Some of the speakers are Dr. David Nielsen on IPM, cooperative extension agent Maria Cinque, Dr. Marty Petrovic on groundwater and Dr. Henry Indyk on turf

The annual event is co-sponsored by the Nassau-Suffolk Landscape Gardeners Association and Cornell's Cooperative Extension of Nassau and Suffolk Counties. For more information, write 59 Orinoco Dr., Brightwaters, NY 11719, or call (516) 665-2250.

GOLF

Supers needed for tourneys

The Musser International Turfgrass Foundation is looking for superintendents willing to host fund-raising golf tournaments. Proceeds from the events go toward turf research, including research on safer athletic fields.

Jon Scott, superintendent at Grand Traverse Resort Village in Michigan, held his second tournament for MITF's safer sports turf campaign last September. The tournament

raised more than \$5,000 for the foundation.

"We are proud to be working with Dr. Fred Grau of the Musser Foundation in helping to promote safer sports turf," Scott says. "We have exceeded our expectations on the popularity of the event. One thing is for sure, the third annual tournament is already in the planning stages."

Frank Dobie, superintendent at the Sharon Country Club in Sharon, Ohio, pioneered the Musser tournaments

15 years ago.

Money is raised by either a participant's entry fees or a sponsor's donation. Sponsors receive a benefit by having

their names posted on a green.

In 1985, the Musser tournaments raised \$17,000. The money is deposited into an investment fund, and the interest is returned to states for promoting safer athletic turf.

Grants have gone to graduate students at Ohio State, Cornell, Penn State and the University of Maryland.

Set-up of the tournaments differ from state to state. In Oregon, a different club hosts a tournament each year. Other states keep it at the same club regularly.

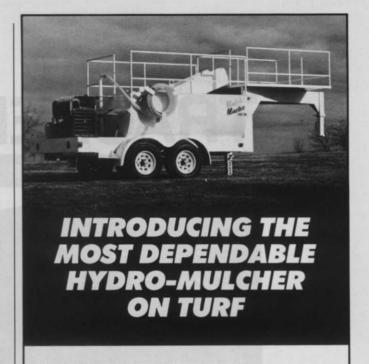
Oregon, Ohio, Maryland, Michigan, Minnesota and

Canada currently host tournaments.

continued on page 22



The team of (from left) Wally Stedding, Steve Potter, Wally Whetzell and Bob Stiffler are shown with (seated) Dr. Fred Grau and the Grau Trophy after winning the eighth annual Musser tournament at Manor Country Club, Rockville, Md. The tournament is sponsored by the Mid-Atlantic Association of Golf Course Superintendents and the Maryland Turfgrass Council.



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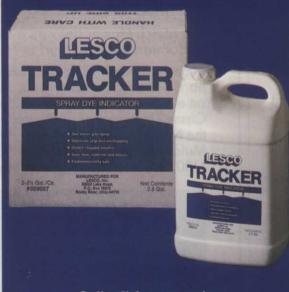
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"My goal is one in every state," says Grau, MITF president. "As our investment fund rises, we will have more interest income for grants and for educational work in safer sports turf through the National Sports Turf Council."

Anyone interested in hosting a tournament in 1987, contact: Dr. Fred Grau, Musser International Turfgrass Foundation, P.O. Box AA, College Park, MD 20740; (301) 864-0090.

PESTICIDES

Substitutes for 2,4-D cited by weed manager

The herbicide 2,4-D has been under increasing fire recently for possibly being a causal agent of cancer. More landscape managers are wondering if there are alternatives.



Leon Jones: alternatives to 2,4-D

Leon Jones of the Tennessee Department of Transportation has some possible substitutes.

Jones, who spoke at the annual meeting of the National Roadside Vegetation Management Association, says that

bromoxynil, buctril and brominal are good substitutes. Jones uses one pint of bromoxynil and 4 oz. of Arsenal, or one pint of bromoxynil and 4 oz. of Fusilade or one pint of surfactant per 100 gallons of water.

Jones has had good results spraying the bromoxynil mixtures on bermudagrass. However, he has found that the Arsenal mixture also kills fescue. Bromoxynil in combination with Fusilade does not prove fatal to fescue, he says.

PESTICIDES

Poast is labelled for centipedegrass

Federal regulators have added the control of three additional grasses to the centipedegrass label for Poast herbicide, a selective, broad spectrum post-emergence grass killer from BASF Corp. Poast's label now also allows use on seedling centipedegrass.

Under the new labeling, bahiagrass now can be controlled in centipedegrass with two applications, according to Dr. Reid Evans, a BASF agronomist who has conducted much of the research on

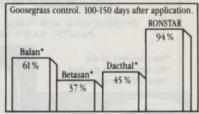


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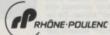


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Circle No. 156 on Reader Inquiry Card

Poast for centipedegrass.

Besides improving the appearance of a centipedegrass lawn by removing annual grasses, Evans adds, Poast reduces the number of necessary mowings, saving on the total maintenance cost. The herbicide will not harm ornamentals, trees or shrubs growing near lawns, Evans says.

The first application will burn down the bahiagrass and suppress seedhead production for 40 days, he says. Due to the plant's extensive rhizome system, however, weak regrowth will occur. A second application should be made soon after regrowth appears.

A rate of ½ fluid ounce of Poast and ¾ fluid ounce of oil concentrate per 1,000 square feet is recommended.

"(Extension of the label to seedling centipedegrass) should be of interest to centipede sod producers who previously had to rely on pre-emergence herbicides for annual grass control," Evans says. "If a late-season frost occurs, the interaction of cold weather with pre-emergence herbicides can damage centipedegrass seedlings. With Poast, you can delay treatment

until any danger of killing frost has passed without sacrificing control."

PESTICIDES

Andersons announces 2,4-D-less herbicide

Amidst the controversy over the safety of 2,4-D herbicide, The Andersons has introduced a herbicide for broadleaf weed control which does not contain 2,4-D.

Hybred Cide Break-Thru is designed to be used most effectively in conjunction with other herbicides, though it can be used alone on easy-to-kill weeds such as black medic, chickweed, clovers, cudweed and dandelions.

The Andersons made the announcement at November's Professional Lawn Care Association of America convention and trade show.

"We've been working on the product for eight years," says Joe DeLuca of The Andersons. "(The convention) was, we felt, an appropriate time to introduce it."

Response to the new herbicide was overwhelming, DeLuca says. Orders have been pouring in, with some lawn care companies planning to switch entirely to the non-phenoxy Break-Thru, while others will give it a trial run this year.

The company is expecting a large sales increase from the chemical division as a result, though DeLuca says it is too early to speculate on how much.

Dr. Ray Freeborg of Purdue University says, "The three-way combination of Break-Thru plus clorpyralid from Dow plus triclopyr appears to be the best non-phenoxy herbicide combination available."

Cost of the product, which, according to DeLuca, is the only non-phenoxy on the market that kills dandelions, will vary with quantity bought, and how it is purchased, either direct or through a distributor.

TURF

Tall fescues win shade tolerance test

Researchers have tried to study turf shade tolerance in controlled laboratory situations, but it can't be done accurately, says Dr. Paul Henderlong of Ohio State University.

"You cannot duplicate the variation in light intensity." Henderlong explained at this year's Ohio Turfgrass Research Field Day. "One minute it's under shadows, the next, there's a burst of light. That burst is more significant than constant light."



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Ohio State University's natural shade study results-1986

Cultivars	Turf Density				Turf Quality
	23 April	26 June	15 July	13 August	13 August
Rebel tall Fescue	8.0	7.7	7.7	6.7	7.7
Falcon tall fescue	8.3	8.0	8.0	7.3	7.3
Olympic tall fescue	8.0	8.3	8.0	7.3	7.7
Pennlawn red fescue	6.7	6.0	6.7	6.0	4.3
Sabre rough bluegrass	8.0	6.0	7.0	4.7	3.0
Bristo Ky. bluegrass	8.0	8.0	7.7	6.7	7.0
Glade Ky. bluegrass	6.3	7.3	7.3	6.7	7.3
Baron Ky. bluegrass	5.7	7.7	7.0	6.7	7.0
Touchdown Ky. bluegrass	6.7	6.7	7.0	7.0	5.7
VA-70-139 Ky. bluegrass	7.3	8.0	7.7	7.0	7.3

Rating scale 1-9, with 9 = best. Average of three replications.

Henderlong implemented a study of turf varieties under naturally shaded conditions in 1983. The study has shown tall fescues to remain the healthiest under shade.

The plots have been maintained at a low fertility and a 2-inch mowing height, with no special treatments. For overall turf quality, Rebel and Olympic tall fescue received a 7.7 rating on a 0-9 scale (9 is highest). Falcon tall fescue, Glade Kentucky bluegrass, and VA-70-139 bluegrass were rated 7.3.

Sabre rough bluegrass and Pennlawn red fescue received the lowest ratings and had considerable fusarium problems.

Despite close ratings among some varieties of bluegrass and tall fescue, the fescues developed no disease problems, making them the best choice for shaded conditions.

Coming Next Month....

WT&T's annual look at the Top 50 Landscape Companies.



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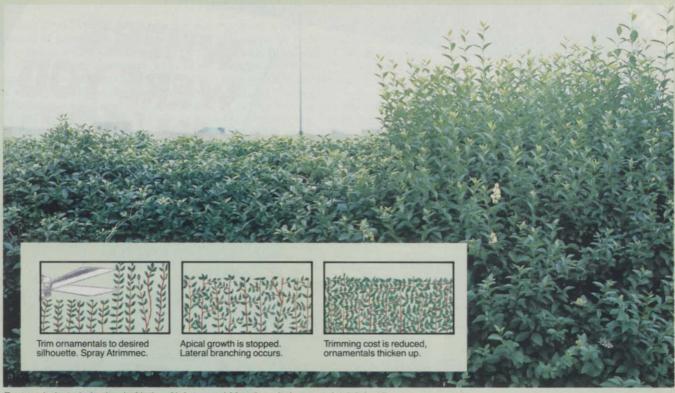
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Featured photo is hedge in Nutley, N.J. treated May 8 and photographed July 15.

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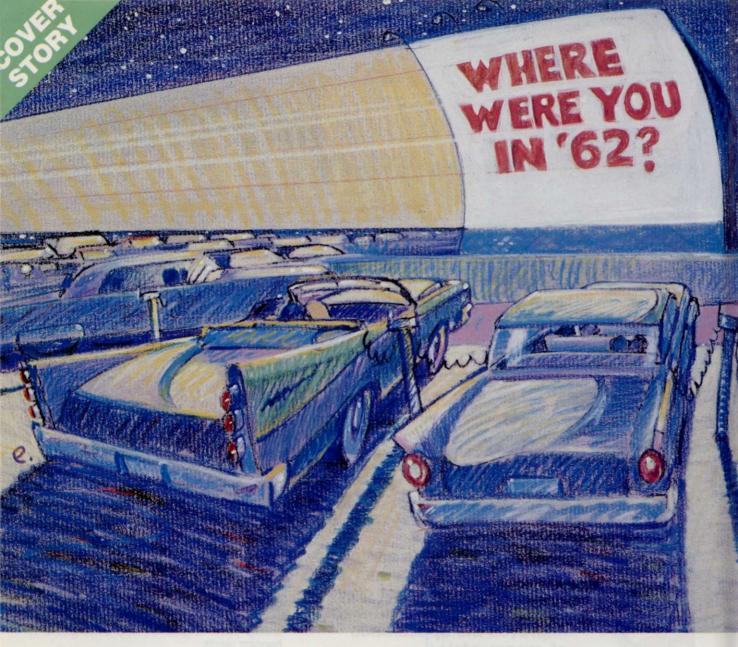
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Circle No. 145 on Reader Inquiry Card

PLANT GROWTH REGULATOR



Weeds Trees & Turf turns 25 this year. To celebrate the quarter-century mark we take a look back and a look toward the next 25 years in the turf industry. This month, the subject is chemicals.

by Heide Aungst, associate editor

t's 1962...Dacthal and Befasan are used for crabgrass control...Merion Kentucky bluegrass is one of the few refined turf varieties...Toro starts its Irrigation Division.

JFK is president...the Four Seasons are at the top of the music charts...Rachel Carson's Silent Spring is published...

Dr. Fred Grau is a consultant to the Hercules Co....Dr. Jim Watson has been with Toro for a decade...Herb Day is in Nebraska doing research and technical service for Stauffer Chemical Co...

Hair is getting longer...pant legs wider...music louder...

And, amidst it all, WEEDS TREES & TURF publishes its first issue.

Well, actually, back then it was WEEDS AND TURF (TREES was added in '64), and it started as a section in Pest Control magazine.

"Weeds," as it's known around the office, has gone through many changes during the past 25 years, but the industry has experienced even more. We just try to keep up.

Over the next several months
WEEDS TREES & TURF will look at the
history of the green industry through

the eyes of three veterans—Grau, Watson and Day. Part I looks at chemicals.

Chemically dependent

Herb Day retired from Stauffer Chemical Co. a year ago, after 30 years of service. He currently works as a consultant in agricultural chemicals.

Chemicals for the turf industry, according to Day, are just entering their fourth generation.

The first generation started before World War II with the use of inorganic chemicals, such as lead arsenate, nicotine sulfate and copper sulfate.

28 WEEDS TREES & TURF/JANUARY 1987

During World War II, the second generation of pesticides started with the development of 2,4-D and DDT.

Using organic chemistry, the chloronate hydrocarbon chemicals, such as aldrin, dieldrin, heptachlor and chlordane were developed and sold for turf and other crops.

Bandane became popular for crabgrass control in the '50s. Its manufacturer, Velsicol, became No. 1 in the

industry.

During this period, other organic pesticides came on the market, including captan, malathion and Sevin.

2,4-D, a broadleaf post-emergence herbicide, was used in mixtures during this time. Primarily it was mixed with mecoprop and silvex. The latter, along with 2,4,5-T, was banned in 1976. (Dioxin forms in the synthesis process.)

In the early '60s, Diamond Shamrock came out with Dacthal (DCPA). Stauffer followed shortly

with Betasan.

For post-emergent weed control, Trimec, a combination of 2,4-D, mecoprop and dicamba, hit the market.

"Trimec was marketed as a patented material because of a synergism claimed which no one could prove or disprove in field studies," says Dr. Wayne Bingham of Virginia Polytechnic Institute. "The patent's just now run out, so there may be similar products coming out."

In the late '60s Balan entered the pre-emergence herbicide market along with organic chemicals Tupersan, dicamba and a number of turf

fungicides

In 1962, Rachel Carson published the book The Silent Spring, which brought the use of pesticides into the public eye. "Everybody in the industry dates things before and after Rachel Carson," says Day.

The book awakened a somber public and led to the EPA's formation. One of the agency's first actions was to

ban DDT in 1971.

Geigy, known today as Ciba-Geigy, was the first manufacturer of DDT. Stauffer stopped manufacturing it in 1972.

The ban led the chemical industry to frantically search for a substitute. Companies turned to phosphate products such as malathion, diazinon and Dursban, and carbamates like Sevin. Chlordane was still used, but has since been banned for uses other than

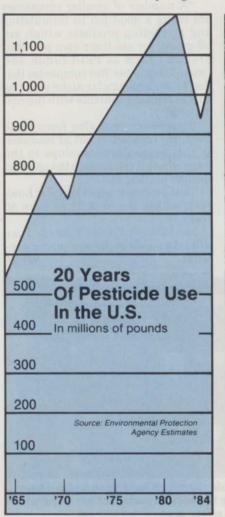
as a termiticide.

Other chemicals also fell by the wayside during this time, including Paris Green, an insecticide, and captan, a fungicide.

The herbicide Ronstar came to the market in the early '70s and, according to Bingham, "was a step forward for golf course people since nothing had worked well on goosegrass on fairways before this," he says. Later Ronstar was cleared for mixture with bensulide to treat golf greens.



Herb Day





Trade shows haven't changed much over the years. In this 1955 photo, AquaGro's first president Larry Fletcher and Jack Boley, director of marketing, sell their product.

Time of transition

A transition among post-emergents occurred in the late '70s. Union Carbide came out with Weedone DPC after the banning of silvex. Dow entered the market with Turflon D, a combination of 2,4-D and triclopyr.

Fertilizers changed dramatically during this time period. The first fertilizers were liquids. Granulars became popular in the late '50s. Early heavy weight fertilizers easily burned turf. Vermiculite became one of the first light-weight granulars.

Sulfur-coated urea became the first slow-release nitrogen source. Nitroform overtook the market as the first soluble fertilizer. "I traveled throughout the country drinking Nitroform Powder Blue cocktails," Grau recalls. "It shocked them at first, but it illustrated the fact that it's safe and breaks down. Of course, I'd have a little whiskey in it sometimes."

Pendimethalin entered the herbicide market in the early '80s (Lesco markets a spray, Scott's a granular fertilizer). "It's a cheaper compound and can be used on a bigger scale," Bingham explains.

The third generation

The third generation began about this time with the use of biorational products, which use bacteria and viruses to fight disease and insects. Growth regulators for plants and insects fit into this category.

Growth regulators, however, are not all ready for the large markets because of costs and regulatory approvals. Some, such as BT (bacillus thuringiensis, trade named Thuricide and Dipel), have been in limited markets for more than 20 years and are just now gaining in market shares.

Another product in this generation is American Hoechst's Acclaim! postemergence herbicide. (The product should be on the market this year, pending labeling). Acclaim! is not an arsenical product like other post-



Early issues of Weeds and Turf concentrated on chemical spraying of turf, ornamentals and trees.

emergence herbicides for annual grasses. It will control annual and perennial grassy weeds in cool-season turf areas at the young stage of the weed's growth. It won't work on old well-tillered grasses.

Dow is experimenting with a product similar to Acclaim!, called Tridiphane, which is also a postemergent. The product will be marketed only if it can economically compete with Acclaim!.

No alternatives?

There's also talk of taking old standby products like 2,4-D from the market because they contain phenoxy compounds. "If they take out all phenoxy compounds, it's setting us way back to control weeds," Bingham says. "We don't have anything that will be a good substitute."

One partial alternative, Bingham says, is the Andersons' Break-Thru, a chloroflurenol that works best mixed with dicamba or triclopyr.

Today, biogenetic engineering—changing the actual gene composition of the plant—is where the industry is headed. Day calls this the fourth generation. It is still in its infancy.

Biogenetic research is scarce at the universities, but it's rampant among

chemical companies.

"What if Monsanto developed a Kentucky bluegrass that was resistant to Roundup? It could put other chemical companies out of business," says Dr. Bill Torello, who is doing biogenetic research at the University of Massachussetts.

"Biogenetics are a direct result of industry developing new technology in the control of pests and the growing of food, fibre and turf," says Day.

He adds that the costs of developing and maintaining pesticides in the market (including liability insurance) will have a big impact in several years on which companies stay in the business.

Day predicts that some of the current big pesticide producers (like Ciba-Geigy, Monsanto, Dow, Stauffer and Mobay) will stick.

Others will get out when their

costs outweigh profits.

"A number of smaller companies are doing a good job in formulating and marketing products which are off-patent (or are their own patented product) such as PBI-Gordon and Lesco," Day notes. But companies that don't have a particular niche won't be able to remain profitable with the cost of liability.

Biogenetics may also force some chemical companies out of business, as this technology develops to the stage where it can replace the need for specific pesticides.

That probably won't happen, however, within the next 25 or even 50 years.

Next month WEEDS TREES & TURE will take a look at the equipment evolution.



Spraying remains a primary means for application of chemicals.



A number of unsafe chemicals have been banned from the market during the past 25 years, but one thing which hasn't changed is safety in chemical storage.