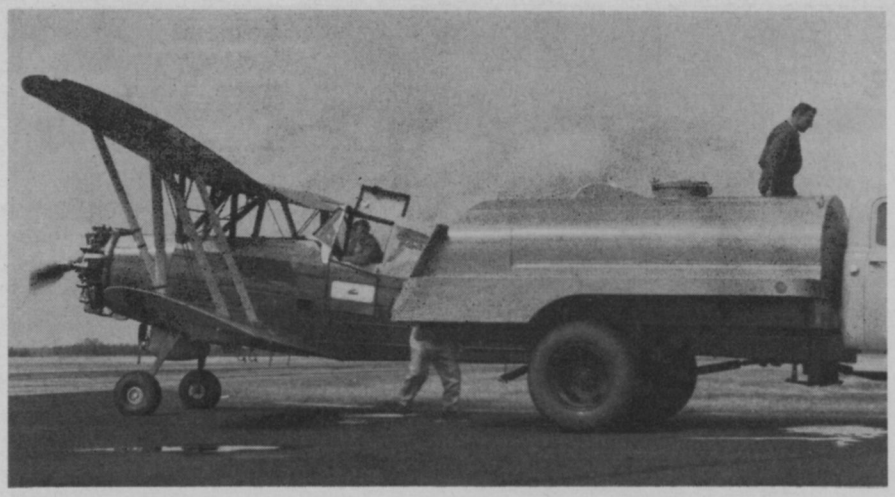

Grumman AgCat stopped to refill with pesticide during the Texas aerial application exhibition.

Major Pesticide Curbs Unlikely, Texas Aerial Applicators Hear

By GEORGE L. EARLE

Assistant Editor, Department of Agricultural Information
Texas A&M University, College Station

No major state or federal legislation to restrict the use of chemicals on food products is foreseen by John C. White, Texas State Commissioner of Agriculture. The official was a speaker at the Thirteenth Annual Agricultural Aviation Conference and Short Course on Pest Control Feb. 23-25 at Texas A&M University, College Station.

White's comments were part of a varied program offered delegates to the annual affair, which seeks to increase the technical competence of a growing number of companies which practice aerial application of pesticides, including custom applicators.

Also on the program was a talk by Minneapolis, Minn., attorney L. L. Schroeder, who detailed the legal liabilities which aerial contract applicators are subject to.

First thing for the flying applicator to do, Schroeder said, is to study local, state, and federal laws relating to the use of airplanes for applying chemicals to plant life.

Schroeder said that the remedy for many hazards is adequate insurance, although applicators must continually seek to reduce the instances in which such insurance would be necessary.

How do pilots get proficient? One obvious method is through training schools, advised Nicholas C. Merrill, who's Director, Agricultural Aviation, Department of Aviation, Ohio State University, Columbus.

Only two continuing agricultural pilot training courses exist in the United States today, Merrill said. One is at Ohio State; the other is the Agricultural Aviation Academy at Minden, Ohio.

The two U.S. schools produce only 50 pilots a year, though the need is for many more, Merrill observed. With the increased use of aerial application, more qualified pilots must be trained.

While agricultural pesticide drift, whether from ground or aerial application, cannot be completely eliminated, it can be significantly reduced, delegates heard in an address on this problem.

"Generally the greatest cause of drift is inefficient application of chemicals," according to Norman B. Akesson, professor of Agricultural Engineering with the University of California, Davis.

Careless application causes a high degree of drift and makes it necessary to use more pesticide, he elaborated.

Dust applications of pesticides have been popular for many years but their use is declining for two basic reasons, Professor Akesson revealed. First, the control residue deposited on the plants is 1/4 to 1/3 that of a comparable spray when applied by airplane. Dusts also drift farther from the application area than do sprays.

Dusts, however, continue to be used by aerial applicators because they have greater effectiveness in certain insect control programs. Also, since dusts require no mixing or formulating at the application site, less labor is needed to handle and apply this form of pesticide.

There is evidence that some pesticides are more toxicologically effective as fine-particle dusts than as sprays. Agricultural dusts consist of particles with a size range of roughly 0.1 to 25 microns, with an average size of about 5 to 10 microns. These fine particles are about 25 to 30 times smaller than a fine spray and will penetrate plant foliage and deposit on the back of leaves, while larger spray particles will not.

A Piper Pawnee agricultural airplane (right) showed how it operates emergency dumping apparatus during the annual conference. Below, a helicopter hovered over the field prior to a spray demonstration.

Know Your Species

ANNUAL BLUEGRASS

(Poa annua)

Annual bluegrass (1), also called dwarf speargrass, is a winter annual which sprouts anew from seeds each year. Distributed throughout the United States, annual bluegrass thrives on moist, rich soil in cool temperatures. This weed is the light-green lawn invader which manages to form seed heads no matter how short it is cut. Annual bluegrass is unique among lawn weeds in this respect. The factor which makes annual bluegrass a weedy species is that following its active spring growth, it sets seed, turns brown, and dies out when the weather gets hot and humid.

Stems of annual bluegrass are one to 12 inches high; they may run along the ground and turn up at the ends. They sometimes root from stem joints. Leaves are light green and very soft.

Small spikelets (2) in the panicle, or seed head, bear 2 to 6 flowers each. Seeds (3), about $\frac{1}{16}$ inch long, shed in the early summer, sprout by fall and annual bluegrass forms rosettes to pass the winter. Growth occurs in the spring before most other grasses break dormancy.

Roots are shallow and easily pulled up. There are no rootstocks, and annual bluegrass can only produce a dense sod by a thick growth of single plants.

Presence of annual bluegrass on a lawn may indicate faulty maintenance. Soil may be too wet, it may be compacted, or there may be some element missing which is weakening the desirable turfgrasses.

For control of annual bluegrass in Kentucky bluegrass and other cool-season grasses, Dacthal at 10 lbs. per acre or Zytron at 15 to 20 lbs. per acre may be used before the annual bluegrass germinates. It usually starts germination in late August. Simazine at 1 lb. per acre may be used in Zoysia and Bermudagrass turf, but not in Kentucky bluegrass or other cool-season grasses.

Infested lawns may be renovated with a complete program of fertilization (applied in the early fall to promote vigorous desirable turf), liming (if needed), aeration (to relieve compaction), and drainage correction (if faulty).

Prepared in cooperation with Crops Research Division, Agricultural Research Service, United States Department of Agriculture, Beltsville, Maryland.

(DRAWING FROM NORTH CENTRAL REGIONAL PUBLICATION NO. 36, USDA EXTENSION SERVICE)

Turf-Water, Irrigation Devices Studied at U. of Calif. Turf Day

"Infiltrometers, which test how deeply water penetrates turf, in combination with aerators, can help one revive turf areas which hold water after irrigation because of compaction," Fred Gorman, Farm Advisor, San Bernadino County, Calif., asserted in his address to the University of California Turf Conference, Feb. 11, at the Davis campus.

When 5-inch-deep aeration holes are placed 2 inches apart, water seeps into soil at the rate of 2½ inches per hour. Before aeration, Gorman showed, the rate was 1/16 inch per hour.

Movement of water in the top 4 to 6 inches of soil is essential for healthy roots and turf. Infiltrometers help indicate the efficiency of aeration operations, Gorman indicated.

"Water efficiency on turf can be controlled effectively by water sensitive (hydrostatic) devices such as the tensiometer, which shows how much water is in the soil," Dr. Sterling J. Richard, Soil Physics Professor on the Riverside campus showed with results of 1962 research.

"A gardener applied 60.5 inches of water to a plot by judging when he thought the turf needed water," Dr. Richard explained. "But a plot with a tensiometer, which activated sprinklers when the turf actually needed moisture, only required 40.2 inches of water to an equal sized plot."

The tensiometer indicates when soil tension becomes high as a result of dryness. Richard implied that a saving of 20 inches of irrigation water over large turf areas is significant.

New Folder on Amitrole-90

A new 6-page illustrated brochure on the use of Amitrole-90 for control of weeds along roadsides, in industrial areas, and in irrigation systems, is now available from American Cyanamid, Agricultural Division, Princeton, N.J., and will be mailed to readers who write the firm at that address. Ask for bulletin PE-5287.

make a killing with TRITAC™

Profit from this powerful new herbicide for control of bindweed, Canada thistle, Russian knapweed, hoary cress, leafy spurge

Bindweed on May 23, 1963, just before Tritac treatment . . .

looks like this on August 14, 1963. Rate: 15 lb. (7½ gal.)/A.

You can effectively custom-treat an acre for a season or more with as little as four to eight gallons of Tritac.

Used along highways, fence rows and other noncrop land, this economical new herbicide controls certain deep-rooted perennial weeds under a wide range of climatic conditions.

When you want quick foliage top kill or want to prevent seed formation, use Tritac-D(TM)—the basic formula plus 2,4-D.

Both Tritac and Tritac-D are noncorrosive and low in toxicity to mammals.

Tritac, for the first time, is now available in a new granular form called Tritac-10G.

Liquid Tritac is available in cartons of six 1 gallon cans; also 5 gallon cans and 30 gallon drums; granular Tritac is packed in 25 pound paper bags.

Hooker sodium chlorate. This original one-shot weed killer is available in steel drums of 50 and 100 lb. net.

Technical help. Our agronomists will be glad to work with you.

Write us, describing your problem. For technical data, please mail us the coupon.

FOR MORE INFORMATION, check here and mail with name, title and company address:

- ☐ Tritac
- ☐ Tritac-D
- ☐ Tritac-10G
- ☐ Hooker sodium chlorate

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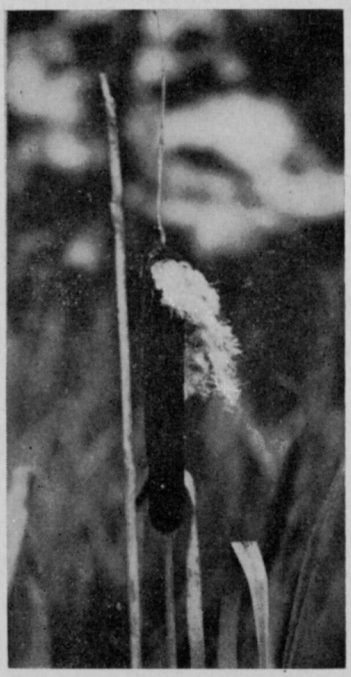


Business Clinic, Plot Tours to Mark 3rd Annual Fla. Turf Show

A detailed series of talks on small-business management, and a half-day tour of turf research plots, will highlight the Third Annual Florida Turf-Grass Trade Show April 30-May 2 at the Hotel Seville, Miami Beach.

Tours of turf plots at the nearby Plantation Field Laboratory in Ft. Lauderdale will be broken down into the following fields of major interest: lawn maintenance; parks, cemeteries, athletic fields; sod growers; golf superintendents; garden supply dealers; and horticultural spraymen.

An extensive show of newly developed turf maintenance chemicals and equipment will run throughout the affair in the Hotel Seville.

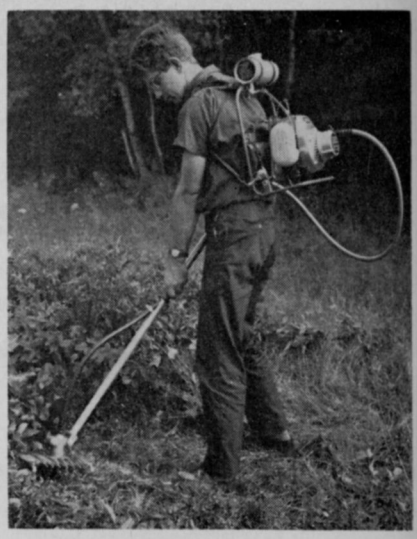
More than 500 registrants are expected, according to Walter D. Anderson, Executive Secretary of the Florida Turf-Grass Association which co-sponsors the event along with the Horticultural Spraymen's Association of Florida, and the Florida Society of Golf Superintendents.

Several lunches, dinners, and other social get-togethers will accompany the technical sessions, Anderson told *Weeds and Turf*. More information is available from FT-GA offices at 4065 University Blvd. North, Jacksonville, Fla. 32211.

Ky. Lists Crabgrass Controls

Four chemicals useful for crabgrass control in Kentucky have been recommended by scientists at the Kentucky Agricultural Experiment Station in Lexington. They should be applied in early April, or in late March.

Preemergence treatment is recommended for best control, according to James Herron, a station weed control researcher. The materials suggested are Bandane, Dacthal, Zytron, and calcium arsenate. These are active ingredients in several commercial mixtures, and are available in dry form for application with either a fertilizer spreader or a cyclone-type seeder.



Rotary Weed Cutter can be used on slopes and banks, has multiple power sources.

New Vandermolen Weed Cutter

A new machine to cut weeds on slopes and ditch banks, and under trees, hedges, etc., has been introduced by the Vandermolen Export Co.

Called the Tarpen-Flex weed cutter, the machine is attached to a flexible driveshaft of 12 or 15 feet so the unit is operable within a radius of 12 or 15 feet from the engine, which is built on wheels. Or the same flexible shaft can be attached to a power take-off shaft of a garden tractor.

Vandermolen also offers a mobile power unit, the Porta-Clipper knapsack engine, which has a 6-ft. flexible drive shaft. This unit, the company says, is ideal for working in wooded areas, on hilly terrain, on steep banks, etc.

The Rotary Weed Cutter has an 8-inch blade, turning 5000 rpm. It is said to cut anything from grass to heavy weeds, up to and including thin brush. It has underwater applications for aquatic weeds, the firm claims.

For heavy brush, Vandermolen has a Rotary Brush Cutter which cuts up to 3-inch wood.

For more information on these and other Vandermolen machines for weed and brush control, write Vandermolen Export Co., 378 Mountain Ave., North Caldwell, N.J.

Next month in W&T
Brush Control

Set Hyacinth Control Meet For June 28 in Tallahassee

Weed controllers dedicated to the destruction of the waterhyacinth and other weeds which choke southern waters will converge on the Holiday Inn at Tallahassee, Fla., June 28-30, 1964, for the fourth annual meeting of the Hyacinth Control Society.

Herbert J. Friedman, president of Southern Mill Creek Products, and secretary-treasurer for the group, told *Weeds and Turf* recently that experts from Louisiana to the Carolinas will participate in the annual program.

New developments from research will be presented. Successes in controls this past year will be discussed along with the problems which cropped up along with the successes.

Those who wish to know more about the upcoming conference can get more information by writing to the local chairman, John W. Wood, Hyacinth Division, Florida Fish and Game Commission, Tallahassee, Fla.

Water-Soluble Hyvar Developed

A new soil sterilant herbicide that is water soluble for easy application, said to provide long-term weed control, has been developed by E. I. duPont de Nemours & Co.

Called "Hyvar" X-WS bromacil weedkiller, the new water-soluble powder is the second formulation of bromacil now being marketed by duPont for industrial weed control.

Since it is water soluble, duPont says, Hyvar X-WS offers several application advantages. A pound of product can be dissolved in a gallon of water through mechanical or hydraulic agitation. Once dissolved, no further agitation of the spray is needed. Solutions of the new water-soluble herbicide also have wide compatability with other herbicides for combination treatments, duPont maintains.

For control of annual weeds and grasses, 5 to 10 lbs. of the product per acre is recommended. Many perennial species are controlled by 10 to 20 lbs., while hard-to-control species such as Johnsongrass, Bermudagrass, etc., require from 24 to 48 lbs. per acre.

DuPont says the new weedkiller is most effective when applied during or shortly before the period of most active growth. More details are available from the I & B Department, E. I. duPont de Nemours & Co., Wilmington 98, Del.

Low center of gravity and three agitators are features of the new Imperial Model Bowie Hydro-Mulcher.

Bowie's New Hydro-Mulcher Called Aid to Better Turf

One-step "hydro-mulching" made possible by the new Imperial Model of the Bowie Hydro-Mulcher provides turf managers with faster, better turf, according to spokesmen of the Bowie Machine Works, manufacturers of the machine.

The new unit carries 1500 gallons and incorporates extra mixing power (3 agitators are supplied) as well as lower center of gravity for the load, the company reports. The machine can spray, in one operation: (1) fertilizer; (2) seed or sprigs; (3) mulching material such as all brands of paper fiber; and (4) moisture for carrying the mulch and for helping germination.

Each unit is supplied with a large complement of fire-type nozzles which permit long throws as well as closeup sprays, Bowie says. The new machine enables operators to plant large quantities of mixed slurries at a rate of one-half acre every 8 minutes, with sprays up to 200 feet.

More information will be sent to turfgrass management personnel who write the company at the Bowie, Texas address.

Herbicides Stay, Study Shows

Researchers at North Carolina State College, Raleigh, indicate that soil treated with certain preemergence herbicides may be mechanically cultivated without the once-feared loss of effectiveness of the chemical.

In fact, scientists believe that final analysis will show that stirring treated soil actually increases the effectiveness of some herbicides. "This discovery represents a major advance in the technology of using herbicides," Dr. R. P. Upchurch, associate professor of crop science, says. "Much research is now under way to explore its ultimate meaning."

Has pH Preference List for Turf

A list showing the pH preference of 19 popular lawn grasses is now available free of charge to turfgrass managers.

Sudbury Laboratory, producers of soil test kits, says the list is useful because some soils are acid, some alkaline, and it is necessary to know the pH range in order to plant, fertilize, and cultivate lawn grasses properly.

For a free list, write Sudbury Laboratory, Lab D, Sudbury, Mass.

730 Delegates at Ohio Short Course Study Turf Diseases, Weed Control, Irrigation

A concise but detailed program for the annual Ohio Short Course for Arborists, Turf Management Specialists, Landscape Contractors, Garden Center Operators, and Nurserymen attracted a record 730 delegates to the Columbus Plaza Hotel in Columbus, Jan. 27-30.

A highlight of the yearly seminar was an address by Dr. Houston Couch, of Pennsylvania State University, on turfgrass diseases. Dr. Couch reminded delegates that although hard to recognize, *Helminthosporium* fungi cause more trouble than all other turf diseases combined.

The best control of all such ills is prevention. Dr. Couch listed the following fungicides as particularly effective when used in preventive maintenance: Actidione-Thiram; Dyrene; Maneb; Dithane M-45; Tersan OM; or Thimer.

Apply every 7-14 days from July through August for Zonate Eyespot and Helminthosporium Leaf Spot, the Pennsylvania expert suggested. All other diseases of this same group can be controlled with applications at the same intervals in April through June. Use manufacturers' suggested rates.

Dr. Robert W. Miller from Ohio State's Department of Agronomy discussed irrigation of turf and problems so involved.

Overwatering is a hazard, Dr. Miller warned, and results in exclusion of air from roots, while underwatering results in shallow rooted turf. Apply enough water to penetrate at least 6 inches or 12 inches in light textured soils each time the turf is watered.

Another Ohio agronomist, Dr. Edward Stroube, lectured the group on weed control practices. Annual grasses such as goosegrass, foxtails, and crabgrass succumb to preemergence applications of Zytron, Dacthal, Bandane, and Treflan, Dr. Stroube commented. The chlordanes and arsenicals are sometimes erratic in preemergence use, although they do have a long residual effect, he continued.

Seeding practices were analyzed by Dr. Kenneth Bader, also an OSU agronomist. The best time to sow seed is late summer or early fall, with spring a second choice, he commented. Some thought could be given to late fall or early winter seedings.

Dr. Bader suggested that turf managers roll the area lightly after seeding to establish good soil-seed contact.

Final speaker, Dr. Richard Davis, from the Ohio Agricultural Experiment Station in Wooster, examined turf fertilization techniques. Soil testing is the first step to correct fertilizer management, the scientist urged, whether one is seeding a new lawn or caring for an established one. Soil tests should be repeated every 3 to 4 years.

Dr. Davis concluded with a mention of the 1964 Ohio Lawn and Ornamental Days, open to all horticulturists and the public, which are to be held Sept. 15-16 in Columbus.

Meeting Dates

3rd Annual Florida Turf-Grass Trade Show. Hotel Seville, Miami Beach, April 30-May 2.

International Shade Tree Conference Western Chapter Meeting. Ben Franklin Hotel, Seattle, Wash., June 21-24.

Hyacinth Control Society Fourth Annual Meeting. Holiday Inn, Tallahassee, Fla., June 28-30.

American Society of Landscape Architects Annual Convention. Hotel Baker, Dallas, Tex., June 28-July 1.

American Association of Nurserymen Annual Convention. Statler-Hilton Hotel, Boston, Mass., July 19-22.

International Shade Tree Conference. Shamrock Hilton Hotel, Houston, Tex., August 15-21.

National Agricultural Chemicals Assn. Annual Convention. The Greenbrier, White Sulphur Springs, W.Va., Sept. 8-11.

Midwest Regional Turf Field Days. Purdue Univ., Lafayette, Ind., Sept. 14-15.

Society of American Foresters Annual Meeting. Hilton Hotel, Denver, Colo., Sept. 27-30.