

Capability!

Five years of development and more than three years of extensive nationwide on-site testing in non-crop areas have proven SPIKE

highly effective in the control of a wide spectrum of vegetation, including many of the so-called hard-to-control species. SPIKE effectively controls many tough perennials, as well as many woody brush and vine-type species that escape other control products.



Dead common mullein along right-of-way is a dramatic example of SPIKE's effectiveness on tough-to-control species.



Commercially-applied test plot demonstrates SPIKE's ability to eliminate persistent varieties such as Bouncing Bet.

Suitability!

Because of SPIKE's features

- Less pounds last longer
- Gets most tough to control weeds and brush
- Gets most tenacious woody vines and brambles
 - Is remarkably resistant to leaching and lateral movement

... SPIKE belongs in your total vegetation program.

"Before" and "after" views of the same test plot clearly demonstrate SPIKE's ability to control brush and woody vegetation. ▶



Dependability!

... that's what all of SPIKE'S abilities add up to. SPIKE is a proven total vegetation control product that is truly tough on weeds! What's your tough vegetation control problem? Whatever it is, consider SPIKE an essential weapon in your chemical arsenal. Contact your ELANCO distributor for full details on SPIKE ... the tough one for total vegetation control!

ELANCO

SPIKE is a registered trademark for Elanco Products Tebuthiuron



How to protect your turf from the world's toughest critic: the golfer.

With this formidable array of armament on your side, you have a broad spectrum turf management program that can ward off just about any attack from weeds or fungi or golfers.

And you can manage it all with surprising economy. Chipco® products protect the green of your turf without straining the green in your budget.

Just try any one of them, and you'll want the entire arsenal. Because once you use a Chipco anything, you'll soon be using Chipco everything else.

Chipco Bucril® gives early control of broadleaf weeds in newly planted grasses for sod or seed production.

Chipco Turf Herbicide MCPP controls clover, chickweed, knotweed and other surface creeping weeds and is safe and effective for use on most bent grasses.

Chipco Turf Kleen is a broad spectrum herbicide that controls broadleaf and surface creeping weeds with a wide margin of safety around trees and shrubs.

Chipco Spot Kleen is a systemic fungicide for control of dollar spot, Fusarium blight, stripe smut, large brown patch and copper spot.

Chipco Thiram 75 prevents and controls snow mold, large brown patch and dollar spot. Used with Spot Kleen, it offers a complete disease control program.

Chipco Microgreen Liquid prevents chlorosis which results in long lasting deep green color, more root growth and less desiccation.

Chipco Turf Herbicide D is a general purpose broadleaf herbicide ideally suited where economical control is desired.

Chipco Spreader Activator is a quality adjuvant to increase the efficiency and effectiveness of turf chemicals.

Chipco Crab Kleen gives economical and selective post-emergence control of crab grass, chickweed and other grassy weeds in established turf.

Rhodia Inc., Agricultural Division, Monmouth Junction, New Jersey 08852



SEED QUALITY CONTROL

The Basis for Turfgrass Success

Seed quality is only the first of many important facets in getting a viable stand of turfgrass. But it is probably the most important step in that a grower needs to know the specific analysis of seed in order to manage intelligently.

Turf seed analysis is available today — but complete testing is not the norm. Only a few seed companies do more than the various state

laws demand. Those who do earn the premium price they have to get for their seed. For the user, the extra cost is often considered nominal when compared to the direct value he receives.

For example, state laws require only that one gram of bluegrass seed for up to 66,000 pounds of seed be tested for the percentage of crop, inert, weed and pure seed. Commer-

cial labs doing such testing readily admit the single gram tested is insufficient to pinpoint impurities which may exist.

The 25-gram test demanded by some companies and the 100-gram tests which are much more expensive go much further in giving both seller and buyer the information necessary to determine worth of a seed lot.

Seed Technology, Inc., at Marysville, Ohio, has tested for most major U.S. and some foreign countries over a 20-year period. Tests are made on a custom basis — and the seed house orders options to meet its own set of seed standards. All options extend well beyond the legal requirements.

Foreign seeds are rated as (A) uncontrollable, (B) controllable, or (C) no problem. The specific seeds, whether weed or crop seed, vary by the particular area of the country. Some seeds which are foreign when found in a turfgrass seed lot are problems in the Midwest but may be no problem on the west coast. The classifications have been worked out in cooperation with university researchers in the various geographic areas of the nation and the seed analysis is made on each test accordingly.

Seed quality standards — the highest legally required in the nation and set up by the state of Washington for certified sod quality seed — call for a statement of minimum purity, minimum germination, the maximum percent of certain other crop seed (0.1% or more in some cases allowable), and the maximum percent of weed seed (0.03% allowable). However, the allowable other crop seed excludes such things as ryegrass, orchardgrass, timothy, bentgrass, big bluegrass, Canada bluegrass except for Kentucky bluegrasses, *Poa trivialis*, smooth brome-grass, reed canary grass tall fescue and clover. The allowable weed seed excludes such things as dock, chickweed, crabgrass, plantain, black medic, annual bluegrass, velvet-



Kevin Kern, technician, uses vibrator developed by Seed Technology, Inc., to check turfgrass seed sample. Vibrator directs seed past operator at a variable speed rate depending on type and condition of seed. Magnification range is 1 1/2 to 25 power. Unit permits careful examination of seed at a rate 10 times faster than hand method, which also includes use of a hand lens.

TEMPERATURES ARE UP AND RAINFALL IS DOWN.



USE YOUR CUSHMAN.

Keeping your turf green during a long hot spell means getting water to the root zone before the sun can bake the earth. And that can develop into a race between you and the sun. What you need then is a method of quick aeration... a fast way to get water deep into the soil.

What you need is your Cushman Quick Aerator attachment.

The Quick Aerator is a two-articulated gang aerator that attaches to your Turf-Truckster chassis in minutes, using three pull-pins. It can be raised or lowered by the hydraulic system. There's no cumbersome trailer or time-consuming equipment to load or unload.

You choose from three aerating tines: deep slicing for delicate greens (with rear rollers that leave turf in playing condition), coring for fairways, or open spoon to help renovate the soil.

And like all Cushman equipment, the Turf-Truckster and Quick Aerator are built to last. Because we don't think product longevity is bad for business... we think it's the only way to do business.

With other accessories, your Cushman can spray, spike, dump and top dress. Use it. It's a lot more than basic transportation.

It's a total turf-care system. Write for your Cushman Turf catalog today.

CUSHMAN
TURF-CARE
EQUIPMENT



OMC-Lincoln, a Division of
Outboard Marine Corporation,
6725 Cushman Drive, P.O. Box 82409,
Lincoln, NB 68501

Following are results of tests of one seed lot which shows the findings on one, 25, and 250 gram samples:

Purity 98.42 Crop 0.10 Inert 1.48 Weed 0.00 Germ 89%

1 gram test	25 gram test	250 gram test
Ky Bluegrass .10% (C)	Ky Bluegrass .10% (C)	Poa annua 4 (A)
	Windgrass 126 (C)	Smooth Bromegrass 2 (A)
	Tansy 18 (C)	Bentgrass 4 (A)
		Chickweed 4 (B)
		Ky Bluegrass .10% (C)
		Windgrass 158 (C)
		Tansy 24 (C)
		Shepherds Purse 180 (C)
		Pigweed 68 (C)
		Small Seed false flax 20 (C)
		Henbit 10 (C)
		Peppergrass 4 (C)
		Ventenata Dubia 6 (C)
		Fine Fescue 4 (C)
		Black Medic 20 (C)

Note: The (A) classification represents uncontrollable seeds in the sample; the (B) classification is controllable; and the (C) group represent no problem.

grass and certain noxious weeds.

At first glance, these standards appear formidable. But, they do not include a requirement that other crop seed be listed.

Agencies producing and promoting certified seed recognize the inadequacy of the one gram seed sample results. They require 25 gram tests to ascertain whether seed is free of certain weeds such as quackgrass and wild garlic. But neither the government nor certification agencies require that other crop seeds be listed. The professional grower needs data on specific turf weeds and other crop seeds which may be in his seed lot.

Assume that a test shows one tenth of one percent crop seed and if that crop happens to be bentgrass, a factory lawn or a fairway could be exceedingly spotty. A 400-yard by 50-yard area would contain almost a million bentgrass seeds in the normal 200 pounds of bluegrass seed.

Or suppose the foreign crop seed is timothy, allowable in many states. A grower would be seeing a quarter million timothy seeds in the 400 x 50 yard lawn or fairway. In the case of tall fescue, he'd put down more than 50,000 seeds. These are examples. There are numerous others which need to be avoided.

Inert materials also need to be

labeled for protection of the grower — but the law requires only that the percentage by weight be listed.

Competent technicians and equipment designed to do the job are conducive to accurate testing. At these laboratories an electronic evaluator is used to count seed, a vibrator has been designed to direct seed past the technician for evaluation and to literally shake the small seeds such as bent from the larger seeds to which it often clings.

Most important today for the turfgrass seed user, based on the thinking of researcher Dale Kern, president and founder, is that turfgrass seed analysis must be tailored to the needs of the grower who wants his seed analyzed. This requires (1) more seed be tested; (2) better equipment be used; and (3) that more complete reports be made available.

Kern goes beyond these suggestions in his own evaluation of seed testing as now being done. He believes that much more emphasis must be placed on the specific weed and/or crop seed which is found in seed. Even the gold label seed which demands a premium price does not include on the label the specific foreign seeds. It provides only the label. This simply means that once the seed comes up the grower could find

a number of crop and weed seeds he did not expect and may not be able to readily identify. Some may be exceedingly harmful, and some be uncontrollable. Some could never be a problem.

For example, downy chess, nutgrass and speedwell are not restricted by law or agency standards, but present difficult management problems for the turfgrass professional. By contrast, windgrass, hairgrass, shepherds purse, and buttercup are also not listed as a rule, but at the same time do not offer major problems.

Only a more complete turf analysis report can forewarn the user, or aid in solving the problem prior to seeding. A grower must determine for his own area what his problem weeds are. Many which are big headaches in some areas (water fox-tail in Wisconsin is an example) may be minor nuisances in other regions.

No longer can the grower depend on standards set by outside agencies, Vern said. He must know his seed and identify his own problems. A complete turf seed analysis is his first step. This identifies foreign seeds in the lot. The second step is to be sure that any foreign seeds which are problems to him are not seeded. □

APPLY MALLINCKRODT

TREX-SAN™

Brand Broad-Spectrum SYSTEMIC Broadleaf Herbicide

ONCE-

RID YOUR TURF OF...



and more
than
35 Other
Broadleaf
Weeds



**MOST
EFFECTIVE
SAFE
HERBICIDE**

One early application of Broad-Spectrum TREX-SAN™ will kill the weeds that plague you now, thus also preventing their seeding and re-appearance next year. TREX-SAN combines the unique weed-killing properties of 2,4-D, MCPP and DICAMBA — their synergistic action in TREX-SAN provides the safest, most effective single herbicide known. We've seldom found a broadleaf weed TREX-SAN won't control. Yet it provides an extra tolerance of safety to fine turf and ornamental plantings when applied as directed. A single gallon of TREX-SAN treats *four full acres* to save you *money* . . . Single applications in spring and fall save you *time* . . . in achieving complete weed control. Order TREX-SAN from your Mallinckrodt distributor today.

Mallinckrodt®

MALLINCKRODT CHEMICAL WORKS

ST. LOUIS

Jersey City • Los Angeles • Montreal



A quiet announcement:

You're in for a quiet surprise when you close the door of the iso-mounted cab on the new Ford 550 TLB



Who in the world but Ford can provide quiet, spacious, convenient work conditions like this? It's quiet because isolation mounts between the cab and the frame help reduce noise and vibration. Cab (optional) meets OSHA 90 dBA requirements for 8 hours.

The new Ford 550 cab is a great place to work, whether you're trenching to 15-foot depths, or moving capacity one-yard loads with the new Ford straight-arm loader. Controls are within easy, natural reach. Visibility is excellent in all directions. Opera-

tions are comfortable in the roomy cab.

See the new Ford 550, worthy successor to the famed Ford 4500 tractor-loader-backhoe. Visit your nearby Ford Tractor & Equipment dealer soon. See him for information on how to buy, lease, rent or finance.

Who in the world but Ford!

FORD TRACTORS



Tree Feeder System Aids Washington Elms

The nation's capitol prepares for the country's 200th anniversary with an evangelical fervor. Construction, restoration and renovation is underway on almost every corner of the capitol, anticipating the millions of visitors who will make the trek to the tree-lined streets seeking a link with the historic atmosphere that permeates the city.

One of the biggest projects connected with the bicentennial is the Bicentennial Mall, a massive improvement project for the grassy



The feeder is built around a 13-inch long cylinder, which has a plastic collar attached to it. The four-inch diameter tube is placed into an augered hole that has been backfilled with aggregate. Once the liner is in place and secured, a filter element which contains the necessary nutrients is inserted and the unit is capped.

stretch that lies between Capitol Hill and the Washington Monument. Vehicular traffic has been closed off, and 40-foot aggregate pathways installed to accommodate the crush of tourists that have already started the pilgrimage.

Lining the boulevard, as they have for perhaps the last 75 years, are over 120 native American elm trees. Already designated as the official bicentennial tree in a ceremonial planting at the White House last year by Betty Ford, the elms are the main component of the mall project, and as such were prioritized by the Capitol Park region of the National Park Service. Because of the construction involved in installing the pathways the length of the mall, the already-distressed trees were subjected to even more abuse.

Feeder roots that had lain in the

heavily compacted soil surrounding the trees were disrupted, and as the aggregate was installed the trees' capacity for obtaining nutrients was further diminished. Clearly a method of delivering food and water to the trees was needed. Elwood Rensch, registered landscape architect and the government coordinator on the job, decided to try the W.A.N.E. (Water, Air and Nutritional Exchange) Tree System, which had been developed precisely for this type of situation.

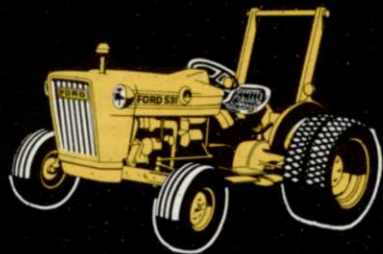
According to Rensch, "The original design of the walkways did not include anything to protect the trees. Because of the hard surface of the sidewalk and the 40-foot width, we knew we had to do something to help the trees." He contacted Wayne Smith, head of A.A.A. Tree Service in Tampa, Fla. Smith is the inventor of the system; he developed and tested the system in his garage. Smith arranged for shipment of the 1,100 units needed for the job.

The system is a piece of equipment that is placed at regular intervals around the tree, the total number needed depending on tree size and the particular situation of the tree. A PVC liner is inserted into augered holes that have been backfilled with about six inches of gravel. Then, a specially designed filter element is inserted and the unit is capped with one of two different plastic lids.

Designed to use a slow-release fertilizer mix, a vapor-release packet or a custom mix of nutrients, the units are protected from damage due to the collars and lids that are attached to the four-inch diameter liner. Able to withstand heavy vehicular traffic, the rise above grade is 3/32-inch after installation. The rest of the 13-inch unit penetrates well into the feeder root zone of the tree, allowing an even distribution of water and nutrients. In northern areas, a frost anchor is provided, while more temperate regions need only an epoxy bond between the top collar and the paved surface for permanent placement. □

The new Fords...

Now, 16 new Ford grounds maintenance power units. Tractor-loaders, low center-of-gravity tractors, all-purpose and utility models.





Sod Producers Updated in Clearwater

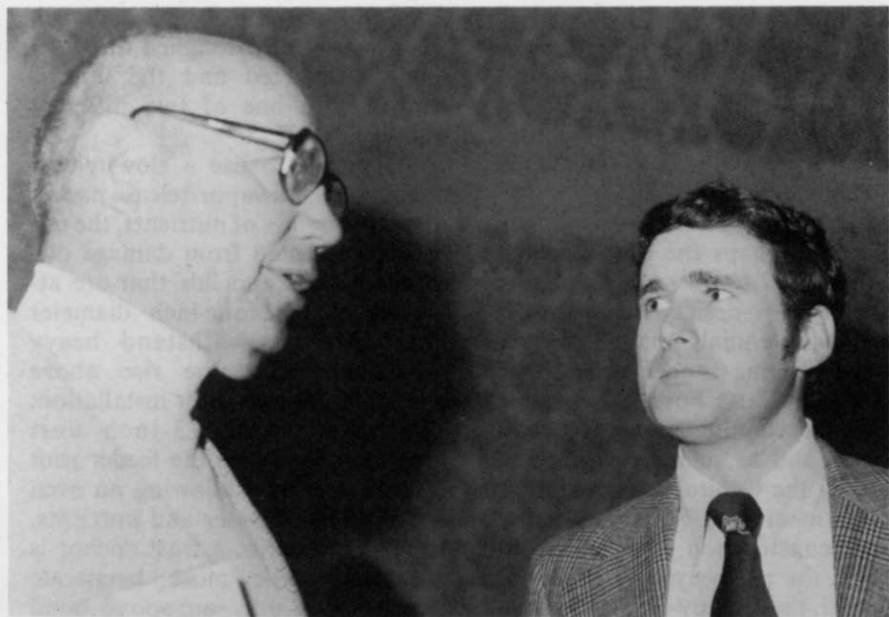
Almost 200 members of the American Sod Producers Association attended the association's mid-winter conference last month at the Sheraton-Sand Key Hotel in Clearwater Beach, Fla. Many members of the association brought their wives and families along on the trip to take in the sights of sunny Florida, which turned out not to be so sunny after all. The weather held up for a dusty field trip to Pursley Grass Co. in Palmetto, and then opened its skies with rain for the long bus ride back to the hotel. Indoors, association treasurer Tom Thornton of Thornton's Turf Nursery, Elgin, Ill., put together a well-attended educational session of many nationally known speakers.

Tom Mascaro, of Safe-T-Lawn in Miami led off the speaker's session with his well-practiced talk "Dew Is Not Dew". He said the grass plant exudates water which is sticky and can be associated with some diseases. He said dollar spot spores grow better in this medium. He said the spore germinates in the droplet and moves up and destroys the blade. He said the water can drop down and if there is quickly available nitrogen there, its mixture will produce leaf burn. Spores also

move more rapidly in exuded water. He said there is a definite relationship with this water and disease. He said it is time to take the existence of this water into consideration in turf management, and that early morning watering dilutes the water and makes it less harmful to the grass. He also said each type of grass exudes water at different rates.

Dr. Henry Indyk of Rutgers University led a panel of experts discussing new products on the market for weed control. Dr. Everett Burke of the Agricultural Experiment Sta-

tion in Fort Lauderdale, Fla., discussed "Kerb" for control of *Poa annua* on warm-season grasses. Paul Jacquemin of O.M. Scotts, Inc., Marysville, Ohio, discussed his company's new "Selective *Poa annua* Control" which is now available in the Midwest and part of the East. Steve Carlyle, of Ag-Division, Rhodia in Gainesville, discussed his company's "Ronstar" a pre-emergence herbicide for crabgrass. Dr. Al Turgeon of the University of Illinois discussed use of "Bosagran" for control of yellow nut-



American Sod Producers Association executive secretary Bob Garey (left) with association legal counsel Bill Harding at the meeting banquet.

Above: Soil fumigation with a layer of plastic at Pursley Grass Co., Palmetto, Fla., the site of a bus tour at the American Sod Producers Association winter conference.