possible herbicide least possible cost.

Pump Motor Pack Unit

Trailer Mounted Unit

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.

Converter Kit

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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!

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For More Details Circle (105) on Reply Card 22 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 P_2O_5 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 overallmarket 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 (continued on page 26)



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VAUGHAN'S SEED CO. Bound Brook, N.J. 08805 • Downers Grove, III, 60515 MeetingDates

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

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

Arizona Turfgrass Council, turfgrass equipment and materials show, Scottsdale Hilton Hotel, Scottsdale, Ariz., April 23.

Wyoming Recreation and Park Association, state conference, Lander, Wyo., April 25-26.

Arizona Turfgrass Conference, Camelback Sahara Hotel, Phoenix, Ariz., May 7-8.

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

Florida Nurserymen and Growers Association, 1975 convention, Innisbrook Resort and Golf Club, Tarpon Springs, Fla., May 22-24.

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

American Sod Producers Association, summer convention and demonstrations, Crown Center, Kansas City, Mo., July 17-18.

American Association of Nurserymen, centennial convention, The Palmer House, Chicago, Ill., July 19-23.

Horticulture Research Institute, New Horizons Day '75, The Palmer House, Chicago, Ill., July 23.

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.

Illinois Landscape Contractors Association, Summer Field Day, Burr Oak Nursery, Round Lake, Ill., Aug. 6.

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

International Shade Tree Conference, annual meeting, Heritage Hotel, Detroit, Mich., Aug. 10-14.

Illinois Turfgrass Foundation, Golf Day, Indian Lakes Country Club, Bloomingdale, Ill., Aug. 25.

Turf and Landscape Day, Ohio Agricultural Research and Development Center, Wooster, Ohio, Sept. 9.

Pacific Horticultural Trade Show, San Diego Convention and Performing Arts Center, San Diego, Calif., Sept. 13-15.

International Symposium on Environmental Monitoring, Frontier Hotel, Las Vegas, Nev., Sept. 14-19.

California Association of Nurserymen, convention, Town and Country Hotel, San Diego, Calif., Sept. 16-18.

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

For More Details Circle (143) on Reply Card

For More Details On Preceding Page Circle (141) On Reply Card



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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, III. 60606. Dept. WTT-345





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."

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Case (4-1 gls.)	\$22.85/gl — \$ 91.40/cs	\$16.35/gl - \$ 65.40/cs	12,000- 24,000 sq. ft
6 gl. pail	\$21.65/gl — \$ 129.90/pl	\$16.15/gl — \$ 96.90/pl	18,000- 36,000 sq. ft
55 gl dr.	\$20.55/gl — \$1130.25/dr.	\$15.41/gl — \$847.55/dr.	165,000-330,000 sq. ft
			(3.79 - 7.58 Acres)

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For More Details Circle (139) on Reply Card

Commercial Sod Industry

Homeowner Sod Problems— Fusarium Blight

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.

By CHARLES L. COOPER*

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 (continued) Fusarium blight is sometimes called frogeye spot because of the characteristic round circles that appear as early symptoms (shown above). Cool, wet weather favors the development of the fungus disease.



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^{*}The author, an extension horticultural agent in Michigan for Jackson, Branch, Calhoun and Hillsdale Counties, presented this article at the 45th Annual Michigan Turfgrass Conference in January.

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 oneshot 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 home lawns sodded here.

The problem is affecting our landscrapers 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 out 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 rightof-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. 4-4891





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For More Details Circle (127) on Reply Card

Industry Newsand Newsmakers-



Penncross Bentgrass scholarships were presented to five turf students at the 1975 Penn State Turfgrass Conference held at University Park, Pa. Recipients of the scholarships were (from left): Keith J. Snyder, Stroudsburg, Pa.; Douglas G. Spaulding, Decatur, Ill.; Michael L. Reid, Sarnia, Ontario; Scott Lamb, executive secretary of the Penncross Bentgrass Association, and presenter of the scholarships; William R. Roberts, Libertyville, Ill.; and Douglas A. Brede, Pittsburgh, Pa.

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.