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WIDELY USED AND PROVED—Thousands of forest acres in the north-eastern United States area have been treated with Thuricide for control of gypsy moth larvae. Professional arborists and nurserymen have used

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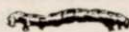
COMPATIBLE, READY-TO-MIX LIQUID—Thuricide comes to you in concentrated liquid form. There are no tedious mixing problems, no danger of nozzle clogging. Thuricide is highly stable, non-phytotoxic to foliage, and can be mixed with other insecticides.

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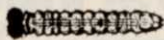
control over gypsy and oak moth larvae—without affecting other forms of life. Thuricide's powerful active ingredient (*Bacillus thuringiensis*) is derived from nature herself. It brings *sure death* to leaf-eating worms, yet there is no risk of toxic drift or residues.

ATTACKS WORMS' GUTS—Once worms ingest Thuricide-sprayed leaf, their digestive systems are quickly destroyed, feeding stops, and death is *inevitable*. Even if worms seem to hang around after spraying, no worry, they're actually starving! Man, birds, beneficial insects and pets, however, are left untouched by Thuricide's unique and selective "target action." For full particulars, see your Thuricide distributor. Or write Sandoz-Wander, Inc., Crop Protection Dept., Homestead, Florida 33030. Or call (305) 248-4671 collect.

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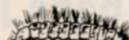
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Thuricide®

Number One Name in Microbial Insect Control!

SWSS REPORT

(from page 38)

on the restoration program accomplished in Lake Eola located in the heart of metropolitan Orlando, Fla. He said that restoration consisted of partial lake drawdown, elimination of pollution sources and treatment with algaecide.

Dr. A. D. Worsham, North Carolina State University, reported on the use of herbicides to manage vegetation on dredge islands along coastal waterways. He said that these islands had become a habitat for birds, yet the encroachment of unwanted vegetation was not conducive to nesting. Applications of various bareground herbicides in tests resulted in the control of several undesirable weeds and promoted favorable nesting habitats.

Wayne Thomaston, Georgia department of natural resources, discussed "Methods and Herbicides Uses For Aquatic Weed Control In Small Impoundments In Georgia." Some of his observations were: 1. gravity flow applications of herbicides are recommended when possible. He thinks this is superior to spraying. 2. one gallon per surface acre of herbicide usually varies very little in parts per million in acid equivalent in Georgia ponds. 3. few farm pond owners understand parts per million or acid equivalent. Recommendations in gallons per surface acre are simpler to understand.

Bill Mixon of Pennwalt Corporation told the group that the liquid formulation of Hydrothol 191 is effectively used in most areas of the country for broad spectrum aquatic weed species. However, in Florida, the slow release pellet formulation proves superior.

Robert J. Gates, director of field operations, Southwest Florida Water Management District, presented an

interesting discussion on control of submerged weeds by use of the bi-fluid-invert system. His contention is that it provides a high degree of safety, placing the material on the target with precision.

In the area of industrial weed control, a variety of papers were presented which drew keen interest among a capacity audience. Dr. Robert E. Eplee, agronomist, Animal and Plant Health Inspection Service, said that maintaining constant nozzle pressure is of prime importance in chemical application. It reduces the risk of drift and insures a more uniform application. He described a system employing a flow control valve.

V. David Perron, phenoxy products manager, Chipman Division of Rhodia, Inc., reported on developments in the Visko-Rhap system of drift control. He said that the Minnesota Wanner Company has developed an auxiliary kit which permits the operator to inject a particular chemical in a system which will control a specific weed. He cited the example where an applicator is primarily spraying for broadleaved weeds but encounters Johnsongrass.

Dick Fields of Velsicol Chemical Corporation spoke on a modified cane-low oil application of Banvel, Accutrol Adjuvant and water. He pointed out the economics of this system in view of the current shortage of fuel oil.

Along this same line, W. E. Chappell of Virginia Tech reported on the brush control studies conducted on rights-of-way. Noting the trend toward lower volumes of more concentrated sprays for woody plant control, he said that in order to lower the volume it was necessary to lower the pressure and increase droplet size. He tested many commercially available nozzles. The one most

satisfactory in his tests was Spraying Systems flatjet P 13500. He said that with this nozzle, it was possible to get uniform coverage and little drive with volumes of around 30 gallons per acre and pressure 75-100 psi.

Also on the program were reports of new compounds still in the experimental stage of development. Dr. Aaron W. Welch of Du Pont discussed Krenite brush control agent. O. N. Andrews of Monsanto reported on Roundup glyphosate in the control of vegetation on railroad rights-of-ways. And D. H. Lade, Eli Lilly and Co., talked about Spike tebutiuron as a new experimental herbicide for total vegetation control.

New officers of SWSS for 1974 are: Dr. William G. Westmoreland, Ciba-Geigy Corp., president; Dr. Paul W. Santelmann, department of agronomy, Oklahoma State University, president-elect; James Becton, Ciba-Geigy Corp., vice president; Dr. Ronald E. Talbert, weed science and physiology lab, University of Arkansas, secretary-treasurer; and Dr. James F. Miller, extension agronomist, weed control, University of Georgia, editor.

The 1975 meeting of the Southern Weed Science Society will be held in the Sheraton-Peabody Hotel, Memphis, Tenn., Jan. 20-23. □

Lawn Mower Attachment to Big Genie Available

Another option available to the use of the Big Genie from Mathews Company is a 6 ft. lawn mower attachment, complete with 34-bushel hopper. It has a caster wheel assembly to prevent scalping on uneven terrain and leaf mulching screen and becomes a lawn mower, sweeper and mulcher all in one machine.



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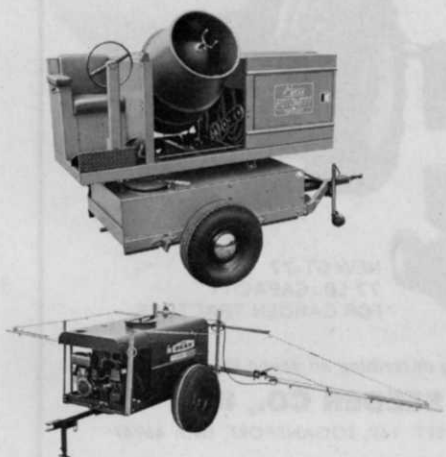


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FMC Environmental
Equipment



A trenching machine was the only piece of special equipment required to lay the irrigation system's pipe network.

IN HIS MAJESTY'S HONOR

(from page 22)

tain-teed Products Corporation).

The system is hydraulically operated and centrally controlled, with a satellite (individual fairway) con-

trol feature. The control system, directed from the maintenance building located near the clubhouse, is operated with a series of clocks and switches. It can put 1 in. of water on the fairways for 6 days, 8 hrs. per day; allowing for 1 1/4 in. on the greens and tees. And everything is accomplished at night. The system can also totally syringe the turf in 20 minutes during the day.

The irrigation system cost over \$100,000 and took nine weeks to install. Yet it took only three men to dig the trenches and lay the piping/sprinkling network. The reason, says John Schmidt, is that Philadelphia Toro specified polyvinyl chloride (PVC) pipe, with handling and flexibility characteristics highly applicable to turf irrigation.

"PVC is the only way to go," says Schmidt. "It's all we ever use. Could you imagine how long the job would have taken with steel pipe or any other material using only three men?"

Williams who supervised construction of the course, agrees. "There are many advantages of PVC," he says. The C factor is better with PVC and then there's the cost."

Cost was a prime consideration, according to Matt Ledwith of Phila-

delphia Toro. "We saved over 50 percent in material cost on PVC in comparison with steel." Overall, however, Ledwith acknowledges that the fully automatic system will not deliver a sizable return on investment; "because the more the turf is irrigated, the more you have to mow it. So what you save in manual watering costs, you make up for in turf cutting labor. The chief objective of an automatic system is to provide more efficient turf management."

In the case of King's Grant, he continues, "where high temperatures and equally high humidity prevail for 3 to 4 months of the year, there is very little ground circulation. An automatic system syringes and cools the turf, balancing the temperature to help save it."

From the pumping station, which can produce 720 gpm at 125 psi, water moves through the 30,000 feet of piping at the direction of the central control system. Individual head control allows for differentials in water needs and winds.

Schmidt's employees required no special handling for installing the system, save for a trencher. Because of the light weight of PVC, sections (continued on page 45)

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Ordinary slow release nitrogens just can't seem to control themselves. In fact, their behavior is as fickle as the weather.

Typical urea-formaldehyde nitrogens depend upon soil temperature and bacterial activity for their release to the soil. During hot weather, the soil temperature and bacterial activity are both high, so they release very fast. During cold weather, they have difficulty releasing any nitrogen to the soil. They have very little self control.

IBDU is a unique slow release nitrogen. Its release rate is primarily dependent upon normal soil moisture and particle size. Soil temperature and bacterial activity have little effect upon the rate of release of IBDU.

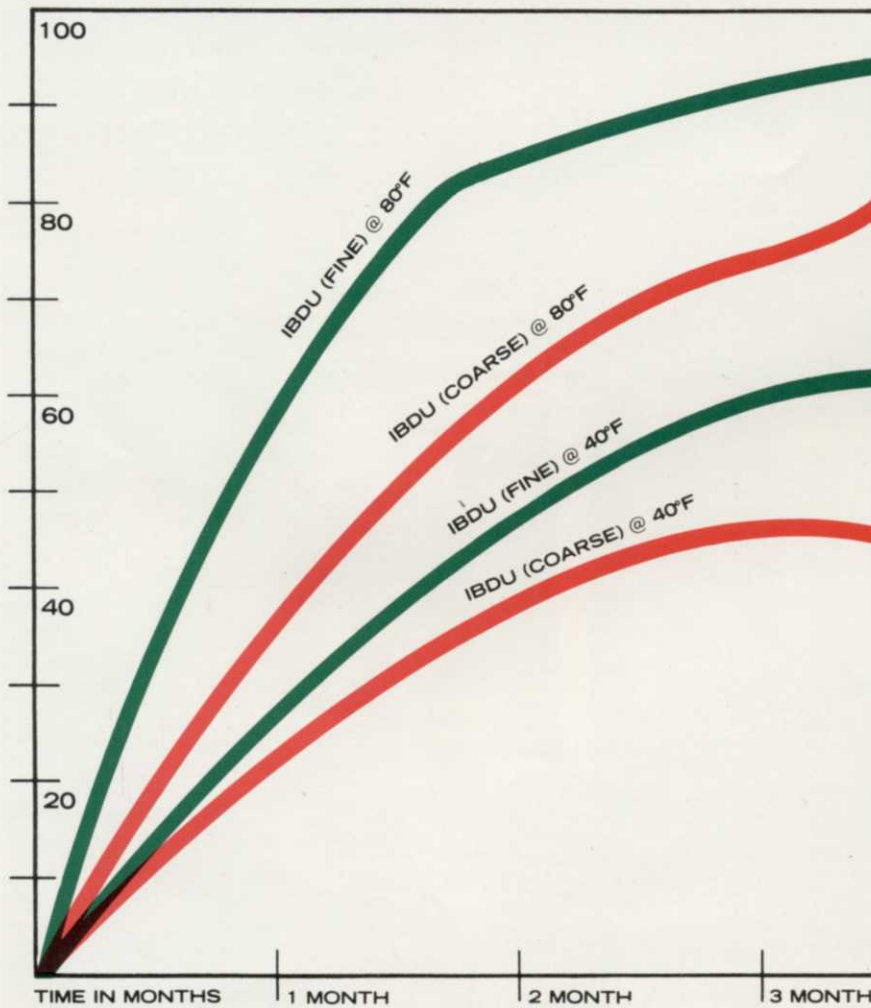
And that means that IBDU gives you control over the feeding of your turf.

On cool season grasses, IBDU will feed in the spring and longer in the fall, extending the overall growing season.

In southern grass areas, IBDU feeds

NITROGEN RELEASE RATES EFFECT OF TEMPERATURE VARIATION

% OF TOTAL NITROGEN RELEASED

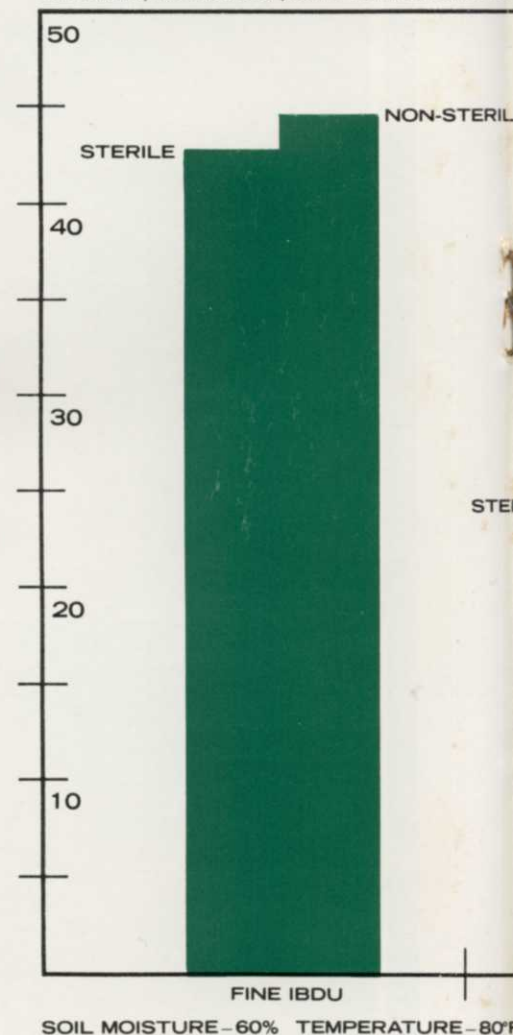


The above chart shows that IBDU is only slightly affected by changes in soil temperature. In a temperature range from nearly freezing (40°) to very warm (80°) coarse IBDU will release 40-60% of its total nitrogen in a 2 month period, while fine IBDU releases somewhat faster.

UF nitrogen sources release quickly in hot weather and almost not at all in cold weather.

IBDU CONVERSION TO SOLUBLE FORMS EFFECT OF BACTERIAL ACTIVITY

% OF NITROGEN CONVERTED TO UREA, AMMONIUM, AND NITRATE IN TWO MONTHS



The above chart shows that IBDU does not depend upon bacterial activity for its release rate from sterile to non-sterile soil.

UF nitrogen sources depend upon bacterial activity for their release to the soil, while IBDU releases its nitrogen (normal soil moisture).

gen source.
 t upon
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 ve very
 f IBDU.
 u more
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 ending the
 ing can be

more evenly continued throughout the hot summer months without fear of rapid growth or turf burn. In addition, it is ideal for overseeding in the cooler months.

By using IBDU, you can feed your turf at a more even and more predictable rate.

Now that you know you can more closely control your turf's response by using IBDU, and that only Par Ex contains IBDU, it makes a lot of sense to buy only Par Ex products.

That's using self control.

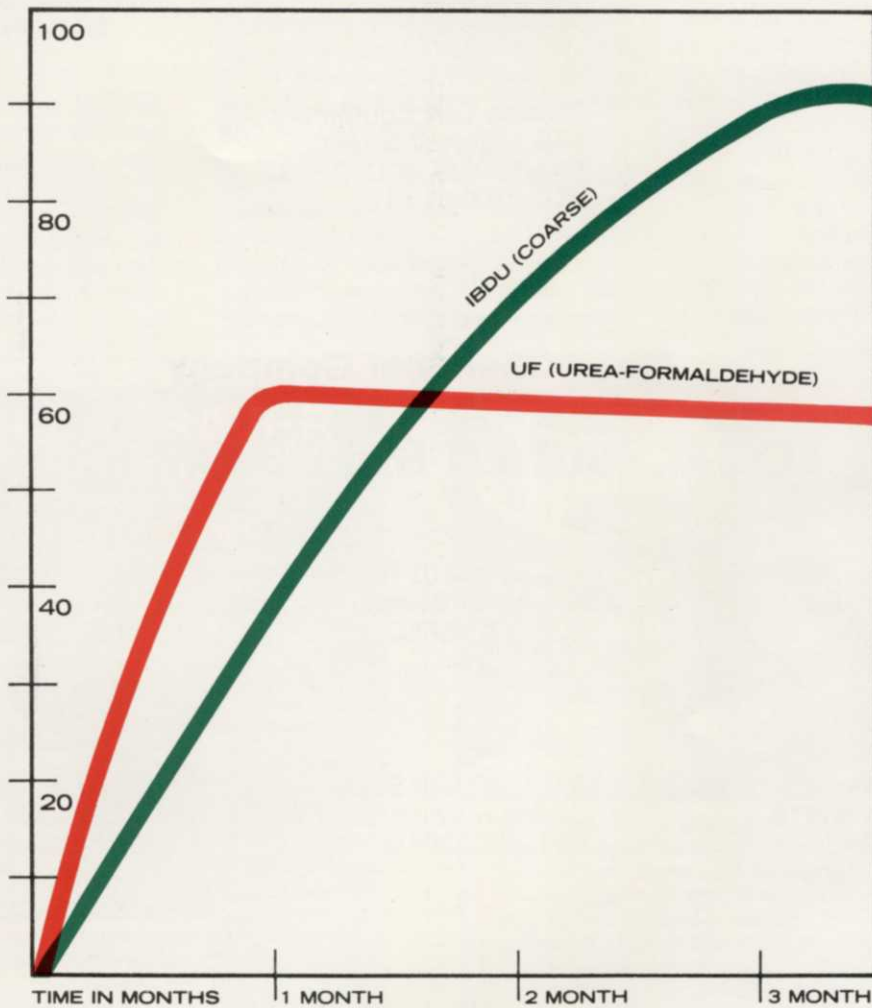
**DOUBLE FORMS
 ACTIVITY**

10 WEEKS



**NITROGEN RELEASE RATES
 IBDU VS. UREA-FORMALDEHYDE**

% OF TOTAL NITROGEN RELEASED



SOIL MOISTURE - 60% TEMPERATURE - 80°F.

s not significantly change
 le soil environments.

terial activity for their
 s to the soil by hydrolysis

The above chart shows the result of more even release rates. IBDU, since it depends primarily on normal soil moisture and its own particle size, releases longer and more evenly than UF nitrogens.

By using IBDU, you can feed your turf at a rate that is more even and more predictable. No matter how the soil temperature and bacterial activity change, IBDU will continue to release at essentially the same, even rate - lasting a minimum of 12 weeks.

(For your local distributor turn page)



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The flexibility of PPC means the pipe could easily bend around greens on King's Grant Golf Course.



This is the plan of the system, says John Schmidt (r) owner of Schmidt Irrigation System Installation Co. Other in the group are: (1-r) James Williams, hydraulic project engineer; Matt Ledwith, irrigation consultant; and Mike Kihn, landscape architect.

IN HIS MAJESTY'S HONOR

(from page 44)

as long as 40 feet could be handled manually. And because of its non-brittle nature, breakage costs were virtually non-existent.

The flexibility of PVC meant that installers were able to make the piping system conform to the configuration of each hole with ease. "Look at the bends we make around

all the greens," says Schmidt pointing to the pipe contouring around the course, "and if we have to, we can cut a section in a few seconds with a handsaw."

Two types of joining systems were used, solvent weld and gasketed couplings. Both permitted sections in whatever length to be joined in minutes by two men.

From a service standpoint, adds Williams, PVC also performs well.

The pipe won't crack or break due to shifting, settling soil, and its lifespan is assured by its resistance to corrosion.

King's Grant is nearly complete, with seeding to be finished before the winter months approach. It's expected the course will be ready for play before the first of 3500 housing units are occupied. And the color, thanks to an efficient irrigation system, will definitely be green.

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NEMATODE CONTROL

(from page 24)

greens? Russell calculates it this way. Green fumigation is made by square footage. Average charge is between \$6 and \$7 per 1000 square feet for material and application. That's for the complete job. Average cost then is about \$35 per green.

The irregular areas of most golf greens are hard to measure accurately. Russell came up with the idea of mounting a surveyors measuring wheel on the injection rig. "When the shanks are inserted, the wheel engages the surface of the turf and accurately records the linear feet of injection," he says. "This makes it a simple job to calculate the square footage and cost per green."

There's an added advantage to this method of measuring that has become a hit with superintendents. "Most of them are keeping these accurate area figures for each green as future reference in calculating rates for fertilizer and environmental protection chemicals," he says.

Accuracy of rate is of prime importance in doing a good job of fumigation. For this reason, Soil Fumigants Company have installed a pump and constant pressure on the system to insure a uniform and accurate delivery. Pump pressure with controlled psi is employed on both the small greens rig and the larger fairway machine. Rate is regulated by ground speed, adjusted pressure and orifice size on the shank outlet.

After three years experience with the fairway fumigation and two years with treating greens, the Russells offer these tips for nematode control in the Gulf States: The best nematode control maintenance program should be annual treatment of greens, tees and other high maintenance areas. For fairways and other low maintenance turfgrass, treat-

ment should be scheduled every two years.

"This gives preventive nematode control that should eliminate at least 95 percent of the turf problems," says John Russell. "Further north, where colder winters are the rule, the turf nematode problem is not as serious. I feel the problem should be dealt with as it arises."

Should a superintendent consider building equipment and doing his own treating? Or should he rely on custom applicators such as Soil Fumigants Company? Jack Russell strongly believes that there are real advantages for having the job done by the applicator. There is the initial high investment in equipment, about \$12,000 for a large fairway rig or roughly \$7000 for the smaller greens unit. In addition, there is the necessity of learning how to apply the nematicide. An experienced custom applicator has this training and the people to do the job professionally the first time.

"Let's not forget about the environment," cautions Russell. "With the increased emphasis being placed on protection of wildlife, fish and man, it is becoming important to know what the label on the product says, but also how to use the material to the best advantage without infringing on the surrounding environment.

"We've found that with this method we can apply much lower rates of Nemagon and minimize surface runoff. Contact with the chemical is reduced to a negligible degree," he continues. "We feel that we're using one of the safest nematicides on the market, particularly when injected at the recommended rate of 20 to 35 pounds per acre."

What about the future? Says Jack Russell: "No doubt new and improved chemicals for turf nematode control will be developed. Better

equipment to simplify application even more will enter the picture. But we believe that until these improvements are available and proven, our two applicators units are giving us the best possible results."

Results is what counts. Vigorous turfgrass free of thin and bare spots is what Soil Fumigants Company is after. And at the rate business is coming in, you'd think there was a reward posted for nematodes! □

Scotts Poa Anna Control Plus Fertilizer Available

ProTurf Division of O. M. Scott & Sons has introduced a new product specifically developed for the needs of Southern and Western golf courses and Western golf courses and other turf areas.

Poa Anna Control plus Fertilizer was designed for use on bermudagrass, and selectively kills Poa annua, bluegrass, and bentgrass, while providing the bermudagrass with a full feeding of nitrogen and potassium. The product is tailor-made for the elimination of winter overseeded grasses on putting greens. A spring application removes all varieties of grasses that are typically used in overseeding mixtures and thus provides a smooth transition to bermudagrass.

The product is dry-applied, granular, odorless, non-burning and dust-free. Primarily designed to be used on bermudagrass greens, tees, and fairways, it will effectively eliminate established Poa annua or winter grasses in three to five weeks, used at double rate in spring or any time these grasses appear.

For additional information write George Horn, ProTurf Division, O. M. Scott & Sons, Marysville, Ohio 43040.



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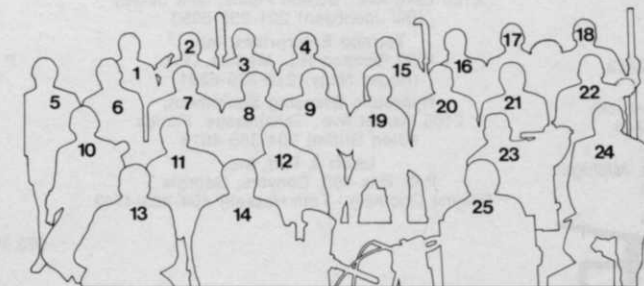
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 19. **Bob Masterson**, Utility Equipment Inc., Oregon, Southern Idaho & Hawaii
 20. **Bill Theis**, Tel-e-lect, Minnesota, North & South Dakota
 21. **Al Bishop**, Bishop Machinery & Supply, Alberta & British Columbia
 22. **Tom Palmer**, Peerless Equipment Co., Texas, Louisiana, Oklahoma & Arkansas
 23. **John Brewster**, Stanley Hydraulic Tools, Northern Illinois
 24. **Sam Teague**, Teague Equipment Co., Colorado, Wyoming, Utah & Eastern Nevada
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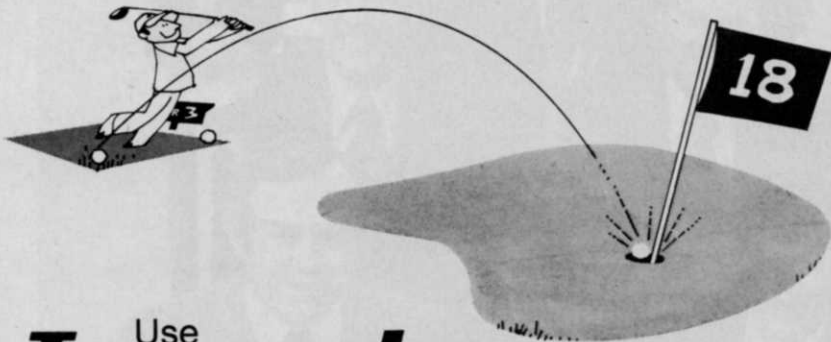
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Graduate Students Win Honors At SWSS

Eight graduate students at five land-grant institutions were recognized for excellence in weed science research at the 27th annual Southern Weed Science Society meeting in January.

The recognition, certificates and total of \$240 in checks are a part of the Society's student interest project.

Taking top place was the University of Arkansas, with two first-place winners of \$50 checks. The students were W. M. Lambert and B. C. Troutman. Their respective research papers dealt with weed competition in soybeans and post-emergence weed control in dormant Bermudagrass.

C. H. Slack of the University of Kentucky was the third top winner. He had placed second in the 1973 competition and works at the University of Kentucky as a research agronomist.

Two Louisiana State University graduate students, R. M. Carter and J. L. Killmer, were runners-up, receiving \$30 checks each for their papers dealing with controlling rhizomes (Johnsongrass) and the behavior of herbicides in plants and soils.

The third runner-up was J. W. Jackson of the University of Tennessee.

Honorable mentions were awarded to C. M. French of Oklahoma State University and T. R. Harger of the University of Kentucky.

New Utility Vehicle Coming From Toro

A low-cost utility vehicle, that combines a sleek appearance with rugged construction and features large-load capacity and simplicity of operation, will be introduced by The Toro Company during 1974.

Called the Workmaster, it has a propulsion system that features a variable hydrostatic transmission coupled to an automotive-type differential.

The unit is in limited production and will be available late this fall.

The Workmaster has a load capacity of 1,000 pounds, a maximum speed of 11 mph, full spring suspension on all three wheels, low center of gravity and, to improve hill-climbing ability and sidehill stability, oversized rear tires. It is powered by a 14 hp, 4-cycle air-cooled engine and has a 12-volt electrical system.

For more details, circle (719) on the reply card.