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**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.

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

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Rhodia Inc., Agricultural Division, Somerset, New Jersey 08873

For More Details Circle (138) on Reply Card
14  Turf Disease Shutout — Dodgertown superintendent Bill Moolenaar controls turf disease with a rigid chemical maintenance schedule. He supervises maintenance on two golf courses, three baseball diamonds and various other training and recreation facilities.

16  Southern Superintendents Discuss Success, Planning — The Southern Turfgrass Association held their annual meeting in Memphis, Tenn. Attendance figured low but spirits were high. Here's a report on what happened.

19  Fertilizer Outlook: 1975 — Hercules' George Osburn takes a look at fertilizer supplies for the upcoming season. He predicts shortages but feels supplies sufficient to meet market demand.

1957 SPECIAL CHAIN SAW SECTION

45  Proper Handling For Chain Saw Safety — To those unfamiliar with chain saw operation, it may seem an easy tool to operate. It is, if you know the basic factors of chain saw operation.

46  A Maintenance Schedule for Cost Cutting — Depending on how you care for it, a chain saw can be either a very expensive or a relatively inexpensive tool to maintain. Dave Kirby, McCulloch Corp., outlines tips for long, reliable use.

49  The Lightweights: Little Saws for Big Jobs — The casual user may not need a pro-model chain saw. Here are a few of the considerations to keep in mind when buying a chain saw to fit your needs.

53  10 Steps to Improved Cutting — Frank McDonald, Pioneer product manager, lists 10 easy steps for properly filing and jointing the chain on your chain saw.

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THE COVER — Spring has arrived. And the National League Champion Los Angeles Dodgers play their first intersquad exhibition game of the year, providing Vero Beach, Fla., residents and tourists with their first real preview of the team in action.
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Your pesticide keeps working longer, when you add Exhalt 800 Sticker Extender to the solution. Even if it rains after only an hour! Each particle of the pesticide is encapsulated. Held in contact with each leaf, where it can continue to do its job. It even flexes as the grass grows, to give you better protection. For a longer time.

There's another benefit as well. By giving you longer control periods with your pesticide, we help give you better control over your budget. No need to re-spray after an unexpected shower.

Easy to use. Mix 1 pint per 100 gallons of pesticide solution.

Easy to clean. Rinse equipment with water while it is still wet. Residue won't damage equipment or clog it when next used.

Exhalt 800. The Sticker-Extender that gives you Protection-Plus. Minus worry.
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Exhalt 800 Sticker-Extender

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"Our members expect the course to be in top playing shape at all times. This year, I made no changes except for adding Exhalt 800 to our regular sprays. That change made a real difference. Hard-to-maintain places are in better condition; in fact, so are all greens and fairways. I'll continue using Exhalt 800. I'm convinced."

Robert DePencier, Golf Course Supt.
Westchester Country Club Rye, N.Y.

"Two years ago, I began testing Exhalt 800 with my fungicide sprays. The results were so conclusive—in a period of severe disease pressures on healthy turf—that I now include it in my regular spray applications. Our greens and fairways never looked better or played as well."

Ronald C. Boydston, Golf Course Supt.
Rockland Country Club Sparkill, N.Y.

Crop Protection Division Kay-Fries Chemicals, Inc. Stony Point, N.Y. 10980
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Water quality management within a very few years promises to become the new opportunity for custom service operators in the green industry. We've seen custom lawn care arrive in a big way, and its growth continue.

Management of water impoundments will require custom service from pesticide applicators — all of whom are slated to be certified and/or licensed by late next year. Inasmuch as water quality management will likely continue to require some form of chemicals for effectiveness, this green industry group of custom pesticide applicators will become responsible for filling this need.

Management of water impoundments to maintain quality will be far more important than conservation, if the job is accomplished. Shortages will exist only if pollution from organic and inorganic wastes are allowed to contaminate more than the one percent of the world's water which is potable.

Impoundments are already important in our industry in (1) home developments, (2) golf courses, (3) parks, (4) potable supplies for municipal use, (5) irrigation, (6) industrial use and others.

Not only does public consciousness of environmental quality demand clean water, but property values, recreation use, water for industry, and most important, water for human consumption, depends on careful management.

The green industry needs to face this major challenge. More attention needs to be given to water quality management in the various turfgrass conferences, weed control meetings, and others of like nature.

Today, only a few technicians and scientists serving the industry have the knowledge and experience to do this job. Only one major association, the Hyacinth Control Society for control of noxious aquatic weeds (and shortly to be renamed the Aquatic Plant Management Society on January 1, 1976) devotes almost 100% of its effort to programs aimed at keeping water clean.

Inland water impoundments, especially, are experiencing water problems and responsible people are recognizing them. We, as an industry who will inherit the custom management business, need to upgrade our capability. A.E.

---

Four more from the same people who build the world's toughest rotary cutter...

Side-Winder® flail mowers, blades, rotary ditchers and box scrapers come from the same people who produce the famous pneumatic-drive cutter. The same engineers and production craftsmen design and build equipment for grass and land maintenance. We measure the quality of our products by job performance and working durability. We invite you to do the same. Contact: FMC Corporation Agricultural Machinery Division Box 818 Minden, Louisiana 71055

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- Today's most popular, widely adapted variety
- More genetically uniform and poa-free seed
- Germinates fast, establishes quicker, thicker
- Superbly consistent, less grain for true putts
- Greens up earlier, hold summer color better
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PENNCROSS can take it
CREEPING BENTGRASS

THE PROOF IS IN THE PUTTING

- Pat Fitzsimons in winning the Glen Campbell Los Angeles Open at Riviera CC, Calif., Feb. 20-23, set a new course record of 64 for a single round and tied Ben Hogan's course record for this event. Fitz previously tied the world record score of 58 on the 6,000 yard course at Salem Golf Club, Salem, Ore.

"Penncross Greens putt true & their even texture gives me confidence in putting."

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We'll put our weed control crew
up against yours any day!

Would your crew promise (and deliver) effective control of many weeds for as little as ten cents per thousand square feet?

Would they promise not to damage or weaken any growing stock they are cleared to handle?

Would they keep on working around the clock, month after month?

If not, turn the weed control job over to our crew. You couldn't ask for better, more dependable help!

Elanco Products Company, a division of Eli Lilly and Company, Department E-455, Indianapolis, Indiana 46206, U.S.A.

(Balan®—benedin, Elanco) (Treflan®—trifuralin, Elanco)
Beautiful turf is no accident. Make it happen with Acti-dione® 4-season disease control

The old saying that beauty is more than skin-deep is nowhere more applicable than on a golf course. Beautiful turf will not retain its beauty unless it remains healthy. In addition to normal wear and tear from golf play and stress from variable weather conditions, fungi are an ever-present health threat to turf. There's little you can do about golf play and weather, but you can control fungal diseases. An effective, economical way to combat fungal growth all year long is to use Acti-dione® Thiram and Acti-dione TGF® in a four-season disease control program. With fungi out of the way, turf has a better chance to grow strong and healthy — to resist weed infestation, to bounce back from injury and to survive adverse weather conditions. See your TUCO distributor today for complete information and assistance in planning a four-season disease control program with Acti-dione turf fungicides.

Brown patch heads summer diseases

Brown patch is a prime summer threat because it thrives in warm weather. Acti-dione Thiram, applied weekly, controls not only brown patch, but also dollar spot, melting-out, fading-out, leaf spot, rust and powdery mildew.

Use Proxol® 80SP to help prevent insect damage

Division of The Upjohn Company, Kalamazoo, Michigan 49001
For More Details Circle (112) on Reply Card

For More Details On Preceding Page Circle (133) On Reply Card
EPA told an informal hearing panel on March 5, 1975, that if the EPA Administrator determined that a request raises "substantial new evidence" which could materially affect a previous suspension or cancellation order, the request could become subject to public notice procedures and formal hearings before an administrative law judge. The revised procedures were announced at the same time EPA Administrator, Russell Train, turned down a request by the State of Louisiana for emergency permission to use DDT this spring to control tobacco budworm.

New EPA statistics indicate that more than 18,000 pesticide registration "actions" were taken by the agency during the past fiscal year. These "actions" include the registration of 2,804 new products, the denial of registration applications for 3,812 other products and the acceptance of amended applications for 3,851 pesticide products.

The statistics indicate that as of June 1974, a total of 34,029 pesticides--insecticides, weed killers, disinfectants and other pest control products--were registered by EPA. The firms producing, formulating or distributing these products amounted to 3,534. The figures also show that 1,370 pesticides were cancelled by EPA during Fiscal 1974, and 33 products were suspended. Both of these actions prohibit the sale of the affected products because of adverse effects on human health or the environment.

Under the 1972 Federal pesticides law, no pesticide may be sold, distributed or delivered in the U. S. unless registered by EPA. The responsibility for this job belongs to EPA's Office of Pesticide Programs.

No changes, said OSHA boss John H. Stender, in response to EPA's proposal to lower the allowable noise standards from OSHA's proposed 90-decibel level to 85 decibels. EPA questioned the adequacy of OSHA's proposal in a December 18, 1974 notice in the Federal Register, by filing "a request for review and report" on the proposal within 90 days. Under the Noise Control Act of 1972, EPA may require another federal agency to justify its promulgation of any noise regulation that EPA deems inadequate. EPA had recommended an 85-decibel limit to be effective in three years with commitments on the part of OSHA to reduce the level further in the future. EPA declared that the proposed limit of 90 decibels would not adequately protect workers who may be especially susceptible to noise.

OSHA is seeking public comment on a document, "Criteria for a Recommended Standard on an Identification System forOccupationally Hazardous Materials," recently submitted by the National Institute for Occupational Safety and Health (NIOSH). The document would satisfy requirements of OSHA that employees be warned of toxic material hazards to which they may be exposed. Public comments concerning the paper should be submitted to the Docket Officer, OSHA, U. S. Department of Labor, Room 260-MNWA, 1726 M St. NW, Washington, D. C. 20210.

Occidental Chemical Company signed a contract with Stan M. Wooger, president of Agrinova Corp., to develop a new line of specialty formulations. Wooger specializes in the research and development of the technological means for more efficient application methods and for the increased effectiveness of applied chemicals.
EACH SEASON is a winning season for Bill Moolenaar.

He does it using a proven battery of turf management methods backed up by a bull pen loaded with years of experience in handling unexpected problems.

Bill is superintendent at Dodgertown, spring training home of the L. A. Dodgers baseball club. The Dodgers boast the most complete, well-equipped spring training facility in the major leagues. The complex covers over 300 acres near Vero Beach, Florida, and includes tennis and basketball courts, swimming pool, housing for players and their families as well as the press, two golf courses, and certainly, 3 baseball diamonds.

The baseball fields are treated in exactly the same manner as the golf course fairways. Fertilizer is applied twice yearly. Constant attention and inspection head off disease and insect problems before they can create serious damage.

The golf courses are open to public membership and a portion of the complex, called Safari Pines, is devoted to private residences. Bill Moolenaar, with the help of 18 men, manages the grounds for the entire complex.

Because of the heavy traffic between January and April, Moolenaar overseeds Italian rye in his bermuda greens. “Most superintendents who overseed know that overseeded greens need special treatment,” says Moolenaar, “but it’s just a matter of getting the work accomplished.”

To get his courses in shape for overseeding, Bill starts in May, just after the players leave, with an herbicide program.

“Crowfoot and crabgrass are my biggest problems here. MSMA and 2-4-D (amine formulation) take care of them pretty well. In September, I’ll follow-up with a spot application or two in trouble areas,” he says.

At the spring training camp of the National League Champion Los Angeles Dodgers, superintendent Bill Moolenaar pitches a . . .

Turf Disease Shutout
A routine disease control program is followed all summer. And he sprays a preventive fungicide every two to three weeks.

In early Fall the greens are aerified and verticut to retard the bermuda growth while getting rid of any thatch problems. Also, early aerifying allows the bermuda to heal for a more uniform putting surface after seeding. "Depending on the weather, I overseed anytime between Thanksgiving and Christmas," says Moolenaar.

A week to 10 days before overseeding, he launches a special program to make sure that his course is free of disease and insects. He applies Acti-dione Thiram and Proxol 80 SP in a combination tank mix at recommended rates, "The two chemicals are compatible, so why make more than one trip?" he says. His biggest disease problems are pythium, helminthosporium and dollar spot and in the warmer periods of late summer, brown patch. Sod webworms, cutworms, army worms and at times, mole crickets are his insect threats.

About 5 days prior to overseeding, he topdresses sterilized soil and applies a low-nitrogen high P & K fertilizer.

All greens are seeded in a 2-day period. "It's more work all at one time, but we get all the greens off to an equal start this way," says Moolenaar.

Immediately after seeding, he follows through with another fungicide-insecticide treatment to protect the newly-emerging seedling at one of its most critical periods. The Acti-dione Thiram-Proxol application is repeated again each week for the following two weeks. After overseeding is established he sprays again, followed by two more sprayings at 7 and 10 days.

"Because the insects come out at night, we like to spray in the late afternoon. That puts a fresh application out there when it's needed," he says.

(continued on page 42)
Southern Turfgrass Association Report

Southern Superintendents Discuss Planning, Success

LOW ATTENDANCE figures once again plagued the turfgrass industry’s show season as the Southern Turfgrass Association registered less than 300 people for their recent conference and equipment exposition in Memphis, Tenn.

Close on the heels of GCSAA’s New Orleans show and continued competition from budget cutbacks held attendance to the low level. GCSAA attendance was also some 440 less than their 1974 meeting.

Theme of the educational portion of the show was “Success Through Planning”.

James Bridges, superintendent of Creeks Bend Golf Course, Hixson, Tenn., welcomed everyone to the meeting and expressed the increased importance of meeting present day challenges through planning. Bridges is also a state director of the association.

Educational director for GCSAA, Bill Knoop, noted a strong correlation between thinking before acting and success in undertaking any project. He listed the tried and true methods of planning and success as: identification of objective or goal, definition of all courses of action, evaluation of all courses of action and development of supportive materials. Knoop stressed that following these steps “does not guarantee success, but the odds will certainly be on your side.”

Speaking on planned work schedules was USGA Greens Section Southern Director, Monty Moncrief. His first suggestion was to determine work schedules — some tentative and some firm — on a yearly, monthly, weekly and daily basis. “Keep communication lines open and plan jobs as early as possible. The less conflict between the pro, greens chairman and club manager the easier your job will be,” Moncrief said. Another Moncrief point was the importance of daily work schedule planning. “After the day is complete, review the finished jobs and plan tomorrow’s schedule accordingly,” he said. To make operations run more smoothly, have someone other than the superintendent know the day’s work schedule so something unexpected does not halt work. Plan the work so completion of all projects can be achieved. Place employees on jobs most appealing to their particular interest. “And above all, show appreciation to employees for a job well done,” Moncrief concluded.

(continued)
It's spring.
For effective control of leaf spot, use
TERSAN® LSR.

Start with TERSAN LSR turf fungicide on tees, fairways and greens in early spring to stop leaf spot activity before it becomes a problem.

Leaf spot is usually most active during periods of cool, wet, overcast weather. Early applications of soluble nitrogen also encourages disease activity.

TERSAN LSR will also protect against rust and large brown patch before they have the opportunity to damage your turf. If stripe smut is a problem, use TERSAN 1991.

Combine this first step with other sound turf-management decisions and you'll have tournament-ready turf this spring.

Stay with the economical TERSAN 1-2-3 Program and you'll be in complete control of major turf diseases on all common turf grasses all season long.

TERSAN 1-2-3
DISEASE CONTROL PROGRAM

With any chemical, follow labeling instructions and warnings carefully.

For More Details Circle (111) on Reply Card
One of the newer trends in housing is the complete community development. In this area, planning is most crucial and speaking from personal experience was Bill Carson, superintendent of Sea Pines Golf Course.

Carson used colored slides to outline the step by step planning and development stages of one of the eastern seaboards largest developments. "Many of the facilities necessary to attract and maintain a satisfied community must be well planned before the first resident moves in," Carson said. "It takes more than tact to inform any of the residents that there has been a mistake in planning and the new highway is going through their backyard."

Irrigation is another area where detailed planning pays off. "One of the most important considerations in any irrigation installation is desired coverage," said Toro Irrigation's Bill Speelman. Matching the system to the area prevents burn-outs and many insect and weed control problems. A common practice, he said, is the use of fairway heads on greens. "If you decide this is the route you want to take, make certain there's adequate pressure - 80 to 98 psi - to achieve proper water break-up," he said. "Incomplete break-up results in inadequate water coverage and sometimes results in turf damage. "In the long run, it adds much to player pleasure and the superintendents' well being if the irrigation job is properly constructed from the beginning," he said.

Preemergence weed control requires use of the planning process and speaking on this subject was G. Euel Coats, associate professor of weed science, Mississippi State University. "Annual bluegrass is by far the most severe grassy weed infesting southern turf areas during the late growing season through the dormant period and into the early growing season," Coats stated. "Aside from decreasing the aesthetic value of turf, probably the primary objection of annul bluegrass in southern turf is the weed problem associated with the rapid die-back in late spring." Control is usually accomplished with either benefin (Balan), bensulide (Betasan) or DCPA (Dacltal). Pronamide (Kerb) is a newer material that has shown excellent potential for either preemergence or postemergence control of the grass. "Application prior to seeding is early enough for annual bluegrass to be controlled and not interfere with transition of bermudagrass," Coats said.

Another approach used on many southern golf courses is the use of a postemergence application of a non-selective herbicide such as paraquat or cacodylic acid prior to breaking of dormancy. "This usually does an excellent job on annual bluegrass as well as those annual broadleaf weeds present," he said.
The Rational Approach

Perhaps never in the history of commercial fertilizers have they enjoyed the front-page attention they have received in the past 18 months. For many years the industry was plagued with low prices and, of course, low profits. Supply was far in excess of demand. Now the situation is reversed and the cry is for more and more and more.

At the same time, the demand for energy for every other use is ever increasing. There is no doubt that we are in a "crunch" situation. Each day brings an entirely new set of conditions as regards energy availability which is reflected in finished product supply and price. I do not propose, however, to be a prophet of doom; rather I do believe that rational thinking will prevail and our priorities will be sorted out so that we can stay in business and continue to grow.

In looking at fertilizer availability, we should perhaps spend a moment in looking at the overall picture as background. The world population is increasing by about 1.4 million people per week. The present population of 3.9 billion is expected to double in the next 35 years.

We must also bear in mind that the population increase is twice as fast in the poorer nations as in the so-called rich countries. One can, therefore, project his own ideas of what the food supply problem will be and the continuing effect food production problems will have on fertilizer availability.

Now let's look at where we stand today in the United States. The fertilizer demand in 1974 exceeded supply and prices were about double the preceding year. The use of nitrogen and potash rose nearly 10 percent while phosphate requirements were unchanged. Forty-seven million tons of fertilizer were used of which about 24 million tons were mixed goods.

At the end of the fertilizer year, 1974 inventories were 28 percent below the preceding year and nitrogen material inventories amounted to only 13 days' production. Fifteen days' supply of phosphates was on hand and 22 days' supply of potash was in producers' inventories.

We cannot, therefore, expect much relief in supply in the short-term even though some production increases are scheduled for 1975. We can briefly cite reasons for shortages which occurred and which will continue to present a problem:

- Natural gas and electric power availability.
- Railcar supply.
- Excessive world demand.
- Continuing low inventories, which means:
  - Continuing tight supply and, of course, high prices.

Let's look at the primary nutrients — nitrogen, phosphorous and potash — for the present and future.

**Nitrogen**

Ammonia is the basic building block for all chemical nitrogen fertilizers. Several announcements have been made about expanded ammonia production and it is estimated that the actual increase in ammonia supply will be about four percent for 1975. Most of this will come in the latter half of the year. In manufacturing ammonia, nitrogen from the air is combined with hydrogen from natural gas, and it requires approximately 40 thousand cubic feet of natural gas per ton of ammonia produced. Thus, the 16.5 million tons of ammonia expected to be produced in 1975 will require about three percent of the total United States use of natural gas. The ammonia industry is one of the principal users of natural gas and, unfortunately, there are no economic alternatives to gas as a feedstock. Naphtha, fuel oil and coal are alternative feedstocks but even if available, would be considerably more expensive than natural gas.

While the four percent increase in capacity is helpful, we should point out that the USDA has projected about a four percent increase in acreage planted for 1975. Assume that for most crops, other than soybeans, each additional four million acres means an additional need of one million tons of fertilizer. This amounts to an estimated 3.4 million more tons of fertilizer needed for farm crops in 1975.

Approximately 40 percent of all the nitrogen used on crops in the United States goes to corn, and that 50 percent of all crop fertilizer goes to 12 midwestern grain states. Also, we must remember that urea, ammonium nitrate, ureaforms and any other nitrogen products do not create a single additional pound of nitrogen — they only convert it and the conversion reduces the actual nitrogen by perhaps 10 percent. This same case applies to converted products of phosphoric acid.

(continued)
How to get the best drift control for the

Aquatic use in drainage systems keeps ditches and canals weed free.
Roadside application of Visko-Rhap adjacent to cropland.

Visko-Rhap clears right of way along railroad tracks.
Power lines cleared by Visko-Rhap of unwanted foliage.
possible herbicide
least possible cost.

We know you're just as concerned with cost control as you are with weed control. Visko-Rhap can solve both problems.

You may be able to convert your present spray equipment to the Visko-Rhap controlled-drift system for about $400, the price of our new Converter Kit. At that price you can't afford not to have it.

Or if you want a more sophisticated piece of equipment, our Pump Motor Pack Unit is available. And for the ultimate in drift control equipment we have the complete Trailer Mounted Unit.

Visko-Rhap has developed a system that keeps Visko-Rhap herbicide and water in separate tanks. They are blended together in a special mixing chamber which produces the thick invert emulsion. So there's no down time for mixing. Material can be left in the tanks overnight.

One highway department in Iowa reported savings of $13 per mile!

Visko-Rhap will clear roadways, power lines, waterways, or crop areas without the herbicide drift that can lead to costly damage suits or crop loss.

Visko-Rhap applies in thick, spaghetti-like strands that go only where directed, and break up into heavy oil coated droplets before contact. It hits only what you want to hit. And what it hits, it sticks to like glue. Spray patterns and droplet size are adjustable. You can even spray when it's raining.

If all this sounds too good to be true, we'll be happy to arrange a full demonstration. Just call your local Rhodia representative and he'll show you how to kill those weeds without murdering your budget.

Visko-Rhap by

For More Details Circle (137) on Reply Card
Before leaving the nitrogen situation, we should point out that we imported about 20 percent more nitrogen in the fertilizer year 1973 to 1974, while our exports decreased by 13 percent. In finished fertilizers, we imported 10.4 million tons while exporting 6.9 million tons. This gave us a net increase of 3.5 million tons. It is obvious that any fertilizer embargo policy would not have been in our best interest.

**Phosphate**

One-fourth of the world’s reserves in phosphate are held by the United States. Phosphate rock is the raw material for the production of finished phosphate fertilizers, and it requires some three tons of rock for one ton of P₂O₅ in phosphoric acid. New acid production was scheduled to come on stream in the first quarter and it is predicted that there will be slightly under one million tons more acid available in fiscal 1975.

Of the three nutrients, N, P and K, phosphate may be in better demand-supply balance domestically, but the 15 percent increase in supply does not mean there will be any world surplus in the foreseeable future. Prices, therefore, will remain strong, and world demand for rock and subsequently acid will continue the current situation until near the end of the decade.

**Potash**

Potash is the one nutrient where we must rely on our friend to the north, Canada. Seventy-five percent of the potash consumption in the United States in 1974 came from the Canadian mines and inventories in North America are reported to be at dangerously low levels. There is little increase forecast for 1975, the major reason being the divergent opinions of the Canadian and Provincial governments and the potash producers, on the amount of taxes to be levied and who shall control the marketing decisions. We, therefore, see continuing shortages and firm prices for all of the potash fertilizer materials. Sulfate of potash is in very short supply due to the above reasons, but also due to the current tight situation on sulphuric acid.

Prices, as one would expect, have continued to rise but we are perhaps seeing some leveling off at today’s published levels. It is possible that there will be spot increases on individual materials, but the overall-market should be somewhat stable and rises greater than 10 percent overall are not anticipated.

With present crop price projections, fertilizer is still the farmers’ best buy and no slackening in demand is really foreseen. The key for those who need to purchase fertilizer, for whatever end use, is management and using only what is required, and at the same time using the most efficient material. We would suggest that before embarking on any fertilization schedule or program, a soil test be made and then use only the nutrients required and in the minimum amounts to accomplish the job.

The price per ton of fertilizer material is not the key to good fertilizer management. Rather, the cost per unit of the needed plant food which will be available to the plant is, and should be, the critical cost. The manager's job is to know unit costs and to program his requirements of needed plant food in the proper unit amount to accomplish the job in the most efficient manner.

It is my opinion that materials, per se, will be the manager's choice in the future and not complete fertilizers when not all of the plant nutrients are required for the job at hand.

Eliminates thatch
nature's way.

Eliminates thatch
(the source of major turf problems)
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feeds only on dead plant matter

25 lbs. covers 25,000 sq. ft.

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(U.S. Plant Patent No. 3150)

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*Source: Plant Variety Protection Office, U.S. Dept. of Agriculture

In 10 years of man-controlled parentage breeding and over 7 years of university and field testing, "Adelphi" has earned a top rating for overall performance. "Adelphi" offers the features most wanted in turf. Professionals and home gardeners, alike, are making it the most widely accepted and universally acclaimed bluegrass in 30 years.

For good looks throughout the entire growing season...excellent density...good disease resistance and tolerance to moderately close mowing, it's...MAN-MADE "Adelphi"...A FIRST IN TURF!

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For More Details Circle (143) on Reply Card

Meeting Dates

**Southern California Horticulture and Turfgrass Institute**, Royal Inn, Anaheim, Calif., April 16-17.

**Southeastern Turfgrass Conference**, 29th annual conference, Tifton, Ga., April 21-22.


**Western Chapter, ISTC**, 42nd annual meeting, Riviera Hotel and Country Club, Palm Springs, Calif., May 11-14.


**Shade Tree Day**, Ohio Agricultural Research and Development Center, Wooster, Ohio, July 9.


**Penn Allied Nursery Trade Show**, Hershey Motor Lodge and Convention Center, Hershey, Pa., July 29-31.

**Southern Nurserymen's Association**, annual convention, Atlanta, Ga., Aug. 3-5.


**Canadian Parks and Recreation Association**, annual conference, Quebec City, Aug. 10-14.


**Outdoor Pest Services Clinic**, sponsored by the National Pest Control Association, Inc., Kansas City, Kan., Sept. 26-27.

WEEDS TREES and TURF
How to put a million tiny hoes to work aerating.

Just apply GRAND PRIZE® Lawn & Garden Gypsum to grassy areas and shrub beds. GRAND PRIZE will work down—like a million tiny hoes—to create a loose, porous soil structure where air and water can move . . . roots can freely feed and grow.

It supplies soluble calcium and sulfur in a readily absorbed form. Won’t affect the pH of the soil. Helps fertilizers to be more effective, and organic matter to decay faster. In addition, GRAND PRIZE helps neutralize pet and deicing salt damage.

GRAND PRIZE is inexpensive and easy to use. While excellent for lawns, use it for flowers, vegetables and shrubs. If you want richer, greener lawns with less work, write for more information to 101 S. Wacker Drive, Chicago, Ill. 60606. Dept. WTT-45.
FERTILIZER (from page 22)

hand. Nitrogen, of course, is always needed for plant growth and many nitrogen bearing materials, ranging from completely soluble to the newest slow-release nitrogen materials, offer the manager a wide range of products to accomplish his objective at the lowest cost.

We would be remiss if we did not comment on the role of fertilizers in the non-farm or non-food production areas. All of us have read on this subject and the media continue to suggest moratoria, legislation, voluntary abstention and various other campaigns to divert United States’ fertilizer from non-farm or non-food uses, and send it “overseas.”

We do not propose to argue the highly emotional case, but we do think that there are some facts that you might want to know, as they affect you and your business. For example, less than four percent of the total United States fertilizer produced and consumed is used for non-farm purposes. You should know that this number includes airport runway de-icing, public parks, playground maintenance, highway shoulder stabilization and very importantly, erosion control. It does not just go to golf courses, not is it 15 percent of the total fertilizer consumed, as some would have us believe. Ed Wheeler, of the Fertilizer Institute, says, “One should never forget that not only do our green lawns and landscaping make our cities more beautiful and pleasant to live in, but in addition, growing lawns and plants remove harmful carbon dioxide and pollutants from the air and release oxygen back in return. The small amounts of fertilizer so employed contribute not just esthetic enhancement to our environment, they make a necessary functional addition to it as well.”

We might also point out that many, many thousands of people are employed in all the non-farm fertilizer service areas. Workers in fertilizer plants who produce specialty fertilizers, employees of all contractors serving the turf and related industries would be immediately affected by any ban on such fertilizer use. Their efforts contribute a considerable amount to the economy which is sorely threatened as it is. Such a ban would result in mass unemployment in still another industry.

Art Edwards, publisher of WEEDS TREES and TURF, requested in his editorial in the December, 1974, issue that: “We need action committees — using the best minds in our industry — to assemble data which will quickly show the need for maintaining the green in our field.” He asked for your ideas and we repeat his request.

Finally, on this matter, we believe that Dr. Robert Schery, director of the Lawn Institute, has put it succinctly when he says in his article entitled “Non-Farm Fertilizer Use” in the January, 1975, Horticulture magazine: “The appeal to forego non-farm fertilizing is an emotional reaction, rather than a reasoned plan for correcting a complicated world problem, towards the solution of which the appeal can contribute almost nothing.”

---

Rebuild & rejuvenate your soils, plants & lawns — Natures Way — Agro Chem's SOIL REBUILDER will do the following for you:

1. Loosen tight, compacted, worn out, heavy clay and non porous soils. Allow air, water and nutrients to penetrate deeper. Encourages deeper, more healthy root growth.
2. Rebuilds soils. Relieves pressure of tight compaction. Adds liquid natural organic soil rebuilding products to the soil, which penetrates to deeper levels, so as to keep soil loose, friable and capable of holding more water, air and nutrients for greater lengths of time.
3. Helps to develop permanent deep, strong productive roots.
4. Recharges soil with natural organic micro nutrients of Iron, Copper, Sulfur, Zinc & Manganese. Gives plants greater health with greater productivity and higher food value.
6. Helps reduce the constant requirement of frequent watering and even reduces cutting — cuts maintenance costs.

Ideal for rebuilding & reconditioning: LAWNs, ORNAMENTALs & FLOWERS

A must for vegetable gardens (helps to produce larger harvests with higher food value). Improves & encourages better and faster decomposition of compost piles. Used & proven by professionals throughout the world. One gallon of concentrate mixes with 24 to 48 gallons of water and covers from 3,000 to 6,000 square feet of soil (or lawn) areas.

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<th>Container Size</th>
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Cost for renovating, rebuilding and rejuvenating soils & lawns only . . . 8.0025 to 105 per square foot of application (when purchased in 55 gallon drums)

For More Details Circle (129) on Reply Card
Fusarium blight is sometimes called frog-eye spot because of the characteristic round circles that appear as early symptoms (shown above). Cool, wet weather favors the development of the fungus disease.

BY CHARLES L. COOPER*

HOMEOWNER PROBLEMS with sod have changed over the past eight years that I have been working in the Jackson, Mich., area. My area of responsibility now includes Jackson, Calhoun, Branch and Hillsdale counties. The two major centers of population are Jackson and Battle Creek, Mich. The sod grown in this area is Merion, Fylking and other bluegrass blends on organic soils.

During the first few years I worked in this area, the major homeowner sod problems were lack of fertilization, watering, thatch and powdery mildew. However, during the past three to four years, fusarium blight has become the most serious problem.

When the disease first began to show up, it was afflicting sod that had been established for four to five years. It then progressed to two or three years, and now we are finding it just one year after establishment, and in a few cases, even the same year.

This last instance may well involve sod that has been grown in the field for two years. You can drive through some subdivisions and the disease is very prevalent. Many of the people who have affected lawns have automatic watering systems or take the time to water properly.

As you know, benomyl (Benlate) is the only material registered for homeowner use. But there are very strong homeowner reactions when the cost of this treatment program is realized.

In 1973, one homeowner made three benlate applications at the rate...
of ½ pound per 1,000 square feet, as recommended. The grass recovered in 1973. On his 8,000 square feet of lawn, he had spent $150. This did not bother him too much until 1974, when the disease recurred just as bad as in 1973. If it was only a one-shot deal, it would not be as objectionable. But as an annual cost, homeowners rebel. Some ask, “What can I overseed with?” Others say, “I would have been better off seeding.”

This kind of image given to the sod industry is not a good one. Negative reactions spread very rapidly by word of mouth when a friend asks the homeowner how the lawn is. This area is a small part of the total market area when one-half of all Michigan sod goes out of state. However, because of the nearness to the producing area, there is also a higher percentage of homeowner lawns sodded here.

The problem is affecting our landscapers too as the customer blames them for so-called poor sod. There are major landscapers in the area who discourage the use of sod except on slopes. They say, “We have a lot less trouble and more satisfied customers with seeded lawns.”

As advisers to people on which method to obtain grass, we extension agents point out the advantages and disadvantages of both methods. With recent problems with sodded lawns and the reactions from owners, you begin to question the advisability of sodding.

In 1972 and 1973, Dr. Charles Laughlin, nematologist at Michigan State University, discovered a relationship between fusarium blight and the stunt nematodes (Tylenchorhynchus). During the summer of 1974, Dr. George Bird, also a nematologist at Michigan State, and I sampled nine problem lawns — all had stunt nematodes with the fusarium blight.

To demonstrate the effectiveness of nematocides, these plots were established on homeowner lawns. The treatments were benomyl, DBCP (nemagon), nemacur and a combination of benomyl with DBCP and nemacur. They all gave effective control.

At present, benlate is the only material registered for homeowner use. Last year, the purchase price ran from $10 to $15 per pound. Nemagon 8.6 EC, nemagon 12.1 EC and fumazone 86 E are all registered for homeowner use by commercial applicators. These are applied by the drench method. However, at present time, few commercial applicators are doing homeowner work. The previously mentioned materials plus nemacur are all registered for use by the sod grower.

The cost of the nemagon and fumazone treatments are considerably less than benlate and, if it can be obtained, perhaps under $50 per 8,000 square feet of lawn — this would be less objectionable to the homeowner on an annual basis.

The lawns infected with fusarium blight have come from at least five of six different sod farms in the Jackson and Lansing, Mich., area. One landscaper who is very concerned with the problem has brought samples of turf that he has just put down on a new lawn, and two samples had stunt nematodes present.

One grower indicated it was not his problem as long as no symptoms were showing on the turf. Another grower has cooperated with Dr. Bird and has set up a test area treated with nematocides.

What can the sod grower do to reduce the possibility of selling sod infected with stunt nematodes? There are three possibilities:

- **New varieties** — When Merion bluegrass began to show susceptibility, Fylking was found to be more resistant. Now it turns out to be more susceptible to fusarium. There are some new varieties on the market that look promising, but have they been on the market long enough to be sure of resistance?

- **Crop rotation** — Certain crops could be rotated with sod that reduce the stunt nematode levels in the soil. However, most of the crops are either not suitable to the organic soils or, like onions, potatoes and lettuce, require a completely different line of machinery, storage and marketing system. Also, at present prices, they are in worse economic condition than the sod industry.

- **Fumigation** — Costs of materials for the nemacur, fumazone and nemagon treatments would run about $70 per acre. On 4,000 square yards to an acre, this would mean a cost of two to 2½ cents per square yard. Most home lawns are 8,000 square feet or less, thus fumigation would cost only about $25.

I’m recommending the third alternative. The landscaper could fumigate the site, but because of the lot size, he is limited in equipment and it will increase the cost to about $50 per lot.

I believe the increased cost of fumigation by the sod grower could be passed on to the homeowner because it will be a better buy for him if the sod were sold on a nematode-free basis. It would be the best approach for the total industry as well.

In summary, the fusarium/stunt nematode relationship is a serious problem and will be even more serious in the future. Now is the time to take action where it costs the least and will have the least effect to the customer in cost and bad feelings at the farm.
Put a "gas blanket" between you and weed breakthrough.

CASORON— for years leader in orchard, nursery, landscaping and industrial weed control—is now approved for use under asphalt. Use it where weeds and roots do the most damage: recreational courts, bicycle and golf cart paths, paved sidings, airport runways, parking lots, etc.

**Works like nothing you've ever used before.** Applied as a granular or wettable powder over the subgrade, CASORON soon begins to emit a weed-killing gas. Once the asphalt is applied, it traps the gas creating a long time blanket and protection against weed growth and weed breakthrough.

**Why CASORON instead of sterilants:**
Simply because you can effectively kill weeds and stop root growth without risking damage to adjacent ornamentals. CASORON is a root inhibitor, ornamental roots will stop growing as they contact the gas blanket. They won't systematically translocate the herbicide. And they won't erupt through the blanket into the asphalt. Also, CASORON's blanket of protection stops weeds from germinating—but won't sterilize areas for future planting. **Other uses:** CASORON is highly effective around right-of-ways, curbs, landscaped areas and fences. Over 60 perennial and annual weeds and grasses can be controlled.

If asphalt is in your plans for the future, specify CASORON. It's a gas.

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For More Details Circle (127) on Reply Card
Drift Control Agent, Antifoam Introduced by Nalco Company

Drift. That's a dirty word to anyone who sprays chemicals, whether he is a custom applicator, a sod producer or a golf course superintendent.

Chemicals that don't make it to the intended target are simply wasted. Not only that, time and money is also wasted if respraying becomes necessary. But probably the most negative aspect of drift is the potential injury to the surrounding non-target vegetation.

While drift may never be completely obsolete, the Nalco Chemical Company of Oak Brook, Ill., is working toward that end with the promotion of a new drift control product — Nalco-Trol Drift Control Additive.

At a recent news conference for editors and broadcasters representing agricultural and non-crop vegetation markets, Nalco officials defined drift as the movement of spray particles or droplets away from the spray site before they reach the target plant. They emphasized that drift works against the applicator in his efforts to get the job done quickly and accurately. Usually, drift involves a physical movement of the droplets, but it was explained that drift can also include evaporation or vaporization.

According to John D. Ingraham, sales manager of Nalco's Agricultural Products Department, Nalco-Trol works by creating a cohesive stream of liquid, holding together some of the satellite spray particles. Droplets smaller than 150 microns are massed into larger particles.

Ingraham said laboratory research as well as extensive field applications have shown that Nalco-Trol can make a positive contribution to herbicide application.

"The ability to deliver more spray material to the target area has improved the overall application," Ingraham said. "We believe that Nalco-Trol gives the applicator, both aerial and ground, a valuable tool which will aid him in the wise and careful application of herbicides."

The Nalco-Trol anti-drift concept is unique among available methods in that it works with standard application equipment, Ingraham reported. Spray equipment that uses mechanical or bypass agitation does not have to be modified. Mix tank solutions and sprayed solution viscosities are maintained with the addition of Nalco-Trol.

Rates of the product are based (continued on page 36)

Committee Seeks Support For National Arbor Day Bill

In a special appeal to the International Shade Tree Conference, the National Arborists Association and the Society of Municipal Arborists, Harry J. Banker, executive secretary of the Committee for a National Arbor Day, requested an all-out effort to support passage of the National Arbor Day bill proclaiming the last Friday in April as Arbor Day.

The measure is a continuing effort on the part of the Arbor Day Committee to secure the passage of this legislation. With the support of many national publications and arboricultural, horticultural and agricultural organizations, the Committee was successful in having National Arbor Day bills passed in 1970 and 1972, resulting in the President's proclaiming the last Friday in April as National Arbor Day for those years only. Passage of permanent legislation in 1975 is the goal of the National Arbor Day Committee.

University Grounds Director Cited for Managerial Skill

Roy K. Rasmussen, director of grounds at the University of Nebraska-Lincoln, was presented an award for excellence in management at a meeting of the University Association for Administrative Development.

The annual award was established in 1973 to recognize University employees who demonstrate outstanding skills in management.

Rasmussen, who has been with the University for 10 years, is responsible for the care and maintenance of the outdoor areas of both the 213-acre City Campus and 170 acres on the East Campus.

Rasmussen was cited for the speed with which he has reclaimed landscaped areas torn up during extensive campus construction, his leadership in placing women in meaningful positions within the Department, his work with disadvantaged and hard-to-employ workers and his efficiency in emergency operations such as snow removal.
New Nematocide, Fungicide Introduced by ProTurf Div.

George Horn, director of marketing of the ProTurf Division of O.M. Scott & Sons, has announced two new granular control products — ProTurf Nematocide and ProTurf 101V Broad Spectrum Fungicide.

The nematocide is registered for professional use on turf to control 11 parasitic nematodes, including ring, root knot and stubby root. Designed especially for the southern United States, the product can be use on bahia, bermuda, zoysia and other Southern grasses. Requiring no mixing or measuring, application of ProTurf Nematocide is said to be quick and efficient with minimum interruption of turf area use. According to Horn, treated turf should show increased vigor and improved appearance within seven to 10 days. In most cases, he reported, the turf will be protected for six months or more.

The broad spectrum fungicide is a new contact formulated to combat a variety of fungus diseases. Horn said that 101V is registered for prevention and control of brown patch, copper spot, two strains of leaf spot, dollar spot and rust in bluegrass, bentgrass, fescues, ryegrass and dichondra. It is also said to prevent and control Alternaria leaf spot and other Southern grasses. Requiring no mixing or measuring, application of ProTurf 101V is said to be quick and efficient with minimum interruption of turf area use.

Sod Producers Association Honors Beard at Meeting

More than 170 sod producers, employees and industry representatives met at the recent annual midwinter conference of the American Sod Producers Association (ASPA) in Tucson, Ariz.

Dr. James Beard, agronomist at Michigan State University, received an honorary membership from the Association in recognition of his research and practical application of techniques in the development of the sod industry.
Remember the name because you're going to hear a lot about it. 0217® Brand Fylking Kentucky bluegrass lawn is something special. It forms a dense, thick turf, more disease and drought resistant. Greens up earlier, stays greener longer. Fylking can be cut low as ¼ inch, even ½ inch for home putting greens. Proven over many years of international certified testing. Ask your seed distributor for Fylking.

Robert A. Kenkel, appointed vice president of operations, Gravely Division, Clarke-Gravely Corp.

Stan Byers, elected president of Bunton Co., a manufacturer of commercial lawn and turf equipment.

Cassell Amend, named production and manufacturing coordinator, Agchem Division of Pennwalt Corp. Louis Janucik, Jr., appointed Agchem's sales representative in the Northeast.

Kenneth F. Geiger, elected vice president, corporate development, Velsicol Chemical Corp. Jim Bob Gibbs, appointed industrial vegetation specialist. Gary L. House, appointed manager, customer relations, Agricultural Business Group of Velsicol, and will be responsible for manning the company's toll-free Banvel herbicide "Hot Line."

John Beattie, appointed vice president of operations, Irrigation and Power Equipment, Inc., a wholly-owned subsidiary of The Toro Co.

Don F. Ward, joined Chemagro Agricultural Division of Mobay Chemical Corp. as a product manager. Jerry S. Philipp, appointed Chemagro's new Hawaiian field representative.

Cliff Helwig and E. E. "Joe" Bredeson, promoted to Par Ex territorial managers for Swift Chemical Co. Thomas H. Moore, joined Swift as Par Ex area sales manager.

L. Brinson Lanier and Mark Hollenbach, joined Thompson-Hayward Chemical Co. as agricultural sales representatives.

Patricia L. Cahn, named EPA director of public affairs succeeding Ann L. Dore who is now with the Washington staff of Union Carbide Corp.

Woody Young, appointed territory manager for Cal-Turf, Inc. Terry Hynes and Kevin Servatius, appointed sales representatives.

John A. Drenchek and David C. Heegard, named technical representatives for the ProTurf Division of O. M. Scott & Sons.

Jack A. Tiethof, appointed research chemist, Minerals & Chemicals Division, Engelhard Minerals & Chemicals Corp.

P. Russell Owings, named vice president of sales for L. R. Nelson Corp. The company also announced sales management appointments: Al Low, Jr., eastern; Elmo Dowling, southern; Richard E. Einfeldt, western; Dale Brown, midwestern; Rex Dixon, sales development manager for Landscape and Turf Division, midwestern and eastern regions.

U.S. Plant Patent 2887

Fylking selected as the World's Fair official grass.

Another fine product of Jacklin Seed Company
Call me today-TOLL FREE
I'll arrange a Ditch Witch Demonstration on your job site.

What's really the key to deciding what underground equipment to buy? Ditch Witch believes it is performance: the ability to do the work you need done, efficiently and economically. That's why your Ditch Witch man makes a standing offer to demonstrate Ditch Witch on your job site. Whether your underground requirements are large or small, there's a Ditch Witch that's exactly right: trenchers, vibratory plows, Modularmatics with broad job capabilities. Let Ditch Witch prove what it can do. Call today and arrange for a demonstration, when and where you want it. Look at Ditch Witch capabilities; compare them with what the competition has to offer. Then decide which equipment can do the job best for you. When you've considered everything, we believe you'll understand why we say . . .


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Ditch Witch . . . equipment from 7- to 195-HP.

DITCH WITCH

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P. O. Box 66
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IBDU works slower doesn’t have to

Sometimes the penalty you pay for well-fed turf is constant mowing. Especially when the weather’s hot and your grass gorges itself on extra nitrogen.

IBDU gives you a lot of green without a lot of growth. It feeds your turf slowly and steadily, regardless of the weather. IBDU is activated by water, while other slow release fertilizers depend on temperature and bacteria. The hotter it is, the faster they release. With IBDU, each hot day doesn’t send you running for the mower shed.

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so your mower work harder.

Par-ex IBDU contains just enough immediately-available nitrogen to green the grass until IBDU's controlled release nitrogen starts working. You avoid the flush of growth that comes after feeding.

IBDU carefully feeds your turf for up to 7 months. How much it feeds depends on how much IBDU you use, and how much you water.

IBDU gives you predictable turf response. And makes your grass grow greener, slower, longer.
on 100 gallons of spray and are expressed in a range of ounces. Mechanical factors such as pressure and nozzle type are calculated into the amount of Nalco-Trol needed. In addition, applicators should practice sound spraying techniques and have a knowledge of environmental factors affecting drift.

Speaking on some of these environmental factors, C. A. Smith, manager of Specialty Chemicals for Nalco, said drift is influenced by temperature, humidity, droplet size, horizontal and vertical air movement, as well as wind speed, pressure and height of nozzles. “All of these factors must be taken into consideration to minimize drift,” Smith said.

Also introduced at the news conference was another Nalco product, 2151 Pesticide Antifoam. The product was demonstrated, and it was explained that as little as one-half to two ounces of the antifoam in a spray tank would reduce foaming caused by pesticides interacting with water. The product is said to not interfere with the action of surfactants or other spray adjuvants. Its primary advantage is reduced foaming during mixing, thus permitting the applicator to completely fill his spray tank.

Pledging Nalco’s commitment to solving water-related problems of the agricultural industry, R. W. Graff, group vice president of Nalco Chemical Company, related some of Nalco’s background to the group.

According to Graff, finding an industry’s needs and filling them through water technology has accounted for a large segment of the company’s growth.

Regarding the introduction of the two water-related chemicals for pesticides applicators, Graff said, “Typically, we will penetrate a new market with our products and as we become familiar with the market and its problems, we try to expand our service to it.”

“Nalco is in the business of selling specialized technology,” Graff said. “The chemical products we manufacture are the tools we use to provide the technology to industry. Customers buy the results produced by the proper application of our products rather than the chemical composition of our products.”

Right, top: Drift, a real problem in the application of any pesticide, is influenced by many factors. Bottom: The addition of Nalco-Trol to the spray solution noticeably reduces the number of fines (small drift droplets).

Holding an informal conference outside Stewart Center at Purdue University are the newly elected officers of the Midwest Regional Turf Foundation. From left are: John Spodnik, superintendent, Westfield Country Club, Westfield Center, Ohio, president; Danny Quast, Milwaukee Country Club, Milwaukee, Wis., vice-president; and Dr. William H. Daniel, Purdue turf specialist, re-elected executive secretary. More than 650 attended the conference.

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If you service lawns, or plan to, we have a complete “automated lawn service” management, training and marketing program available, free with your LAWN MAKER combine. This machine is also excellent for Greens.

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| For More Details On Preceding Page Circle (118) On Reply Card |

36
Toro's Mobile Turf Service Expands By Five New Units

The Toro Company's mobile service program for turf products — vans fitted with spare parts and diagnostic and repair equipment and staffed with trained technicians — will be extended this year to reach more than 35 percent of all Toro turf products in use in the U.S.

James Maloney, national service manager for Toro's Turf Products Group, said the additional units will all be in service before the end of March. They will be operated by Toro distributors in Florida, Wisconsin, Connecticut, Massachusetts, Rhode Island and Louisiana.

The new units are scheduled to go to these Toro distributors:

- Hector Turf & Garden, Inc., Miami, covering south Florida.
- Gulf Shore Turf Supply, Inc., Pensacola, for the northern Gulf Coast area, Louisiana and parts of Mississippi and Alabama.
- The Clapper Company, West Newton, Mass. This will be Clapper's second unit for expanded coverage in eastern Massachusetts (including Cape Cod), New Hampshire and Rhode Island.
- Reinders Brothers, Inc., Elm Grove, Wis., for central and eastern Wisconsin and Upper Michigan.
- Turf Products Corp., South Windsor, Conn., for most of Connecticut.

Units of the "Red Wagon Fleet" are already operating in the following areas in addition to the Clapper program in Massachusetts: southern California; north, central and western New York; greater Chicago; central Tennessee, Kentucky and parts of southern Indiana and Illinois; the metropolitan areas of Baltimore and Washington, D.C.; and the Tampa-St. Petersburg region of the Florida Gulf Coast.

The mobile units, developed to help eliminate costly downtime for turf maintenance equipment, provide emergency as well as scheduled service. They are equipped to provide factory parts replacement, reel and bedknife grinding and lapping, and repairs to engines, hydraulic systems and transmissions for mowers, seeders, sand rakes, and other turf equipment.

The units are operated by mobile service specialists who have graduated from an intensive training program at Toro headquarters in Minneapolis, Minn. The operators are required to take refresher courses at Toro's new turf products training school, which recently opened in the Minneapolis suburb of Eden Prairie, Minn.

Consulting Arborists Society Convened In St. Petersburg

The American Society of Consulting Arborists (ASCA), recently met in St. Petersburg Beach, Fla., and presented papers on tree evaluations, tree care and the liability of its members to possible suits from poor judgment or malpractice.

The past year's work of the Evaluation Committee with the Internal Revenue Service (IRS) and the Homeowners Division of the Insurance Services Office appears to (continued)
Northrup King introduces a new Kentucky Bluegrass concept:

**Aquila/Parade**, working as one perfect blend

The Northrup King formula for the nearly perfect Kentucky Bluegrass: $1 + 1 = 1$. That's two superbly compatible bluegrasses—Aquila and Parade—working as one to create an outstanding blend component.

For a long time, turf researchers have been looking for the “perfect” Kentucky Bluegrass. They haven’t found it. They’ve come up with some excellent varieties but not that one perfect cultivar.

Northrup King has been seeking perfection, too. And, taking a different approach, we think we’ve come very close to it.

**Perfection, a team concept.**

Since all known grasses have some sort of weakness, why not select a team of two grasses—with each member of the team possessing compensating strengths—and blend them in a way that’s practical for use by turf professionals? This is precisely the approach Northrup King has taken.

For ten years, our researchers have sought two superior and superbly compatible Kentucky Bluegrasses to form a high-performance, low-maintenance “blend-within-a-blend”. In Aquila and Parade, we’ve found the pair we’ve been after. Let’s look at these two grasses, first as individuals and then as the Northrup King team of Aquila/Parade.

**Aquila for persistence.**

Bluegrass turf that’s been established for three to five years tends to require significantly more maintenance in order to keep it dense and healthy. Aquila Kentucky Bluegrass provides a striking exception to this fact of turf life.

Once established, Aquila holds its density and color and maintains a healthy weed-resistant stand for longer than five years, even under low or moderate nitrogen fertilization. It also requires less moisture to maintain its color and shows tolerance to moderate drought conditions. It has a medium leaf width and attractive dark green color for textural and esthetic compatibility with a wide range of turfgrasses. Aquila is, on its own merits, a remarkable Kentucky Bluegrass. And we’ve teamed it with another:

**Parade for durability.**

The particular strength of Parade Kentucky Bluegrass is that it develops a tough sod fast. It withstands traffic better than many bluegrasses and can recover quickly from injury, making Parade excellent for athletic fields, golf courses, fairways and other high-traffic areas. With its pleasant dark green color and moderately broad leaf width, it’s compatible with many turfgrasses. In combination with Aquila, it forms a nearly perfect blend component.

**Aquila/Parade: low maintenance, high performance.**

Together, Aquila and Parade give you a bluegrass component with more advantages than any single cultivar we’ve ever seen or heard about.

The Aquila/Parade team requires moderate amounts of fertilization, water and general care—factors that should help your maintenance budget considerably. Yet, in concert with other grasses that meet your requirements, Aquila/Parade will provide a uniformly attractive turf that establishes early and lasts straight through into fall. This blend component will also stand up well under traffic and give you good disease protection.

**Aquila/Parade is ready. Now how do you use it?**

Northrup King is committed to the blend concept, as are many turf experts today. Our experience convinces us that a good com-
Two bluegrasses to form a nearly component.

A combination of grasses will give the best performance. So we look upon Aquila/Parade as a component to be blended with rye, fescues, other bluegrasses and/or whatever your particular conditions warrant. And, we'll gladly help you formulate the proper blend.

If you'll fill out the form below, we'll give you our professional recommendation as to the best blend, using Aquila/Parade as a component. We hope you'll take us up on this offer, because we think the Aquila/Parade team is the most important Kentucky Bluegrass concept to date—as close to perfection as anybody's been able to get.

AQUILA PARADE
KENTUCKY BLUEGRASSES

Northrup King will recommend a blend, using Aquila/Parade, customized to your specific needs.

Just fill out this form and send it to Aquila/Parade, Northrup King & Co., 1500 Jackson St. N.E., Minneapolis, MN 55413.

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For More Details Circle (144) on Reply Card
NEWS (continued)

offer promising results in the near future. The Committee reported that insurance claims on damaged trees may soon be raised from the present $250 per tree to $500 for the common homeowner’s policy. The work of ASCA members L. C. Chadwick, F. R. Micha, R. Gustin and V. Curtis on the Evaluation Committee indicates that IRS may give homeowners a better break for casualty losses on trees.

From the University of Florida, Dr. Williard Witte brought ASCA members up to date on fertilizing practices for shade trees and Professor Charles Anderson gave members the guidelines for evaluations on citrus and pecan orchards.

The International President of the American Society of Appraisers (ASA) George Sinclair and Executive Vice President Dexter MacBride worked with ASCA members in possible ways of setting up a new category for ASA to approve the ASCA members as senior members of their Society.

At the final business meeting, the following ASCA officers were elected for the coming year: O. J. Andersen, Texas, president; F. Earle Martin, Ontario, president-elect; William P. Lanphear, Ohio, vice president; and F. Lewis Dinsmore, Missouri, secretary-treasurer. Directors for the coming year will be Walter J. Barrows, California; Nat Dunn, Tennessee; Arnold Webster, Iowa; Wilfrid Wheeler, Massachusetts; and W. Roland Shannon, Pennsylvania. Spencer H. Davis, Jr. of Rutgers University in New Jersey was reappointed as executive director.

O. J. Andersen (left) receives the gavel from the outgoing ASCA president, W. Roland Shannon. The gavel and block are from the Joyce Kilmer Oak which was on the campus of Rutgers University in New Brunswick, N.J.

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  - KOKET. A low growing chewings fescue known for its bright green color and adaptation qualities which allow it to grow well, even under adverse weather and soil conditions.

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Financing Municipal Golf Courses

Fifty years ago, most golfers played at private clubs. But the increasing popularity of the game, combined with growing population and affluence, has reversed the picture. Today, 45 percent of all golfers play municipal facilities, 35 percent play at daily fee courses, and only 20 percent belong to private clubs.

The growing popularity of the game has created an acute shortage of golf courses.

As the nation grows more concerned about physical fitness and preserving its greenbelt areas, municipalities become more interested in providing recreational facilities in natural settings. Developing new golf courses meets both needs. A high-caliber golf program is also influential in attracting new industry and business to a community.

Most municipal golf courses are financed through the sale of general obligation bonds. Such financing is based on the municipality's credit and taxing power and must be approved by the public.

Many municipal golf courses have also been financed through tax-exempt revenue bonds, payable from the net income derived from operating the course. Depending on state statutes, revenue bond issues may also require public approval.

However, there are additional financing options available to municipal planners. All should be explored to select the best plan for the situation. These additional options include the following:

(continued)
A Legacy of Parks — The Surplus Property Program: Federal government properties declared surplus are made available as parklands to local governments through 1970 legislation. State and local governments are notified of availability and can apply for title to the Bureau of Outdoor Recreation. The federal government deeds this land at little or not cost.

Land and Water Conservation Fund: The Bureau also makes matching grants to states and, through them, to municipalities for public recreation areas including golf courses. To qualify, a state must develop a comprehensive statewide outdoor recreation plan and update it regularly.

Farmers Home Administration Loan Program: To develop facilities for use in rural areas, the Administration is authorized to make loans to communities unable to raise funds from commercial sources. Applications can be made at county offices of the Administration.

For a copy of a list of federal assistance programs related to outdoor recreation, write U.S. Government Printing Office, Superintendent of Documents, Washington, D.C. 20402. Interested communities can obtain a list of golf course architects by writing: American Society of Golf Course Architects, 221 N. LaSalle St., Chicago, Ill. 60601.

SHUTOUT (from page 15)

After the greens become established, Moolenaar slacks off only slightly with his fertilizer and spray program. All through the winter months, the greens are sprayed every 10 days to 2 weeks on a routine basis. They are fertilized every 2 weeks for a more consistent fertility level. Heavy applications at less frequent intervals would be leached out through the porous soil by heavy rains.

Because of the extreme heat on certain days, he waters 3 to 4 times each day but for only a short period of time. “This keeps the greens cool and gets the seed off to a good start,” he states.

Normally, Moolenaar tries to water the greens in the morning while covering the fairways at night.

Getting his greens off to a good start has rewarded him with a long, healthy stand throughout the spring. “We had rye here last year until May, although it was beginning to thin out a bit in April,” he says.

“Mr. O’Malley (Walter O’Malley, owner of the L. A. Dodgers) is an avid golfer as well as a baseball fan,” says Moolenaar.

“He encourages all of the players to get out on the courses.”

“In fact, the Dodgers use the courses to build good community relations with the people of Vero Beach. Each year they host a tournament where the Safari Pines members and the Dodgers get together. Each foursome includes a team member. The community really supports the team, too,” he says.

After the baseball players leave in April, Moolenaar takes a breather — but it’s a short one. He has to get the complex in shape for the arrival of the New Orleans Saints football team in mid-July. Last year was the first year that The Saints leased the facility for summer camp—but he looks forward to having them back on a regular basis.

“They cleats aerify the outfield for me,” he says.
1975 Special Chain Saw Section
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For More Details Circle (146) on Reply Card
Proper Handling For Chain Saw Safety

By BLAKE STRETTON
Vice President, Stihl American, Inc.

IN THE HANDS of an experienced, capable operator, a smooth running chain saw is a high production harvesting tool. It can be a pleasure to watch a skillful operator using a chain saw effortlessly as if it were a part of himself. Some of these men are “artists” who never appear to waste a single movement and are capable, productive and safe chain saw operators. This requires experience, alertness, concentration and, above all, knowledge. Knowledge in the case of safety refers to understanding the potential hazards and the limitations of the operator himself and his chain saw.

What Causes Accidents?
Three basic factors must be considered in examining possible chain saw related accidents: the environment, the operator and the machine. Environmental factors include terrain, ground cover (understory), timber type and density and, of course, the weather. Operator factors involve training, experience and skill to recognize unsafe acts or conditions. Alertness and attitude are also important, plus attention to such details as footing, clothing and personal protective gear. But the major cause of accidents is fatigue.

Machine factors involve selecting the right size and type of chain saw and cutting attachment, in addition to proper maintenance. Weight and balance are important for safety, as are handling characteristics. Noise, smoke and vibration contribute to operator fatigue. Ease of maintenance, elimination of fire hazards and availability of special protective safety devices also should be considered.

One of the less obvious environmental factors is ground cover. Thick brush, heavy blowdown and soft or loose rocky ground certainly affect footing. Since man is a two-legged animal, his own balance is vital, especially when he has a chain saw in his hands! The timber type and density can affect his cutting technique and present varying degrees of hazard. Rain, snow, ice or wind can double the hazard since they can affect mobility, footing and the operator’s grip on the saw. Frozen wood reacts to cutting and splitting quite differently from wet or green timber. The weather affects the operator’s mental attitude as well (who can possibly feel good when every branch you touch with your hardhat pours half a cup of icy rain water down your neck?)

Training, Experience and Supervision
Many progressive companies engaged in wood harvesting have initiated training courses for their chain saw operators. Most chain saw companies are usually willing to provide maintenance and operating instruction, and a few provide some form of operator safety training. Many of the timber companies who have such training programs can also point to their safety records with a great deal of pride.

Experience cannot be acquired merely by instruction, but good supervision is important. Supervisory staff should be quick to point out any unsafe acts that they observe saw operators performing, and to help the operators recognize potential cutting hazards on the job.

An operator’s personal health can also affect his mental attitude and alertness. No responsible supervisor will allow a man who is “not really feeling well” to operate a chain saw, or they are both asking for trouble.

No supervisor should allow a chain saw operator on the job without proper personal protective gear and proper footwear or clothing. This includes a hardhat, with or without screen visor. Goggles are not always the best since they fog up, get covered with fine saw or bark dust, and can limit the operator’s peripheral vision range.

Good fitting boots with steel toe caps are needed, and they must be in good repair.

Durable, properly fitted clothes are also important to safe operation in the woods (too snug can affect mobility and too loose can catch on brush or tangle with the saw). Hearing protection should also be considered, depending on the brand or model of saw being used. Fatigue is one of the biggest factors contributing not only to chain saw mishaps but all industrial accidents.

Fatigue and Handling Ease
Many characteristics of the chain saw itself can contribute to fatigue. These include vibration, noise and exhaust smoke, as well as balance, handling and control of the saw. Chain saws vary greatly in such areas as design, construction, power output, balance, handling and reliability. But let’s talk about the machine factors: To help in selection of the right tool for the job and to provide some guidelines for the selection of a safer tool, here is a “checklist” of design parameters that apply to any chain saw used in commercial cutting.

Weight and Power
Low weight is useless if the unit is so flimsy that it lacks durability and reliability, or has limited fuel and chain oil capacity. Don’t be misled by “dry weight — less bar and chain.” Some saws run considerably longer on the same quanti-
Sawdust and other debris allowed to build up under sprocket housing can cause improper alignment of the guide bar, leading to poor cutting performance. Left: Proper fuel preparation is one of the most important aspects of chain saw maintenance. McCulloch saws operate on a 40:1 fuel/oil mixture. Above: Instructions for carburetor adjustment, if necessary, are contained in the owners manual. Following procedures can help the operator obtain maximum performance and reliability.
A Maintenance Schedule for Cost Cutting

By DAVE KIRBY, McCulloch Corporation

DEPENDING on how you care for it, a chain saw can be either very expensive or relatively inexpensive to maintain.

Unless cutter teeth are properly sharpened and lubricated, the chain, bar, and engine will be subjected to premature wear, resulting in rough, slow cutting.

Following are tips for long, reliable use:

1. Keep the chain sharp. A properly sharpened chain will feed itself into the wood. If you must force the chain saw or have difficulty making a straight cut, immediately resharpen the cutters and/or lower the depth gauges.

2. Keep the chain fitting properly. When the engine is stopped, the chain should not hang down below the bar. It should be as snug as possible to the bar and still be loose enough to be easily pulled along with a gloved hand.

3. Rotate your cutter bar. Because most wood cutting is done with the bottom side of the bar, turn it over every four to six hours of cutting to avoid excessive wear, which can cause chain damage.

4. Lubricate chain adequately. This may be the most important single maintenance item for your chain saw. Skimping on chain oil will increase maintenance and repair costs.

On saws with only manual type oilers, a full stroke should be made every 10 to 15 seconds while cutting. Automatic chain oilers will deliver adequate oil except in very dirty, dry wood or while boring with the end of the bar. In these cases, the manual oiler should be used.

A good practice is to check the chain oil reservoir each time fuel is added. Under normal conditions a reservoir of oil should be used for each tank of fuel.

5. Use proper and recommended oil in the fuel mixture. When a two-cycle engine is operating at 7,000 to 8,000 r.p.m., there is a little margin for error in the amount of lubrication provided by the fuel.

Chain saw cylinder temperatures are as much as 200 degrees higher than those of other engines. Oil must be able to withstand the higher temperatures without breaking down.

A chain saw user should not attempt to save maintenance dollars by using the same type of oil for his chain saw that he uses for his car, lawnmower, truck, or other equipment.

Here is a checklist of additional saw maintenance procedures:

- Remove and clean air filter regularly.
- Clean the external engine and cylinder fins regularly.
- Check and tighten fasteners every day the saw is in use.
- Ask for use and maintenance training from your chain saw dealer.

Even more important than using proper maintenance procedures is the observance of safe handling practices — especially by the first time or infrequent chain saw user.

Following are chain saw handling tips compiled from McCulloch Corporation's booklet, "Chain Saw Operation," available at McCulloch dealers or directly from the company.

1. Starting. Place the saw on the ground or other firm surface before starting. Make sure the chain and bar do not touch anything. Grasp the top handle firmly and pull quickly and evenly on the starter cord. After starting, guide the starter cord back onto the take-up reel. Do not let go and allow it to snap back.

2. Cutting. Always maintain control with both hands and avoid making cuts above shoulder height. Never cut a limb or other wood directly overhead. Stay alert; the sound of a chain saw engine can drown out warning voices or audible signals. Cut as close as possible to the base of the guide bar; attempting to cut with the tip of the bar can cause "kickback."

3. Between cuts. Stop the engine whenever doubtful about safety or cutting performance and when moving between cuts. Check the wood carefully for nails, wire or other metal. Have a second person within calling distance whenever working with a chain saw.

4. Felling. Many factors determine safe practice in cutting down a tree, including the tree's size and condition, its lean, other trees in the area, terrain and wind conditions.

First, determine a retreat path to follow when the tree begins to fall. Make an undercut in the direction the tree is to fall. This cut forms a wedge about one-third the diameter of the tree.

After the undercut is made and the wedge removed, stop the engine and move around to the back of the tree for the back cut. This is a straight cut slightly higher than the undercut. Do not cut clear through to the undercut; a small "hinge" should be left to guide the fall of the tree.

6. Limbing and pruning. Limbing is the removal of branches from a tree that has been cut down. Pruning is the removal of branches from
Keep your saws sharp and in good repair with precision-engineered chain saw service tools. Sharpen and repair right on the job. Precision-sharpened saw chains cut faster, increase the life of saw chains, and add engine life, too. Shown are but 4 of a line of tools, yet inexpensive, chain saw service tools & attachments. See them at your tool supplier, or for additional information contact us.

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**Mini-Mill Lumber-Making Chain Saw Attachment.** Make your own lumber with a chain saw. NEW! MINI-MILL attachment when combined with a chain saw makes smooth, ready-to-use lumber from logs. In addition, MINI-MILL can be used as a portable power saw in making time-saving square cuts and angle cuts. Clamps on in seconds, no holes to drill. One size fits most saws. Easy-to-operate, no moving parts. Comes complete with metal guide rail. Order as MINI-MILL G-555.

**Chain Saw Attachment.** Brush, Tree, Hedge & Weed Trimmer. Attaches in seconds. Converts lightweight chain saw into powerful growth trimmer. For cutting brush and weeds, shaping and pruning trees, and trimming hedges. Order as Chip-N-Trim, sizes 12" to 21".

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The Association lists three primary unsafe acts which lead to injury accidents:

1. Failure to use mechanical means to safely pull a lodged tree — one which fell partially and is suspended by other trees — to the ground.

2. Failure to remove potential overhead hazards such as dead standing trees (snags) and limbs which are loosely hanging overhead prior to cutting.

3. Carrying out felling operations while other personnel are in close proximity.

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**WEEDS, TREES and TURF**
The Lightweights: 
Little Saws for Big Jobs

By JERRY KARTHEISER, Product Manager, Skil Corp.

USE and application of lightweight chain saws is well known to many members of the Green Industry who earn a sizeable percentage of their income with chain saws. But for those whose familiarity is limited to an occasional limb removal, merits of lightweight chain saw use should be carefully considered.

For starters, we will be “basic”: why use a chain saw?

The casual user may submit just one reason: easier cutting. The commercial user sees this as a major factor, too, but he finds other benefits:

**Faster cutting.** For the man who must cut wood as part of his occupation, time is money. Where a golf course superintendent may want to lop a few branches, the commercial user may have five or ten trees to cut or trim, or several cords of firewood to prepare, and he wants to finish this task and move on to another. The chain saw provides a cumulative savings in time which can have practical workday values.

**Versatility.** A chain saw will handle probably any outdoor cutting of wood that can confront, for example, a nurseryman or a golf course superintendent. It will cut any type of wood. And it can zip through the odd cutting job that crops up every so often.

**Safety.** The chain saw minimizes the body movement and exertion that, with a manual saw, can pose possible safety problems while working up in the branches of a tree.

If the merits of the chain saw have been established for the commercial user, the next decision is whether to buy gasoline or electric.

The first point to emphasize is that, when both types are the same size and power output, there is no difference in cutting ability.

The first and most obvious difference between the two is accessibility to the job at hand. This of course eliminates the electric-powered chain saw from many applications. And the much greater portability of the gasoline-powered saw has advantages even where a source of electricity is available.

The electric, on the other hand, has advantages where its use would be indoors or in or near public areas. It’s quieter and has the merit of not producing exhaust fumes.

Some more pro’s and con’s on the electric saw:

—There’s no problem in starting nor with the possibility of running out of fuel . . . worth consideration when the job at hand is in an awkward location such as up in a tree.

—The electric chain saw generally is less expensive at retail than the gasoline; maintenance also will tend to be less expensive.

—On the negative side, distance from a power source has another limiting effect on the use of an electric chain saw. It operates best within the limits of a 100-foot extension cord. Beyond 100 feet voltage begins to drop, and beyond 150 feet the saw will not provide consistently effective cutting.

Special features in today’s lightweight chain saws contribute to their versatility and make them an even more efficient partner in heavier cutting operations.

Gasoline models, and some electric chain saw models, have a centrifugal clutch which disengages if the chain gets bound in the cut, a periodic occurrence when cutting large-diameter trees and branches. This clutch action . . .

—reduces the chance of kickback;

—reduces possible risk when working in a tree;

—reduces load on the saw and thus helps prolong its life.

Another “plus” in modern lightweight chain saws is their fuel capacity. With certain models the operator has up to 15 or 20 minutes of cutting time available, an attribute which permits railroad or power line right-of-way work far from the base of operations.

How big a chain saw is needed? Almost all chain saw work in the applications considered here can be handled by 10, 12, 14 or 16-inch cutting bars. The effectiveness of today’s saws means that a chain saw with a 16-inch bar will make an efficient 16-inch cut, and an efficient 32-inch double cut.

A 100-ft. extension cord gives a good bit of mobility — and utility — to a lightweight electric chain saw.

Positioning of the cutting bar on this 16-in. gasoline chain saw enables the operator to cut close to the tree trunk.

APRIL 1975
Important factors in operating a chain saw safely are good footing and a clear area.

reliable guide to power output, either. Some makes of chain saws derive much more power per cubic centimeter or cubic inch than others. Always compare two saws with the same chain and guide bar length, because the type of bar and chain can greatly affect cutting speed.

Balance and Handling
Look for excellent balance in both felling and bucking attitudes. This makes a saw "handle better" and feel lighter which, of course, reduces fatigue. Look for a low, narrow profile, a smooth bottom and an exterior with no sharp corners, exposed linkages, oil lines or parts that will catch on clothing or brush. Try the saw "limbing" to see how it handles.

Note the controls. Are they simple? Positive action? Within easy reach of the control hand? Does it have a throttle trigger interlock? (This means the operator "control" hand must be firmly in place before the throttle can be opened.) Are all rotating parts enclosed? (except the chain, of course) Is it equipped with a front hand guard? (to prevent the "holding" hand from slipping onto the revolving chain.) How about a rear or "control" hand from whipping brush, stubs or a broken chain "flying" as well as accidental activation of the controls. Some saws are available with an automatic chain brake that stops the chain in the event of a kickback in less than two-tenths of a second.

Before you can hire handicapped people, you've got to know where to find them.

If you are interested in hiring people who have overcome their handicaps, hard-working, skilled men and women, write to your State Director of Vocational Rehabilitation.

Tell him what kind of business you're in. What job openings need to be filled. And he'll put you in touch with the right people for your company or organization. People who will work to their fullest potential. And help your company—and our nation—prosper.

Write: Director, State Department of Vocational Rehabilitation at your state capitol.
Note the direction of the exhaust gas and cooling air discharge. Is it away from the operator? Is he protected against contact with a hot muffler surface?

Does it have an automatic oiler? This lets the operator concentrate on more important things than keeping his chain and bar properly lubricated. Does it have a flow adjustment for this lubrication to conform to timber type and size, season, temperature, and larger length bar and chain? Does it pump at idle, wasting oil and making a slippery mess? Do the chain saw tanks hold enough, and are the fuel and lubricating tanks integrated to avoid bothersome and unnecessary refilling stops?

Is the spark plug located where it will not shock the operator if it has a leaky "boot"? (This can surely make a man jump at the wrong time.) Does it start easily? (Some accidents have been caused by an exasperated operator violently yanking on the starter cord of a balky saw and soon finding a running saw in his lap.)

Noise, Smoke and Vibration

Check the noise level. Observe the muffler design, location, construction and shielding for the operator against hot surface contact. Under the Walsh-Healy regulations, some brands of saws can be run twice as long as others without hearing protection. Not only has noise been proven to effect fatigue, but it prevents voice warnings or the "crack" of a tree going over from being heard easily.

Can it be equipped with an approved U. S. Forest Service Spark Arrestor Screen? How about smoke and exhaust fumes, which can restrict vision and produce nausea? Can it use a low oil/fuel ratio mix? This eliminates most smoke, reduces carbon build up in exhaust ports and actually extends spark plug life.

Try the saw to feel the vibration level. Vibration like noise, induces fatigue. Does the saw have an anti-vibration system? Does moving the saw within the vibration mounts affect the throttle action? This could hold the throttle open at the wrong moment.

Fire Hazard Reduction

Note the location of the fuel tank and the filter opening size and location. Some saws have a "drain" for the carburetor chamber immediately above the muffler! Can it spill on the spark plug or high tension lead? Is the muffler shielded against contact with dust, dry moss or needles? Is sawdust discharge easy and direct? Some saws have places where oily chips can build up in the muffler area, presenting a potential fire hazard.

Selection and Maintenance

Guide bar nose contour must match the chain being used. If the "geometry" of these two parts is not correct, particularly if the guide bar nose radius is too large, it can cause very severe kickback during nose contact with the wood.

One serious hazard in the woods today is the so-called "safety" chain. There is no such thing as a safe chain. As one safety director put it — "if it will cut wood — it will cut people." These chains are best referred to as "reduced" or "anti" kickback chains and do help to reduce kickback during certain types of limbing and brushing operations. Remember that the best and safest cutting attachments designed are also only as good as the maintenance they receive.

Many sharpening and maintenance publications are available from chain saw manufacturers and replacement chain manufacturers. Some companies also conduct "clinics" and maintenance classes. Simple tools are available to aid in better sharpening, jointing and maintenance of cutting attachments. These tools are a good investment since any chain that is properly and evenly sharpened (and jointed) is a smoother cutting, safer chain. A shop type chain grinder is also a good investment since it produces more consistent results.

Over the years, Stihl-American, like other conscientious chain saw manufacturers have diligently worked at making their saws safer more dependable.
Crabgrass and Poa annua never see the light of day.

These unsightly pests can be controlled effectively with DACTHAL® W-75 Turf herbicide. Give desirable grasses room to grow and flourish. Grassy weeds...and many broadleaves...never come through the ground, because DACTHAL controls weed seeds as they germinate.

Golf course superintendents use DACTHAL on fairways and tees. DACTHAL is also used extensively on parks, industrial and commercial lawns, and by turf-care contractors — anywhere professional turf management is practiced.

DACTHAL breaks down quickly...is not overly persistent in the soil. Tough on crabgrass, but nice to grass.

Don’t let the sun rise on weed-infested turf. Use DACTHAL W-75.

Diamond Shamrock
AGRICULTURAL CHEMICALS DIVISION
10 Steps to Improved Cutting

By FRANK MCDONALD, Product Mgr., Pioneer Chain Saws

A PROPERLY FILED and jointed chain on a chain saw adds life to your machine by allowing it to cut faster and smoother at minimum engine stress.

But you won't get more life out of your saw just by taking a few quick whacks at the chain with a file. To assure maximum life and performance from your saw, adopt the following step-by-step guide to joint and sharpen the chain properly:

1. Clamp the chain in a vise to prevent the chain from moving sideways as you file it. Chain movement restricts ability to control the plane and achieve an even cut. Furthermore, placing the chain in a vise assures optimum control because you can use both hands on the file to prevent biting and skipping. If your chain needs limited touching up, but you are in the field where a vise isn't available, increase the chain tension to minimize movement.

2. Select the correct size chain saw file. You can determine proper size by consulting your owner's manual or a dealer, who will need the chain pitch and brand to help you. Incidentally, use the next smaller size file when cutters on the chain are worn back halfway. It will be easier to obtain the correct undercut and side plate angle.

3. Place the file in a cutter opposite your side. The sharpening angle may vary depending upon the type of chain, but manufacturers generally suggest you hold the file parallel to cutting edge at 35 degree bevel angle with the side plate edge 80 to 90 degrees from the cutter's base line. If you follow these instructions carefully the top plate undercut or cutting angle will be correct. This angle, which makes the chain pull itself into the wood, results from the side plate angle and the file position relative to being horizontal. These angles will give satisfactory performance under average cutting conditions.

4. Always let one-fifth of the file diameter protrude above the cutting edge to assure the correct undercut. If the file is held too high, the cutter will have a blunt and slow-cutting edge. Stress and extra pressure required to make it cut will produce wear and eventually break the chain. Similarly, a thin and quick-dulling edge (with hook) will result if the file is held too low. A hooked cutter will tend to grab while cutting and cause wear on the guide bar rails.

5. Keep the file snug to the top edge of the tooth and apply two or three firm strokes against the edge. The outside surface of the cutting edge is very hard (chrome plated), so you'll preserve the file by pushing it outward in a straight line. Filing in a straight line can be assured by stiffening your wrist and pretending your underarm is a solid extension of the file.

6. Leave the file in the cutter between individual filing strokes. However, apply pressure only on the outward stroke and move the file away from the cutting edge on the return stroke to avoid dulling the edge. Never remove more metal than necessary, and finish all cutters on one side before doing the other side. Your best measure of sharpening accuracy is a visual check to make certain the cutters are not back sloped or hooked, which are two common sharpening mistakes.

7. Next check the joint clearance, because correct joint height is vital to a fast cutting and smooth operating chain. The joint may vary depending upon the manufacturer, but the normal joint on chains is 0.025-inch.

8. Use caution if more joint is required, because an improper joint (continued)
will cause excessive wear and shorten the life of the bar and chain. Excessive joint will cause cutters to bite too deep, forcing chain to grab and overload the engine. Conversely a shallow setting will prevent cutters from biting into wood.

9. Correct improper joint either with a flat file or a jointing gauge but, whenever possible, use a gauge for optimum results. When jointing with a flat file, a steady firm stroke will remove 0.002 to 0.003 inch of metal. File all depth gauges with an identical number of strokes and pressure. To protect against excessive jointing, never make more than two passes of a file before retesting the joint. Two passes with a file will remove about 0.005 inch of metal.

10. When using a gauge, set the filing block to the desired joint. Place gauge on chain so the depth gauge protrudes through the hole in the filing block. Hold the gauge firmly with your left hand and file down depth gauge to top of the filing block. Always file depth gauges from the same side of the guide bar.

Hold file parallel to cutting edge at 35 degree bevel angle with side plate edge 80 to 90 degrees from cutter's base.

Remove Tree Stumps in Minutes with Eager Beaver's carbide tipped triple-level cutting blade. Clean up more easily because flexible shield gathers debris. Locking kickstand is spring-loaded; keeps blade above ground when starting engine. Narrow enough to pass through a gate; light enough to eliminate lawn damage. Write for details.

For More Details Circle (175) on Reply Card

Full Vision
Box 647 • Newton, Kansas 67114
Phone (316) 283-3344

Joint clearance is vital to fast cutting and smooth operating chain. The normal joint on chains is 0.025-inch.
Reversible cutting bar fells trees 32" in diameter.

Sprocket-nose bar improves bar life and cutting efficiency.

All position carburetor maintains same performance regardless of the position of the saw.

Conveniently grouped controls provide easier operation.

Automatic oiler with manual override.

Centrifugal clutch, same as used in larger professional models, permits engine to idle without rotating chain.

Piston-ported engine improves starting, idling and acceleration and gives constant cutting power.

Front and rear handles placed for best balance, comfort and control.

This lightweight can really cut it.

Here's a genuine lightweight chain saw that supplies the muscle professionals need. Get a grip on the Skil lightweight, and clear that underbrush, fell 32" trees, and cut logs into a winter's worth of firewood. Skil can handle it.

Take a look at the features. It's the powerful lightweight you've been looking for. It's from Skil.

1612 Chain Saw, The powerful lightweight.
Dependability? We're Glad You Asked!

Expose the guts of a Vermeer M-440 or M-418 and you'll see why so many depend on "The Diggin' Dutchman" for service line work. You find it first in the extra heavy-duty, welded construction... in balanced design and machine weight that actually embarrasses the competition. You feel it in articulation, power steering, 4-wheel drive, smooth hydraulic power... plus a host of heavy-duty, labor-saving attachments... and with a drive system that's engineered to beat the day-in, day-out punishment of service line work.

You get it in a Vermeer, because "The Diggin' Dutchman" doesn't take short cuts.

Write, or better yet, call him (515/628-3141) for a free demonstration.

VERMEER
THE DIGGIN' DUTCHMAN
VERMEER TRENCHER—PLOW DIVISION
7204 NEW SHARON ROAD ♦ PELLA, IOWA 50219

Both of "The Diggin' Dutchman's" M-440 (with liquid-cooled engine) and M-437 (air-cooled) machines feature P-12A vibratory plows with quick-tach reel carrier.

At the same time, you double your job capacity with a backfill blade that swings 45° left or right and tilts hydraulically for sloping surfaces

... and triple your capabilities with two heavy-duty backhoes, which swing a full 180°... Loaders and boring attachments also available.

For More Details Circle (103) on Reply Card
New from Frontier Division, Quadra Manufacturing, Inc., the Mark I "VIP" (Vibration Isolated Power-head) is designed to fill the growing need for a lightweight, reasonably priced saw with features previously found only on expensive professional type units. Mark I VIP has all the features of the Mark I automatic, plus: vibration isolating insulators at all points where handles come in contact with engine housing; tip-up hand guard just forward of front handle; throttle lock feature to prevent accidental revving of the saw. Priced at $149.95 complete with 12-inch sprocket nose bar and chain, this is said to be the lowest priced anti-vibration saw on the market today. For more details, circle No. 701 on the reply card.

No. 702

Designed for rugged, high speed sawing under difficult conditions, Milwaukee Electric Chain Saws are available in two models — 16-inch and 20-inch. Powered by 13-amp 115-volt Milwaukee-built motors, both saws deliver a full 2 hp at the chain, cut at a speed of 2,000 feet per minute, and feature quiet, smooth electric power and instant starts even in freezing temperatures, without fuel or fire hazards. Model 6205 (16-inch) weighs 17 1/2 lbs. and 20-inch Model 6206 weighs 18 1/2 lbs. Other features include all ball bearing transmissions with hardened steel gears, plunger type chain oiler and large capacity oil reservoir, tempered steel guide bar with simple chain adjustment and specially designed handles for fatigue reduction. Operates on standard 115-volt or with portable generating equipment. For more details, circle No. 702 on the reply card.

West Germany's Solo Kleinmotoren GmbH has released a fourth version to its modular chain saw design series 620/650/660AV — the 655AV Model. With a displacement of 70 cc. (4.27 cu. in.), the new Solo (continued)
655AV delivers roughly 6 ½ hp/SAE. Designed primarily for the professional market, the 655AV is available with standard 20-inch or 24-inch guide bars. Automatic chain oiling and throttle safety lock are standard; an optional wrap-around handlebar is available. Solo’s abrasive saw attachment for pavement, concrete and metal cutting may also be used with the 655AV. For more details, circle No. 703 on the reply card.

Echo Chain Saw Division, Kioritz Corp. of America, is introducing a high-performance, low cost and low maintenance scythe, Model SRM-202F. The lightweight SRM-202F (13 lbs.) is equipped with a Kioritz two-cycle engine. Scythe is outfitted with automatic rewind starter, centralized clutch and can be equipped with a 10-inch circular saw blade or 10-inch, 8-blade cutter. For more details, circle No. 704 on the reply card.

Reinco

A 4-TON-AN-HOUR "MINI-BRUTE":
the new Reinco TM7-30 truck-mounted mulcher

Ideally suited for commercial or residential turf work.
The Reinco TM7-30 is a "lawn-a-minute" work horse that blows mulch a distance of up to 60 feet. Its unique straight-through drive eliminates power-robbing belts, chains, and gears. But most important of all, the TM7-30 cuts labor expenses as much as 5000% over hand shaking. Check out all the other advantages like low maintenance and versatility. You'll find the Reinco TM7-30 a real profit maker.

One man, one hydrograssmer
perfectly suited for establishing grass on home lawns and other small areas.

One man can easily fertilize, seed, and mulch up to 6 good size lawns a day with the PP500. Only one moving part insures low maintenance. Simple to operate. Add mulch, seed, fertilizer plus a soil binder such as Terra Tack to the circulating water to form a homogenous slurry...then spray...that's all there is to it. Spray on all the ingredients necessary for good turf—all in one easy operation. Check out the time...you'll be surprised. For further information write to:

Reinco
P. O. Box 584, Plainfield, N. J. 07061 (201) 755-0921

For More Details Circle (151) on Reply Card
"I'VE NOTICED ON P.G.A. COURSES I'VE PLAYED THAT HARD USE AREAS SEEDED IN MANHATTAN PERENNIAL RYEGRASS HOLD UP BETTER, LOOK BETTER AND PLAY BETTER THAN OTHER GRASSES. . ."

Pat Fitzsimons on Manhattan

CERTIFIED

TURF-TYPE

PERENNIAL RYEGRASS

- GREAT FOR HARD USE AREAS
- UNIFORM DARK GREEN COLOR
- FINE TEXTURED—BLENDS WELL WITH OTHER GRASSES

Manhattan Perennial Ryegrass was selected and developed by Dr. C. Reed Funk, Rutgers University. Manhattan develops a uniform dark green leafy, dense turf with leaf blades as fine as many Kentucky bluegrasses.

Pat Fitzsimons, in winning the Glen Campbell Los Angeles Open at Riviera CC, Calif., Feb. 20-23, set a new course record of 64 for a single round and tied Ben Hogan's record for this event. Fitz, above, tees off on the No. 1 Manhattan tee at Salem Golf Club course, Salem, Ore., where he previously tied the world record score of 58 on a 6,000 yard course.

Certified Manhattan is grown by the MANHATTAN RYEGRASS GROWERS ASSOCIATION

P.O. Box 415 • Hubbard, Oregon 97032

EXCLUSIVE MARKETING AGENT
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52 Leslie Street • Buffalo, New York

For More Details Circle (171) on Reply Card
Why Not Spray the DEPENDABLE Way...

SMITHCO

Why are Smithco Sprayers ALWAYS ON THE GO? They're dependable... THAT'S WHY!

All Smithco Sprayers feature long lasting corrosion resistant fiberglass tanks, (guaranteed for 3 years) centrifugally cast for added strength and appearance. High capacity strainers with stainless steel screen and, mechanical tank agitation. For big jobs select from five models of the HAWK. For smaller requirements there are the LARKS.

A Size for All Occasions

Smithco sprayers are equipped with pumps that produce 10-20-25 GPM up to 800 PSI with tank capacities from 110 to 500 gallons. Available either trailer or skid mounted; gas engine with V-belt drive or PTO; convenient drains, hose and boom outlets.

The Golden Eagle Pump

Dependable, four cylinder, positive displacement, short stroke design for pulsation free operation. Plunger cups that are guaranteed for one year, and Timken Tapered Roller Main Bearings guaranteed for two years. Ceramic valves with Nylatron seats. Longer pump life than any other pump.

SMITHCO

MAKES SENSE FOR '75

bar of winch. This bar, used with a rim sprocket and loop of cutterless saw chain, transmits engine torque to the winch without mechanical alteration to the saw. Restoration of the saw for cutting is comparable to changing a bar and chain. Standard winches have either 3/8-in. or .404-in. pitch drive and other pitches are available as special orders. Also available is Model 2000, a self-powered version of Model 1500, powered by a Tecumseh two-cycle engine. Engine and winch are mounted on a welded steel frame that provides fuel storage and handles for transport and control. For more details, circle No. 705 on the reply card.

No. 706

A new steel hand guard is being introduced by Pioneer as an accessory for its 1975 professional and farm chain saw line. The safety guard lists for $5.45 and is bracketed to the front handle of the Pioneer P40 and P50 model chain saws. The accessory is designed to protect an operator from injury in case his hand slips off the saw handle. Pioneer chain saws and accessories are marketed by OMC-Lincoln. For more details, circle No. 706 on the reply card.

Echo Chain Saw Division, Kioritz Corp., is now marketing specially compounded motor oils for two-cycle engines including chain saws, power blowers and brushcutters. The oils will be packaged in cases of 48, 8-ounce, six-pack containers. For more details, circle No. 707 on the reply card.

WEEDS  TREES  and  TURF
The Growing Commercial Market

NO ONE will argue that the cost of materials and labor is climbing at an alarming rate. But is the chain saw industry's growth rate keeping pace?

"The growth rate is tapering off," said Frank McDonald, Pioneer product manager, "but only when measured against the phenomenal 25 to 35 percent annual sales upsurge experienced industry-wide since 1972.

He predicts gasoline-driven chain saws will increase 13 percent this year in North America to 1.7 million units. The farm, professional and commercial segments of the market are expected to increase 10, 5 and 8 percent respectively.

McDonald, also a director of the Power Saw Manufacturers Association, estimates 90,000 saws will be sold this year in the commercial market compared to 72,000 units in 1972.

However, unit sales to the commercial market were down slightly in early 1975 compared to a similar period a year earlier. McDonald attributed the decline to the economic slump and high unemployment, but said marketing research studies project a rebound before the key fall buying season.

The key period will be four months beginning in September when an estimated 51 percent of industry-wide sales are expected to be recorded.

Commercial unit sales this year are expected to constitute almost 7 percent of the North American chain saw business. Because commercial saws are operated in work-a-day conditions, the average commercial saw is replaced at least once every 2 years at $190 minimum.

"The commercial market is a slowly growing segment of the business, but it is dependable and maintains a steady upward curve," McDonald said. "Growth in the commercial field will be influenced by replacement sales plus an increase in the variety of new chain saw uses that are constantly cropping up in the commercial field."

McDonald sees the industry-wide growth as sparked by the high-volume consumer market, which was first penetrated in 1971 with the advent of saws selling under $140. Low-priced saws enabled consumers to discover the utilitarian value of chain saws around the home, but there is evidence the casual market pipeline is filling up.

A chain saw can last a homeowner a lifetime if he only uses it once or twice a year to cut firewood or trim trees. "That's why the tremendous growth is peaking out. The replacement business isn't as significant as in the commercial segment," said McDonald.

The news from 1974 was good and 1975 looks even better, according to Don Bartelt, general sales manager of the Echo Chain Saw Division of Kioritz Corp. "Our sales were up nearly 200 percent over 1973," Bartelt said. "In 1973 we grew 113 percent."

WEEDS TREES AND TURF recently completed the 1975 Golf Course Market Study and found that the 9,300 golf course superintendents own an average of 1.8 chain saws. Most experts agree that chain saws purchased by superintendents fall within the commercial market.

WEEDS TREES AND TURF also polled leaders in the chain saw industry. We asked the manufacturers to describe their 1975 market forecast. Most respondents agreed that supplies were sufficient to meet market demand. Early 1975 sales indicators were split evenly between steady and down. Only one respondent indicated an upward trend in sales.

We also asked the manufacturers to compare their profit outlook for 1975 to their 1974 net. Most respondents indicated an unchanged profit picture from 1974.

“The New Chain Saw for the Handyman” is the slogan Husqvarna, Inc. has put on the new Husky 35 Chain Saw, priced at $124.95 and featuring a Phelon ignition and Tillotson all-position carburetor. Another feature is automatic oiling with a manual over-ride. The Husky 35 weighs under seven pounds and has a 2.2 cubic inch, two-cycle engine. Bar lengths are available from 10 to 16 inches. All components are said to be easily accessible under the protective casings, making the chain saw easy to service. Top filling gas and oil caps offer ease in maintenance, according to the manufacturer, the Husky was designed with inexperienced users in mind. The tank and front section are extended to prevent fingers from coming in contact with the chain while sawing. For more details, circle No. 712 on the reply card.
## THE 1975 CHAIN SAWS

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**New Products**

**STUMP REMOVER**: Full Vision, Inc. has introduced its Eager Beaver stump remover that is said to remove a stump in 15 to 30 minutes, depending on diameter, coarseness and dryness of stump. The quick-change blade has six carbide cutting points that attack the stump simultaneously at three cutting levels, and can excavate the stump up to eight inches below ground level. Eager Beaver’s features include a locking kickstand for operator and blade protection, a flexible safety shield that encircles the cutting area, a protective screen that covers the top and handles that pivot over the main body for compact transportation. The 180-lb. unit is powered by an 8 hp four-cycle engine with controls located on the handle. Circle No. 175 on the reply card.

**PNEUMATIC TIRES**: Zedron, Inc. has introduced its Dura-Tech tire for use on compact tractors, riding mowers, snow blowers and other terrain and utility vehicles. According to the manufacturer, Dura-Tech’s single component construction is an engineering breakthrough in tire design and elastomer technology. The pneumatic tire is a homogenous, one-piece continuous airtight structure made from a strong thermoplastic elastomer compound. Manufacture of the Dura-Tech tire, which does not use wire beads and fabric cords, is said to require 40 to 60 percent less raw materials than the conventional tire. Dura-Tech is available in a variety of colors and is totally recyclable. Circle No. 708 on the reply card.

**QUIET-PLUS ENGINES**: Kohler Co. has a new "Quiet-Plus" line of engines designed to reduce engine sound levels. The seven models, modified versions of standard Kohler engines, include one- and two-cylinder models and range from 7.5 to 22 hp. The Quiet-Plus models have a special shrouding to adapt them for closed compartment installations — under garden tractor hoods or enclosed in the bodies of golf or utility cars — and an improved cooling fan which forces a high volume of air over the engine. Sound level is reduced mainly by subduing exhaust and intake noise with a high-efficiency muffler and carburetor intake system that draws air from within the shroud. Other features include asymmetric blade spacing on cooling fan to reduce fan noise, universal access on shroud for Bowden wires to choke and throttle controls and internally-vented crankcase breather which reduces emissions of unburned hydrocarbons. At speeds up to 2400 RPM, Quiet-Plus engines have the same output as standard Kohler models. Circle No. 709 on the reply card.

**DRY APPLICATION SYSTEM**: A new 280 cu. ft. Auger Boom System (ABS) from Ag-Chem Equipment Co., Inc. is said to provide accurate application of any dry, flowable material. The new three-boom system (left, right and center) helps eliminate any uneven spreading caused by differences in particle size, weight and ballistic characteristics. According to the manufacturer, the System, which can apply up to 1200 pounds per acre, will provide uniform application of mixed material from ¼ inch diameter down to a powder. Dual function 360 degree swivel markers at the end of the 18-foot booms eliminate guesswork. Hydraulic boom operation is controlled from the cab. A Servo-system electronic sensing eliminates the need to hold the vehicle speed constant. Electronic system gives plus or minus two percent accuracy at spreading speeds up to 20 miles per hour. Circle No. 710 on the reply card.

**HITCHES**: Superflex Hitches is introducing a complete line of shock-absorbing hitches including models that can be mounted on cars, trucks or tractors. All models are designed with a polyurethane cushion that acts like a shock absorber to remove the tugging, swaying or jerking caused by trailing loads. Interchangeable cushions are available for different load capacities, allowing the same hitch to be adapted to the specific job at hand. The truck and tractor models are said to support the heaviest of equipment. According to the manufacturer, the hitches are constructed to give a lifetime of safe service without maintenance, and are priced economically with an unconditional guarantee. Circle No. 711 on the reply card.
HELP WANTED

DISTRIBUTORS for D. J. Andrews, Inc. stump cutter teeth, pockets and bolts. Best wholesale and retail price in U.S.A. Add to this exclusive area, local advertising at our expense, etc. all necessary. Contact D. J. Andrews, Inc., 17 Silver St., Rochester, N.Y. 14611. Call 716 235-1230, or 716 436-1515.

PROFESSIONAL POSITION OPEN — Landscape design and sales, must be college trained and at least 5 years experience in the residential and light commercial field. Excellent opportunity for the aggressive person. Will match your existing salary plus more if you qualify. Contact F. R. Micha, Monroe Tree & Landscape, Inc., 225 Ballantyne Road, Rochester, New York 14623

MAN TO WORK AND MANAGE all phases of tree and spray business in Michigan. Salary open. Please send resume, salary requirements, and any questions to Box 129, Weeds, Trees and Turf, 9800 Detroit Ave., Cleveland, Ohio 44102.

MISCELLANEOUS

TREE APPRAISALS, Surveys, loss evaluations and expert consultation services. For names of members of the American Society of Consulting Arborists, Inc., throughout the country, contact Executive Director ASCA, 12 Lakeview Ave., Milltown, New Jersey 08850.

PUGET SOUND TREE SERVICE, INC., 1111 No. 98th St., Seattle, Washington 98103, Stump Chipper Teeth and pockets for the Northwest. Phone 206 523-2240.

EDUCATION-BOOKS

AUTOMATIC IRRIGATION COURSE Sprinkler heads, remote control valves, controllers, vacuum breakers, precipitation rates, etc. all variations covered. System design, installation, operation, maintenance. Send for free course outline. Larson Company, P.O. Box 4453, Santa Barbara, Ca. 93103.

Connecticut Scientists Study Efficiency of Photosynthesis

Connecticut scientists are working to keep plants from wasting the sun’s energy.

Research at the Agricultural Experiment Station in New Haven, Conn., are studying photosynthesis and are trying to produce more efficient plant varieties. Israel Zelitch, chief of the Station’s Biochemistry Department estimates that some crop yields could be increased 50 percent by reducing excessive respiration. Station scientists are studying the chemical mediators that regulate the processes of respiration in plants. “Some of this respiration is essential, but a considerable part is wasteful and could be eliminated,” Zelitch said.

Agway bags it!

The dependable organic nitrogen that's 38% N so you can apply it less often. Try it.

Turf and Horticultural Products, Synthetics Dept. Wilmington, Delaware 19899

For More Details Circle (135) on Reply Card
Ancient remedies and several new discoveries of natural insecticide compounds derived from plants are reviewed in a new book issued by the U. S. Department of Agriculture (USDA). For example, a substance extracted from the leaves of the chinaberry tree kills corn earworms and fall armyworms. Some plants also contain compounds effective against insects that do not attack plants. In one study, scientists killed several species of ticks in less than four minutes by exposing the pests to powdered garlic. Other researchers found that cardol and anacardic acid from the nutshell of cashews killed mosquito larvae as well as grain weevils and caterpillars. English ivy leaves have been used since antiquity to destroy vermin of the body. An extract of the ivy bark, used as a spray, failed to kill house flies or yellow fever mosquitoes. Altogether, more than 500 studies conducted between 1954 and 1971 are reviewed. Copies of the Agriculture Handbook No. 461, "Insecticides From Plants," are available for $2 each from the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.

The January monthly fertilizer tonnage report issued by the University of Missouri-Columbia shows a total of 1,739 tons of non-farm fertilizer shipped. Total shipment for fiscal year 1974-75 was 608,259 tons.

Is the real thing better than a photo? Who actually gets more out of a photographic or slide? There's really not much difference, according to a recent U. S. Forest Service Study, if the photograph shows the entire scene. Three groups of respondents were tested. One saw the actual scenes, another viewed color slides and a third saw color photos. Reactions were recorded on a set of adjective scales and compared both graphically and statistically. The researchers found that a scene with "natural" content elicited similar on-and-off site responses. So the next time you're sitting in on an educational session and the speaker turns off the lights and flips on the slide projector just remember that it's almost as nice as being there in person.

An outdoor pest control program aimed at controlling the dreaded malaria mosquito has been launched by USDA scientists in El Salvador. Using the sterile male technique, scientists hope to release sterile males into the natural population in such large numbers that they, and not the virile males, mate with a large portion of the females. If the area is large enough or isolated to keep immigration of fertile insects at a minimum, no progeny develop. Thus insect populations are drastically reduced and the disease transmission cycle interrupted. According to present plans, the study will run for 2-and-one-half years. The first year will be devoted to preliminary studies of mosquito biology, working out techniques, establishing a mosquito colony, training nationals to operate the program and in general getting the essentials of the program underway. The full scale program will go into effect the second year.

Taking the stink out of composting sewage sludge are a couple of ARS researchers, Dr. Eliot Epstein and George B. Wilson. Their technique involves controlled aeration from beneath the sludge, pulling interior temperatures up from a minimum of 130 degrees F to as high as 185 degrees F. Woodchips are mixed with the sludge at a ratio of three parts chips to one part sludge before composting to improve drafting through the pile. Each pile is covered with a blanket of pre-dried screened sludge compost which prevents odors from escaping to the atmosphere. The cover of screened compost is also an insulating layer providing more uniform temperature distribution throughout the pile. Previous studies showed that temperatures obtained by this composting technique kill most human pathogens. Additional studies are being conducted on virus and bacterial survival during composting. Past experiments in composting sludge brought protest from nearby citizens and passing motorists.

Converted air pollution monitoring equipment is being used by a crop physiologist in the Institute of Agriculture and Natural Resources of the University of Nebraska to identify an effective herbicide and show how it works. Dr. Lowell Klepper has modified an early model monitoring devise and is using it to monitor nitrogen dioxide gas given off by a leaf of a plant treated with an herbicide. With his equipment, one person can test 50 chemicals per day for herbicidal action. Commercial tests now take several days for each chemical, he said. The souped-up monitor can also measure herbicide penetration.

Okay, we all know about insect sex attractants. And we know some insects give off chemical signals that turn off certain unwanted suitors. But now scientists are using these facts to develop additional alternatives to pesticides for insect pest control. Control strategies are possible in two directions — attractions and inhibition or disruption. First of all, the synthetic pheromone may be used to attract insects to a bait laced with small amounts of pesticides in a trap. Another is using the attractant to confuse — an area permeated with the pheromone so males cannot tell exactly where females are. These studies and others will determine the effectiveness of male trapping in population suppression and will be used to evaluate the effect of migration and other factors in any future control program.
Now here's a mower.

This 9-gang giant will take on the biggest mowing job you have and breeze right through it.

Grady Hassell can tell you about it. He's with Lawn & Turf, Inc. in Conyers, Georgia. As a Jacobsen Distributor he has all the answers about Jacobsen equipment. Like the huge F20 9-gang mower.

He'll tell you that it cuts a wide 19-foot swath. It has a gargantuan appetite that can cut through 76 acres in one work day. And that's mowing at a realistic pace.

But it's easily tamed for more delicate chores because the operator can raise and lower any of the reels with a fingertip control. Things like median strips can be mowed from the road shoulder with the outboard reels, for example.

Just because it's big doesn't mean it's clumsy. Far from it.

There's a ground-gripping front drive that gives sure traction on grades and sidehills.

And the rear wheel steering means that the reels turn in the same arc as the steering wheels. No skidding, no skipping, no uneven cutting in the turns. And no wheel streaks in the straightaways, either.

If you have big mowing chores ahead of you, ask your Jacobsen Distributor about how the mighty F20 can help you. An actual demonstration ought to raise your eyebrows a couple of notches.

And you might even find yourself saying, "Now here's a mower."

Your Jacobsen Distributors.
Before we sell it, we buy it.

For the name of the distributor near you write: Jacobsen Turf Distributor Directory, 1721 Packard Avenue, Racine, Wisconsin 53403.
At last... A fescue that's green enough to match bluegrass, Jamestown
Chewings Fescue

Researchers have long looked for a fine-leafed fescue that has the color and adaptability of modern bluegrasses and that will look well in a seed mixture. Jamestown, a low-growing new variety of chewings fescue, developed at the University of Rhode Island, is the answer for nearly every turf condition required. Jamestown has good disease resistance, shade tolerance, the darkest green color of any fescue on the market and wide adaptation. Jamestown has been thoroughly researched by universities and independent research groups throughout the United States and Canada. But, most importantly, the low growth and brilliant color are the outstanding virtues landscapers, contractors, sodmen and golf course superintendents count on. Jamestown can be used for practically any turf condition.

GENERAL LANDSCAPE...
For home lawn use, institutional, parks... university studies from Winnipeg, Canada to Maryland have consistently rated Jamestown number one in overall quality for the past five years. Jamestown broadens the adaptation of bluegrasses because of shade tolerance and lower fertility requirements.

SOD FARMS...
Jamestown is ideally compatible in persistence and color to the new Kentucky Bluegrasses such as Baron and Majestic. It's natural low and dense growth combined with its deep rich color makes Jamestown the number one fescue for use in the sod industry.

GOLF COURSES...
In the temperate climates Jamestown should be used for seed mixtures on tees, roughs and fairways. While in the Bermuda belt Jamestown is the best fine leafed fescue for fall overseeding greens. A Clemson University study showed that Jamestown is outstanding at a cutting height as low as 1/8 inch.

Remember... Jamestown is particularly useful where turf conditions are less than perfect. It does very well in non-irrigated and somewhat infertile soils where the turf may be subject to adverse conditions on low maintenance budgets.

Worldwide Producers and Marketing Agent
Lofts Pedigreed Seed, Inc.
Bound Brook, N.J. 08805 / (201) 356-8700

For More Details Circle (104) on Reply Card