

put out 10 to 15 acres of Merion bluegrass. It seems to be ready for harvest sooner than Kentucky bluegrasses we've tried before. They took four years to get ready for harvest!

"We use the Graham at least twice, and usually three or four times. It cuts two to three inches deep each time. Our old S-30, International tractor, made in the thirties, still does a fine job in this operation. After the loose dirt is exposed to a few rains, I use a regular mobile plow to turn it over.

"Leveling is the next step. We use the disk for this, but find that after going over the field several times, our loam soil becomes fluffy in spots; tractor wheels sink in these soft depressions, often 20 to 40 feet long. To compact the soil so that our low-slung seeder won't drag, we use a roller and a weighted harrow on the field after discing.

"My last operation, just before seeding each year, is adding fertilizer. About every three or four years we add lime according to soil test results. I put on either

1,000 lbs. of 10-10-10, or 700 lbs. of 14-14-14 per acre. Usually put on 10-10-10. After the fertilizer is applied, I go over it once lightly with a harrow and then start seeding," DeMuth said.

#### **Plowing Starts August 15th in New Jersey**

Miner, in Cranbury, New Jersey, begins his new-start schedule this way: "We're growing Merion bluegrass now, and this fall we'll have about 1,500 acres out. We also grow mixtures of Kentucky, Merion, and Amron fescue on the loam soil here.

"In this area, we have two heavy cutting seasons. One starts in late March and continues through June. Another is around the middle of August.

"After cutting, we begin to plow. This starts about the 15th of August. Then we disc the fields and add fertilizer.

"Fertilizer, 0-20-20, usually runs from 300 to 600 pounds per acre. We use one to four tons of lime every two years or so according to results from soil tests.

"After the fertilizer is worked into the soil by discing, we bring out our spring-toothed harrows to level the fields. Our farm continues harrowing and constantly keeps the soil clean and ready to seed in the fall.

"Just prior to fall seeding, we put on 100 lbs. of urea per acre for nitrogen. After seeding and during the growing season, urea is added at 80 lbs. per acre," Miner reported.

#### **Californian Pre-Irrigates to Settle Soil**

Jacobsen in Tehachapi, California says, "We always reseed our 150 acres for sod production. Our soil is classed as a loam, and we grow hybrid bermuda varieties as well as bluegrass combinations.

"The first pre-seed operation here is chiseling, or plowing, which tears the soil loose about 12 to 14 inches deep. Next, we springtooth harrow the ground and then pre-irrigate.

"By pre-irrigating, we saturate and settle the soil. Our irrigation mainlines are the permanent

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surface type, and the laterals are moveable.

"After we irrigate and harrow once, we do it again. Then we add fertilizer, using 16-20-0 at 250 lbs. per acre, put on before seeding. Ammonium sulfate is applied monthly after seeding. We don't add lime because soil here is not acidic.

"After the fertilizer is applied, the fields are cultivated at very shallow depths. Then we put the seed in."

#### **Bluegrass Seeded on Colorado Loam**

"We always reseed our 465 acres out here in Colorado," Rich said in Denver. "Our soil is sandy-loam, and we grow Merion, Clark and Kentucky bluegrasses.

"The bulk of our stripping is in early spring, from March through June. July and the first part of August are slack. In September and October, stripping picks up again, when we average two acres a day.

"After the stripping operation is finished, soil is turned with a Reason plow, and we use a 12-foot rotavator to work the surface. A 121 h.p., 5010 John Deere

tractor and a 84 h.p., 4010 John Deere pull our equipment. Afterwards the Rototiller goes to work to break the chunks and level the soil. Then the field is rolled twice with a regular cul-pactor to break and pack the soil. It's rolled once more and we start to seed.

"We don't put on fertilizer before we seed, but apply nitrogen at 7.6 lbs. per acre through irrigation water after the grass is growing. No lime is added.

#### **Florida Muck Irrigated by Canals**

"We never reseed," Amerine at Belle Glade, Florida points out. "We grow primarily St. augustinegrass here with some bermuda varieties, zoysia, and centipede. We strip sod from our muck soil about every 13 months. The sod is cycled on our 1,200 acres so we can strip periodically all year round. This way some sod is ready for harvest while more is in the growing stage.

"After stripping, we roll the muck soil and wait for regrowth from root systems left in the ground. While waiting, we add about 100 lbs. of lime per acre.

"Our fields are consistently ir-

rigated by a canal system laced through the farm. Water level in the canal is maintained so the muck soil can be saturated at any depth. Plenty of water is supplied to roots left in the ground, and seeding is not necessary here for succeeding good stands of sod."

It's apparent, representative sod growers devise cultivation practices to coincide with prevailing climatic and edaphic (soil) conditions. In Michigan, Johnson found pre-irrigation unnecessary this year since rains supplied enough water for proper soil moisture. But, irrigation is commonly needed near Chicago where rains are not sufficient for adequate sod moisture.

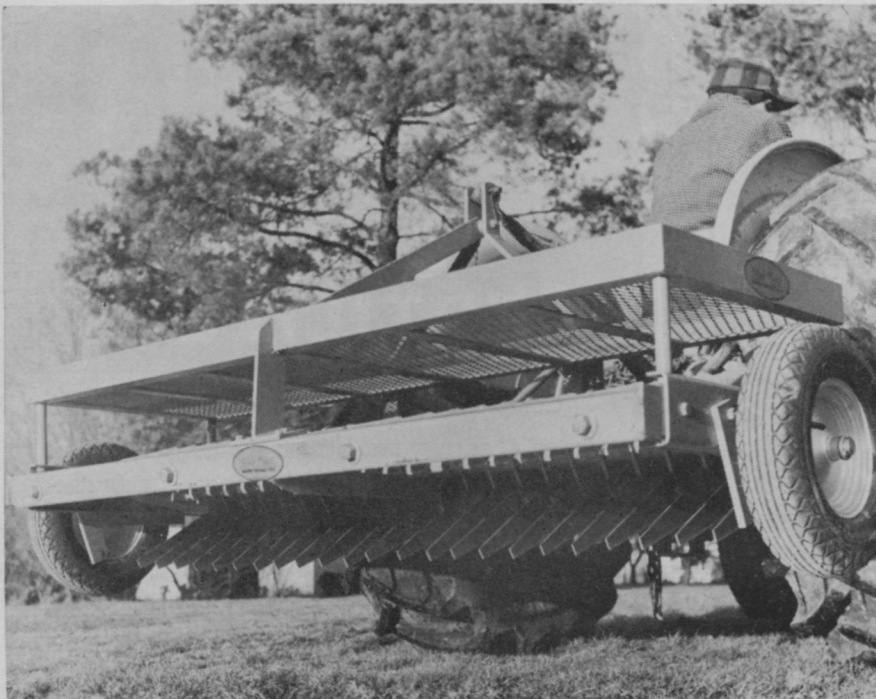
Methods of leveling, cultivating, and sod growing are governed by soil type, water availability, acreage, and personal preference. Sod is propagated from roots in rich, well-irrigated muck in Florida, while seeding is favored on loams in New Jersey, Colorado, California, and Illinois.

In California, irrigated water is used to settle the fields as a regular cultivation practice; rollers or rotavators are put to work elsewhere to make the soil compact before seeding where rainfall is adequate.

Generally, growers that reseed, cultivate by first breaking the soil loose with a plow. Discing or light plowing may follow several times, depending on how often it rains or to what extent the soil clots. Finely tilled beds for seeding are prepared by repeated cultivation with spring-toothed and spike-toothed harrows.

Sod fields in Florida are rolled level after sod is stripped. Since propagation is from root growth, fields are not plowed or harrowed, but the roots are left undisturbed to sprout anew.

Fertilizer rates are determined by two methods. Soil samples are sent to agricultural testing stations to detect deficiencies that can be replaced by recommended amounts of fertilizers. Need for fertilizer, and sometimes even relative rates, can be determined by the trial and error method over a period of many years.



**Verti-Slicer** has 23 tempered-steel blades which knife through a 70 inch swath of turf at depths up to 2½ inches. The tractor-drawn unit produces continuous "fine-line" turf slicing of fairway grasses as it prunes grass roots and provides water and air penetration of turf. Verti-Slicer can be used throughout the season, does not disturb grass surface, and allows uninterrupted play, according to West Point Products Corp., West Point, Pa., which can supply further information.

# Stolon Harvester Found at 4th Annual Cal-Turf Field Days

A new stolon harvester which can harvest up to 1,200 bushels of hybrid bermudagrass stolons per hour, was on display at the Fourth Annual Field Days, sponsored by Cal-Turf, Inc. at its Camarillo, Calif. farms, July 21-24.

The harvester was developed by Cal-Turf to reduce the cost of stolons and thus make hybrids more saleable for use on athletic turf facilities.

Nearly 300 architects, contractors, and recreation personnel attended the four-day affair intended to acquaint prospects and others with the latest in methods, varieties, and equipment within the turfgrass field.

Shown also was a planting machine for greens, developed by Cal-Turf president Tobias Grether. Of particular interest to golf course superintendents, the planter distributes stolons evenly and simultaneously presses them into the soil. A disc roller pulled behind is interchangeable with a solid roller, used to dress bentgrass at Cal-Turf.

Ability of hybrid bermudagrass sod to withstand abuse was demonstrated by retaining sod

for seven days before installing it on soil. Visitors saw sod at varying stages of recovery after the test had been prepared prior to the Field Days.

"While bermudagrass can withstand misuse, I do not recommend it," Grether commented. He warned viewers that they should not abuse bluegrass in California either or they would have sodding recalls and unhappy clients.

Tests being conducted on various grasses by Cal-Turf in several plots include daily compaction by a 700 lb. roller. A portion of each plot on display was covered with shade cloth to show degree of shade tolerance.

Salinity (salt) tolerance of bluegrass and Tifgreen hybrid bermudagrass was shown in specially constructed bins filled with various test soils. Soil having a high salt content won't support bluegrass unless the soil is corrected. Thus, the importance of matching turf varieties with the right soils was pointed out, according to Dick Morrow C-T field representative.

Need for extra nitrogen when sawdust or chips are added to soil at high rates was also shown.



**Salinity tolerance** is being checked here by Cal-Turf representatives Ed Mutoza (left) and Dick Morrow. Bluegrass on the right was completely brown 23 days after being sodded on high-salt-content soil. Tifgreen (left) on same soil survived. These boxes were built for the meeting.

Stolons were planted on varied soil mixes, ranging from all soil to sand with high rates of sawdust. The mixtures were planted on June 7th, and received no fertilizer after planting. Turf planted on pure soil was lush and green, but turf planted on plots containing sawdust was chlorotic, red stemmed, and very sparse. President Grether said, "No attempt is being made to encourage growers to plant in 100% soil, but when sawdust is incorporated, extra fertilizer must be added if turf is to establish fast and perform satisfactorily."

Presently the company is testing 23 different varieties of grass from all over the U.S. In the future, many of these will be tested on 20,000 square feet of play area at a local school. Wear and recovery from wear will be checked under persistent usage by active school children.

Cal-Turf was established in 1959 with one acre of turf. That was the year the Dodgers moved to Los Angeles and ordered all the turf the company had. It was sold out before it really started. Today the company has 300 acres in two locations: Camarillo and Patterson, California.

Coordinator for the educational affair was William Gourley, Jr., who told WT&T, "It was the most successful Field Days show we've ever held."



"Toby" Grether, Cal-Turf president (center), took visitors on tour of test plots at firm's Camarillo sod farm. Growing habits of new varieties of bent, bluegrass, and bermudas were seen, as well as their ability to withstand compaction and shade.

# Banvel-D and Bandane for Turf Weeds

By RICHARD N. CROWL  
Velsicol Chemical Corp., Chicago, Illinois

Phenoxy herbicides have long been of economic importance for post-emergence control of many broadleaf weeds in turf. The phenoxy family of herbicides is undoubtedly the best known group of weed killers presently on the market.

However, with the advancement in strains of grass and increased problems in turf from weeds not controlled by the phenoxy group, demand for new herbicides has increased. For example, greater soil compaction from the use of larger equipment and electric golf carts has increased the population of knotweed in turf. Also, clover, sometimes considered a desirable plant, has become undesirable in many areas.

New herbicides are also in demand for other reasons. Many weeds, such as chickweed, grow when temperatures are between 45 and 50°. It is important to control these weeds in their early stage so the desirable grasses will have less competition.

Banvel-D 4-S was introduced by Velsicol to the turf market to meet this demand. This chemical has given excellent control of weeds in turf that were previously hard to control without injury to desirable grasses.

The herbicide (4 lb./2-methoxy-3, 6-dichlorobenzoic acid per gallon) is a water soluble material for ease of dilution in sprayers. It is a dark-colored liquid in formulation and is stable at temperatures to -5°F. Any increased density at lower temperatures will decrease as the temperatures increase and the chemical will return to its original soluble state without heating or agitation as temperatures rise. Also, Banvel-D 4-S remains stable in direct sunlight.

Control of knotweed, chick-

weed, white clover, sheep sorrel, curly dock, and dogfennel, can be obtained anytime the weed is actively growing in bluegrass, bermudagrass, St. Augustine, centipedegrass or bentgrass with Banvel-D 4-S at rates from ½ to 1 pound per acre. Also, promising results have been obtained in many areas on control of dandelions, creeping-charlie, and henbit.

Desirable grass seed may also be sown one month before or after application of this weed-killer. This permits contract applicators to seed previously weed-infested areas during the same growing season.

Another cultural practice that has grown rapidly in the past

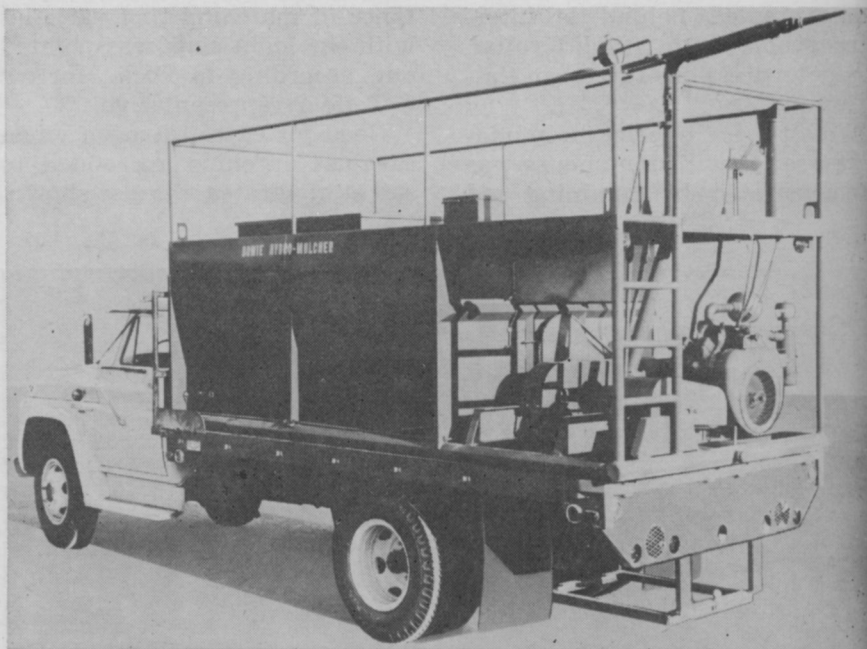
few years is pre-emergence control of crabgrass. Because of the thousands of seeds produced by one crabgrass plant, this problem needs constant attention.

A formulation containing Banvel-D, Velsicol's broad spectrum herbicide, plus 2,4-D for use on lawns, turf (not pastures) and golf fairways, aprons, tees and rough has just been approved.

Bandane, (polychlorodicyclopentadiene isomers) a pre-emergence herbicide developed by Velsicol Chemical Corp., is available to turf growers in granular form. It combines crabgrass control, insect control, safety to desirable grasses, into one chemical for better turf.

Bandane applied at rates of 30-35 pounds actual per acre has given crabgrass control without injury to grasses such as bentgrass, bluegrass, bermuda, zoysia, St. Augustine and centipede.

Bandane is a chlorinated hydrocarbon and has little or no post-emergence activity, therefore, it must be applied before crabgrass germinates.



**Seeds, fertilizers, Turfiber and sprigs can be applied with Bowie's new Hydro-Mulcher.** The device, called the 1500 Gallon Chief, can cover up to half an acre in 8 minutes with its spray reach of 200 ft. Equipped with a 60.5 horsepower, 154 cu. in. air cooled engine complete with starter, generator, and main drive clutch, the Hydro-Mulcher has a 108 Dodge pump clutch and a heavy duty skid of 4 in. pipe. A catalyzed epoxy coat inside the tank and an agitator help prevent rust and corrosion. Other features include a gate valve inside the tank to hold slurry away from the pump, belt and chain drive throughout, a horn signal device and a choice of either 3500/IB/F Bowie Pump or 4 by 3 in. centrifugal pump (for seeding operations only). Ball bearing support and top mounted controls add to the machine's usefulness, according to Bowie. Five nozzles for close, medium and long range spraying and auxiliary gas tanks for all day operations round out the Hydro-Mulcher's equipment. Bowie Machine Works, P.O. Box 630, Bowie, Tex. will furnish more information to WIT readers who write the company.

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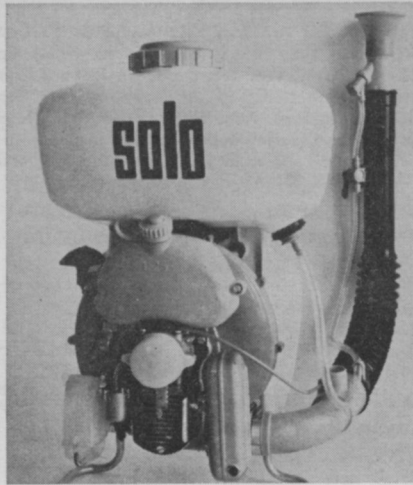


## BRUSH CONTROL

left: the Solo Mistblower  
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above: Solo Chain Saw 70-A  
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## ISTC Washington Meet Report

(from page 19)

is broken down into a series of descriptive units. Presently, we have contractors bid on these units by division. Unit divisions, used for contract references, should be well defined with few variables. Tree trim units are based on line voltage, and tree cut units are based on tree diameter.

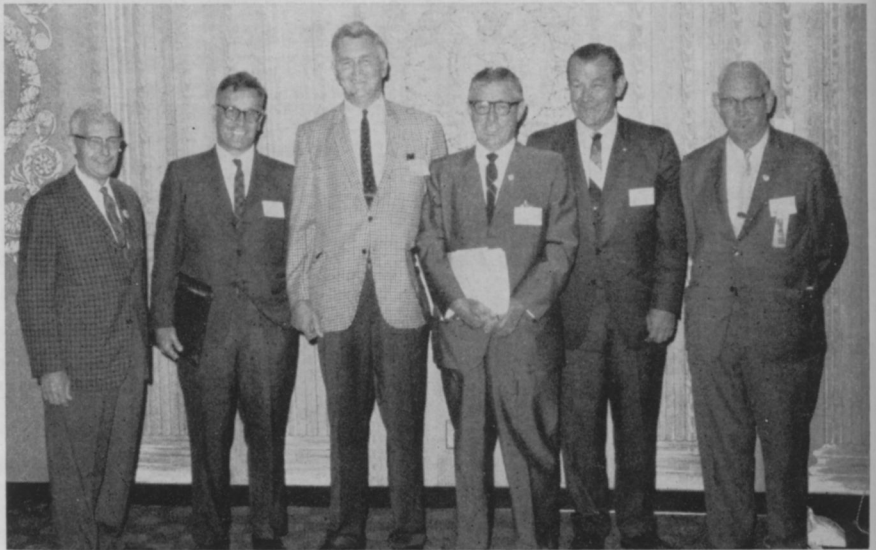
"We get more miles of lines cleared for less cost by using the unit bid system. Supervision requirements of the company have increased but the cost per unit is less and total expenditures have fallen."

Continuing with the subject of expenditures and profit, Steven Pugh, Bartlett Tree Expert Co., Stamford, Conn., added, "A company should make enough profit to reduce service costs to future users through tolls and research progress. What is profit? It's both a compass and a goal. In a company, profit is the measure of service and proficiency."

### Pesticides: Integral Part of Modern Society

"The subject of our panel presentation, 'Pesticides in the Modern Society,' may be best described by the terms complexity, ignorance, confusion, and misunderstanding," Dr. Richard J. Campana, President-Elect, ISTC, University of Maine, Orono, told the attentive delegates. "Man can contaminate his environment in many ways, however man's life is now geared to use of pesticides. The role of insecticides today is complex, and we'll hear much more of them in the future."

"Large scale usage of pesticides in the manner recommended by manufacturers and U. S. government regulations is consistent with sound public health policies," Dr. Paul B. Pearson, President of the Nutrition Foundation, Inc., New York, N. Y. cited. "This was the general conclusion of the World Health Organization, U. S. Public Health Service, and the Food Protection Committee of the National Research Council after reviewing the public health aspects of proper pesticide usage." Pearson agreed with other panel members that it is important to recognize a potential pesticide danger. However, used properly, pesticides contribute greatly to man's health and wel-



Deep go the roots of this "official" ISTC slate of officers responsible for the coming year's activities. They are (from left to right) Editor Paul Tilford, Executive Secretary, National Arborist Assn., Wooster, Ohio; Dr. Richard Campana, President-Elect, University of Maine, Orono; Joseph A. Dietrich, '64-'65 President, Park Superintendent, Greenwich, Conn.; Olaf J. Andersen, '65-'66 President, from Trees of Houston, Houston, Tex.; Vice President C. Elmer Lee, Alhambra, Calif., Line Clearing supervisor of the Southern California Edison Co.; and Dr. Lewis C. Chadwick, ISTC Executive Secretary at Ohio State University, Columbus.

fare by protecting foodstuffs and vegetation from pest invasion, and they aid in disease vector control.

"Losses of food from insects, plant, and animal diseases are much greater in less industrialized countries. Estimates in India show that 18% of the food produced is destroyed by insects and an estimated 8,800,000,000 rodents before it reaches the table. The U. S. would probably be an underfed rather than an overfed country if it were not for the widespread use of pesticides and other agricultural chemicals," Pearson contends.

"The dose solely makes the poison," Louis A. McLean, Secretary, Velsicol Chemical Corp., Chicago, told the delegates. "Doctors learn that every drug, every food, every material, if over-dosed can be lethal. Conversely, minute amounts of highly toxic materials which are added to, or occur naturally in, foods are safe; some even benefit good body function. Emphasis should be on proper usage rather than substitution of one thing for another. Truly, it has been said, there are no safe materials, merely safe ways of using them.

"Much controversy both before and since the advent of Rachael Carson's book, 'Silent Spring,' has brought forth the importance of intelligent usage and precise measurement of both doses and pesticide residues recovered. The National Academy of Science re-

port on chlordane determined it is a safer product than believed when tolerances were set in 1950. The report concluded that there is no evidence available to indicate that chlordane constitutes any real or potential hazard as a residue in foods or as a contaminant in other environmental aspects."

Today, pesticide residue contamination is based on traces recovered from food, soil, and water by very delicate instruments such as gas chromatographs. Pesticide traces are recovered from numerous parts per million to immeasurably small amounts.

"Scientifically, zero is merely the detectible limit of the instrument. Unfortunately, through recent history of pesticide detection of controversial materials, rules of the game changed as each new and more accurate instrument was developed," McLean continued.

"The objective has always been safety, not useless exercises in mathematics causing perfectly good milk to be sewered because infinitesimal amounts of pesticides could be detected by the newer instruments. Many people have been worried by reports of residue findings of billionths and trillionths which, if true, should be reassuring instead of alarming.

"The National Academy of Science reports that 'zero' tolerance should mean 'negligible' and permissible residues should

be determined on the basis of actual acceptable daily intake. Thus, the scientific community has spoken and pointed the path to assure adequate food supply and health protection.

"However, you cannot erase imaginative fears by merely stating the considered judgment of experienced scientists. The National Academy report emphasizes it is wrong to create alarm where a residue is negligible. It is wrong to shout 'fire' in a crowded theater, and it is criminal to so shout because analytical instruments indicate that someone in the lobby lit only a cigarette," McLean told the arborists. "There have been some misuses and there are health situations where a small calculated risk to wildlife is necessary. Lack of substantial injury, however, is seen by the increasing numbers of song birds and wildlife population explosions in Delta country which has been most heavily treated."

"Just what do we know about effects of pesticide chemicals on fish and wildlife resources?" Walter W. Dykstra, Research Staff Specialist, U. S. Department of Interior asked. "We do know that some species are

highly sensitive to certain pesticides. Generally, crustaceans, mollusks, and fish are most sensitive, followed in order of decreasing sensitivity by amphibians, reptiles, birds, and mammals. Residues from one or more of the chlorinated hydrocarbon insecticides, including DDT and its degradation products, are now found in practically all specimens examined by the Fish and Wildlife Service." Dykstra pointed out that residues of chlorinated hydrocarbons have been recovered from penguins and seals from as far away as the Antarctic. Residues detected by highly sensitive instruments vary from only a few parts per trillion to several thousand parts per million.

After summarizing case histories of residue incidents, Dykstra outlined rules of safety and conservation for use of chemical pesticides. "Resort to chemical pest control after considering carefully their use in terms of need, anticipated results, and possible harmful effects. Use only those chemicals registered for a particular pest and follow label instructions. When selecting materials, regard safety as the primary consideration rather

than cost. Limit pesticide treatments to target areas and avoid contaminating community interest spots. Use the most selective chemicals at minimum dosage rates, and avoid large scale use of pesticides that are known to concentrate in living organisms. The overall success and efficiency of a chemical control program hinges on the intelligent use of pesticides."

"Pesticides and public policy is the real concern in Washington, D. C.," Jerry Sonosky, Special Assistant to Senator Abraham Ribicoff, explained as he addressed the arborists. "Pesticides and their use are involved in public policy, and both are matters for public debate. Who is going to decide what the proper pesticide policy is: industry, agriculture, or 'Capitol Hill'?"

Sonosky promoted intelligent, integrated use of pesticides, not discontinuance. "Be concerned where we're going next; this is more important than past pest damages."

Next year's ISTC convention will be held in Cleveland, O., Aug. 28-Sept. 2, probably at the Cleveland Sheraton Hotel, but exact scheduling will be announced later, WTT learned.

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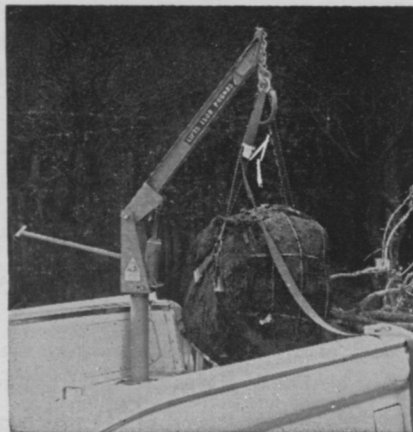
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## CHICORY

(*Cichorium intybus*)



Chicory is a perennial which reproduces by seed; it is also known locally as wild succory and blue daisy. This native of Europe is common across the United States with the exception of the Deep South. It may be found along roadsides, in pastures and meadows, on vacant city lots, and other waste places.

Initial plant growth is a rosette which resembles dandelion, having deeply scalloped leaves. Sometimes these leaves are cultivated and harvested for salads or greens, since chicory is a close relative of endive. Later the rosette sends up an erect stem which may reach to 7 feet high. The stem (2) is smooth and much-branched in the upper portions. The hollow stem center is filled with a bitter-tasting milky sap.

Leaves on the lower portion of chicory retain the dandelion shape, but upper leaves are small, tongue-like and sit directly on the stem.

Flower heads are borne on stalks which grow from the axils of leaves. Each flower head is made up of many tiny disc flowers (3), each with its single yellow petal. The conspicuous blue petals are called ray flowers; they are sterile and produce no seeds. The ray flowers open in morning and evening, and close over the disc flowers during the day.

Seeds are dark brown and wedge shaped; they are  $\frac{1}{8}$  inch long and have a row of bristlelike scales along the top (4).

The root is a white fleshy taproot (1) which grows deeply. It is sometimes cultivated, harvested, dried and used as an addition to or substitute for coffee.

One or two sprayings of 2,4-D will selectively kill this weed. Three or four mowings per year likewise will kill it. It should not be permitted to drop seed.

*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)

## How to Calibrate Turf Sprayers

(from page 11)

and turf advisors should be consulted for their recommendations before a spraying program is started. If their recommendations are followed faithfully, your spraying program will be successful. If not, the best sprayer made cannot do the job for which it was intended.

Another important point to consider is the choice of spraying equipment. Be sure the sprayer has sufficient capacity to carry out your full program. Make sure it has a tank and piping system which are protected against the ravages of modern day chemicals. Be certain it has a good filter or ample capacity; plugged nozzles will upset your rate of application. Be doubly sure it has a pump that can withstand abrasive and corrosive chemicals you will be using. It should have an accurate and reliable pressure gauge and pressure regulator or relief valve. Make sure also that the boom is protected inside against rust and corrosion.

Buy your sprayer from a reliable source, preferably your turf equipment supplier. He has access to factory warranty and service programs which can be very helpful. Take good care of your spraying equipment; keep it in good condition. Periodically check nozzle capacities. Follow closely the recommendations of your turf advisors, and your spraying program will be successful.

## Elm Beetles Scavenge Kansas

Elm leaf beetles reportedly defoliated Chinese and hybrid elm trees throughout Kansas this summer. Dr. Hugh E. Thompson of the Kansas State University Extension Service said leaves chewed by the beetles dropped to the ground. "Fully grown elm beetles are crawling down the trunks of trees and going into tree crevices or into grass and other hiding places," he noted.

Thompson added that the insect has three or four generations in Kansas. The second generation is working at present and



will soon go into the third generation. Tree surgery potential increases with each generation of beetles as their number increases.

Information on the elm leaf beetles is contained in Kansas State University Extension Bulletin 386, "Control of Elm Leaf Beetles." Copies are available in County Agricultural Extension offices and from the Kansas State University, Extension Service, Manhattan, Kansas.

### Outlines Woody Plant Control

"Chemical Control of Wood Plants," a recent publication by two University of California botanists, explores methods for removal of plant pests such as poison oak, chamise, and other shrubby vegetation (chaparral).

Authors O. A. Leonard of UC's Davis Department of Botany, and W. A. Harvey, Agricultural Extension weed control specialist, claim that removal of these wood plants would be an economic boon to California. "Some of the land now covered by this brush is suitable for conversion for range and crop purposes, other areas may be cleared for watersheds, and still others eventually will be partly cleared for rural living and recreation," they foresee.

Chief chemicals listed in the pamphlet are 2,4-D and 2,4,5-T and various formulations of the two. The publication, Agricultural Experiment Station Bulletin 812, is available from county offices of the UC Agricultural Extension Service and from the Division of Agricultural Sciences, University of California, Davis, Calif. 95616.

### Bean Turfkeeper Displayed

Turfkeeper is a specially designed, high-flotation turfgrass sprayer with a 28 ft. 4 in. plastic boom, John Bean Div., announces. Built in 5, 10, or 20 gpm pump sizes, Turfkeeper is said to eliminate the problems of tearing, gouging, or rutting the turf. Models for 9.00 x 8 Terratires and bomber tire combinations are available. John Bean Div., FMC Corp., Lansing, Mich. 48909 has more information.

## Meeting Dates



**Northeastern Weed Control Conference Turfgrass Field Day**, Virginia Polytechnic Institute, Blacksburg, Va., Sept. 8-9.

**Sixth Annual Alabama Turfgrass Short Course**, Auburn University, Auburn, Ala., Sept. 9-10.

**Illinois Turfgrass Field Day**, University of Illinois, Urbana, Sept. 10, 13.

**Mississippi Turfgrass Assn. Fall Meeting**, Jackson, Sept. 14.

**Northern Michigan Turfgrass Field Day**, Traverse City Country Club, Traverse City, Sept. 14.

**Mississippi Valley Golf Course Superintendents' Association Monthly Meeting**, Field Day and Equipment Demonstration, Westwood, C.C., St. Louis, Mo., Sept. 14.

**Northeastern Weed Control Conference Mountain Lake Right-of-Way Maintenance Conference**, Mountain Lake Hotel, Pembroke, Va., Sept. 14-16.

**Colorado Turfgrass Assn. Annual Equipment and Materials Exposition**, City Park, Denver, Sept. 15.

**Penn State Turfgrass Field Day** on campus, University Park, Pa., Sept. 15-16.

**Northeastern Weed Control Conference Forestry Herbicide Tour**, Mountain Lake Hotel, Pembroke, Va., Sept. 17-18.

**Northwest Nurserymen's Indian Summer Session**, Salishan Lodge, Gleneden Beach, Ore., Sept. 17-19.

**Tennessee Nurserymen's Assn. Convention**, Holiday Inn, Nashville, Sept. 19-20.

**Washington Association of Ground Sprayers, Inc., Sprayarama '65**, Seattle Civic Center, Seattle, Wash., Sept. 20-21.

**California Association of Nurserymen Annual Convention**, Riviera Motel, Palm Springs, Calif., Sept. 21-23.

**Northwest Turfgrass Association Conference**, Hayden Lake Golf and Country Club, Hayden Lake, Idaho, Sept. 22-24.

**Florida Nurserymen and Growers Association Trade Meet**, Naples Beach Club Hotel, Naples, Fla., Oct. 1-3.

**Montana-Wyoming Turf and Nursery Assn. Annual Meeting**, Montana State College, Bozeman, Oct. 3-5.

**Florida Turf-Grass Management Conference**, Ramada Inn, Gainesville, Oct. 5-7.

**Central Plains Turfgrass Foundation Meeting**, Kansas State University, Manhattan, Oct. 20-22.

**Nebraska Association of Nurserymen Annual Convention**, Cornhusker Hotel, Lincoln, Nov. 15-16.

**Pennsylvania Grassland Conference**, Nittany Lion Inn, State College, Nov. 22-23.

**National Weed Committee of Canada, Western Section Meeting**, Palliser Hotel, Calgary, Alberta, Nov. 30-Dec. 2.

**Illinois Turfgrass Conference**, University of Illinois, Urbana, Dec. 2-3.

**North Central Weed Control Conference**, Broadview Hotel, Wichita, Kans. Dec. 5-7.

**Connecticut Nurserymen's Assn. Annual Meeting**, Hotel Statler-Hilton, Hartford, Dec. 30.

**North Carolina Nurserymen's Assn. Annual Meeting**, North Carolina State University, Raleigh, Jan. 3-4, 1966.

**Western Association of Nurserymen Annual Convention**, Hotel Continental, Kansas City, Mo., Jan. 3-5.

**Rutgers Winter Turf Course**, College of Agriculture, New Brunswick, N. J., Jan. 4-Mar. 11.

**Northeastern Weed Control Conference**, The Hotel Astor, New York, Jan. 5-7.

**Indiana Association of Nurserymen Annual Winter Conference**, Claypool Hotel, Indianapolis, Jan. 5-7.

**Iowa Nurserymen's Assn. Annual Convention**, Hotel Roosevelt, Cedar Rapids, Jan. 7-9.

**National Landscape Nurserymen's Assn. Convention**, LaSalle Hotel, Chicago, Ill., Jan. 8-9.

**North Carolina State Annual Pesticide School**, North Carolina State University, Raleigh, Jan. 10-11.

**New York State Arborists Assn. Winter Meeting**, Ithaca, Jan. 16-18.

**Rutgers Lawn and Utility Turf Short Course**, College of Agriculture, New Brunswick, N. J., Jan. 17-19.

**Maryland Nurserymen's Assn. Annual Meeting**, Washingtonian Country Club, Gaithersburg, Jan. 18-19.

**Southern Weed Conference**, Hotel Robert Meyer, Jacksonville, Fla., Jan. 18-20.

**Oregon Association of Nurserymen Annual Convention**, Eugene Hotel, Eugene, Jan. 18-20.

**Wisconsin Nurserymen's Assn. Annual Convention**, Red Carpet Inn, Milwaukee, Jan. 19-21.

**Rutgers Golf and Fine Turf Short Course**, College of Agriculture, New Brunswick, N.J. Jan. 20-21.

## Michigan Turfmen See Research in Thatch Work, Turf Management, Soil Evaluation, at Field Day

Participants at Michigan State University's Turfgrass Field Day in July viewed long-term scientific investigations such as Prof. Leyton Nelson's study of optimum management practices to minimize thatch build-up. Nelson, an MSU extension specialist, is evaluating factors such as cutting height, clipping return, and nitrogen rates in the development of thatch.

"Thatch has only recently become a problem in lawns and is not widely known or recognized yet," Nelson commented. "The lawn owner notes a disease or drought problem rather than the major role of thatch."

Nelson's display was one of 16 projects which dotted the East Lansing turf research plots as over 400 turfgrass professionals toured the four acres of experiments and demonstrations of recent developments in turf management. Dr. James Beard, MSU turfgrass researcher, and Dr. Paul Rieke, MSU soil scientist, coordinated the Field Day, and headed a roster of speakers composed mostly of MSU staffers.

Among the other exhibits were Beard's evaluation of 14 bentgrass varieties and his exhibit on the comparative rates of establishment with various sodding and seeding practices. MSU extension specialist Prof. Stuart Hildebrand displayed bluegrass

and red fescue variety evaluations.

Rieke's exhibit of soil mixtures and relative infiltration rates indicated the effects of coarse sand, fine sand, fine sandy loam, and peat on growth. Rieke noted that soil mixes prepared for putting greens must possess properties of rapid infiltration and drainage, reasonable water holding capacity, resistance to compaction, and ability to hold a well-played ball.

"Control of Diseases of Turfgrasses," a massive report by Dr. Nicky Smith, described organisms and diseases, their most likely victims, and control measures available. Such diseases as rust in Merion, snow mold in bentgrass, and helminthosporium in bluegrass were covered.

Dr. William E. Wallner of the MSU Extension Service described turfgrass insect control. He divided turf insects into two groups based on their feeding habits: root feeders and leaf feeders. "Generally chemical control measures for one group are not effective for the other," he emphasized. Among the root feeders he cited white grubs and wireworms. Webworms, cutworms, chinch bugs, and leafhoppers fall into the leaf feeders category.

Extension agent Dr. Carter Harrison handed out tips on key plant structures for the identi-

fication of problem lawn weeds such as quackgrass, tall fescue, and nimblewill.

"Effects of Pre-emergence Herbicides on Desirable Turfgrass Species" were viewed by Dr. William Meggitt, weed researcher. His work, which began last year, will eventually evaluate several herbicides.

Other events in the busy day-long schedule included a visit to controlled-climate chambers where biochemical mechanisms of high temperature growth stoppage in Merion bluegrass are being studied, and a stop at Extension Agent Dr. Robert E. Lucas' display of "Watering and Water Sources for Turf." The latter exhibit recommended that water be applied to wet soil to a depth of six inches with each irrigation to encourage deep rooting.

### New Nematode Attacks Florida St. Augustinegrass

A new nematode pest causing severe damage to St. augustinegrass in Florida has been discovered by nematologists with the state's Gainesville Agricultural Experiment Stations.

Specialists say the glossy white, lemon-shaped nematode was discovered in a sample of grass from Boynton Beach, south of West Palm Beach.

The parasite was identified as a cyst nematode, a type not previously known to cause economic damage in the state.

Detailed study of the nematode indicates that it's a new species.

This species has since been discovered in other locations on the lower east coast of Florida, always infecting St. augustinegrass.

Researchers point out that infected grass turns yellow and growth slows down as the nematode damages roots.

Studies are continuing on control methods. But until satisfactory chemical control can be worked out, Dr. V. G. Perry, who has co-authored a technical bulletin on the new species with Dr. A. A. DiEdwardo, suggests St. augustinegrass under attack by the pest should be replanted with another kind of grass.



Soil infiltration rates are explained to Turfgrass Day visitors by Dr. Paul Rieke (right), MSU soil scientist, who poured water into different soil mixes to show rate of movement through them.