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• • •

Technical dieldrin is manufactured by Shell Chemical Corporation and sold to well-known insecticide manufacturers for sale under their own brand names. Try dieldrin this season and you will agree that dieldrin is one of the most effective turf pest controls available. For further technical information on dieldrin and its application, write to:

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insects, Dow technicians suggest aeration of the area prior to treatment.

Passing over the area with a shallow spiker after fumigation prepares an excellent seedbed. Tests conducted by Dr. W. H. Daniel at Purdue showed that spiking both before and after seeding greatly improved grass stand.

#### Precautions Suggested

Until more is known about some of the problems related to MC-2, the Dow company recommends caution in completely fumigating in close proximity to shallow rooted plants growing in light soil. Some protection may be afforded these plants by thoroughly irrigating the area where roots are located prior to treatment. Red cedar, Swedish and Pfitzer junipers growing in light sandy soil have been damaged by MC-2, but where treatments have been made to within two feet of shrubs, no ill effects have been noted. Large areas under old black locust, maple and apple trees have been treated without the trees having been damaged.

MC-2 is highly toxic to warm-blooded animals and people. Only persons familiar with the safe uses of gases and vaporizing liquids are qualified to use it. This would include greenkeepers, gardeners and greenhouse operators, many of whom are well enough acquainted with fumigants similar to MC-2 to safely apply it after studying methods recommended by the Dow's company technical staff.

There are several advantages to treating undisturbed sod for turf renewal. In many cases, such as around golf greens, it is possible to allow traffic to continue over the new grass seeding. This is due to the protecting effect of the old grass and roots which hold the soil together and protect the new grass seedlings until they become established. The old grass acts as a mulch to maintain a moist seedbed and the decaying roots from old sod aid in aeration of the soil, favoring good grass growth.

A typical example of the fine results obtained with MC-2 is the Notre Dame University football field. Dissatisfied with its condition in 1954, Supt. Chester Keeley decided to renovate the field for the 1955 season. The entire area was cultivated and organic matter and sand added before the fumigant was applied. On Apr. 29th of last year, the field was seeded with Merion and Kentucky bluegrass. First mowing came 34 days later. The grass was mowed twice a week for five weeks and then three times a

week for ten weeks thereafter. By this time the grass roots had grown to a depth of 9-in. and was entirely free of undesirable grasses and weeds and new turf had developed uniformly. In Keeley's estimation, the turf held up amazingly well throughout the entire football season, probably better than it had at any time during his 25-year tenure at the South Bend school.

Turf authorities who have carried on extensive experiments with Dowfume MC-2 and aided in its development include Dr. W. C. Elder of Oklahoma University and Dr. W. H. Daniel of Purdue.

#### Used in Nursery

William E. Lyons, supt. of Firestone GC, Akron, O., and owner of a turf grass farm, also has done some interesting work with the Dow product. Lyons first used MC-2 to kill quackgrass in a home vegetable garden. Later he reclaimed a 5-acre tract of muckland for a turf nursery, successfully growing Pennlu, Meyer Zoysia, Z-73, Hall's U-3 Bermuda and even Tifton 127 Bermuda after fumigating the area.

Planting of the grasses was started 24 hours after the cover had been removed. "We were well pleased and a little amazed at the rapid rate of growth," says Lyons. "Dowfuming enabled us to plant continuously from June 1 to Aug. 1. Even stolons planted in August in 3-ft. rows covered the ground in short time and were sold late in the fall."

Lyons annually Dowfumes his nursery before planting a new grass crop since it eliminates old sods from regrowing unwanted seedheads. According to the Akron turfman's observations, only clover and buckhorn plantain are impervious to MC-2, and require hand weeding. Lyons has built portable covers for convenience in fumigating his nursery. They are made of 1x3-in. spruce strips, 14-ft. long and 7-ft. wide with 12-in. ridge poles in the center to keep the covers off the ground and enable the gas to circulate underneath them. A one-pound can of Dowfume is just right to fumigate the 98-sq. ft. area under each cover. After one plot is fumigated, Lyons' portable cover can be easily dragged to a new location.

#### Iowa Short Course

Iowa GCSA will hold its annual turf-grass short course at Iowa State University's Memorial Union, Ames, Mar. 12-14. Dr. O. J. Noer and Dr. William Daniel will be the principal speakers.



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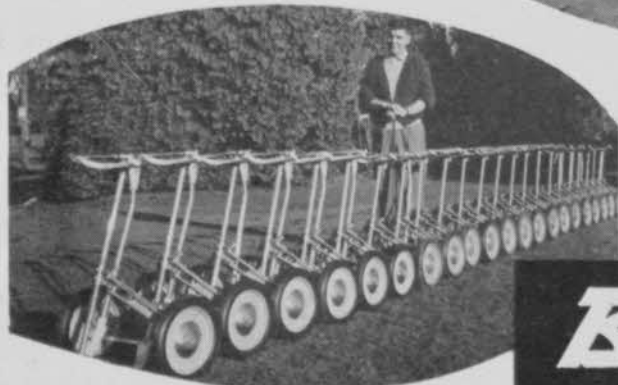
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# Let's Get to the **BOTTOM** of Good Pool Painting

By **KENNETH SCHILLER**

**Y**OU'VE just painted your club's swimming pool. Members "Oh" and "Ah" and slap you on the back. "Wonderful job. Looks simply great!"

But will the members be as enthusiastic next month? Will the paint still be glossy, colorful, an invitation to swimming? Or, will your pool look like last year's circus poster — paint faded, blistering, coming off in ribbons and sheets?

Where the wrong paint is used, or the right paint improperly applied, everybody is unhappy. To prevent unhappiness and bring your members the real pleasure of swimming, here are some important tips that will steer you toward a successful pool painting job.

First, let's get to the bottom of good pool painting practice. We mean "the bottom" quite literally. Good painting starts here. Without proper surface preparation, the finest pool paint in the world won't produce the results you expect. Here, briefly, is how to avoid being disappointed with your pool:

1. Don't let a contractor finish a new concrete pool with a cement wash. This temporary finish may make the pool look clean, but it's a prime source of paint failure. Wash is structurally weak and later will fall away, taking your good pool paint with it.

2. If your pool is to be constructed of

concrete, and still is in the planning stage, keep these things in mind when you talk to your architect: (a) Concrete surface hardeners interfere with paint bonding; (b) Metallic waterproofing agents rust, and discolor paint; (c) A steel trowel finish makes the surface too slick for proper paint bonding — use a wood float finish.

3. Don't let a contractor finish off a metal pool with any primer except that recommended by the manufacturer whose paint you intend using. To do otherwise may cause bonding failure. The pool paint won't stick or eventually will peel off.

4. Whether your pool is new or old, it must be washed before it can be successfully painted. There is only one exception: the new steel pool. New steel pools should be sandblasted, then painted at once. Why must a pool be washed? Even though it looks perfectly clean, there will be at least a thin film of dirt, form oil (on new concrete pools), body oil, algae, or grease. These substances stand between the pool and the paint. Paint adheres to surface substance. If this substance is foreign matter, there will be trouble. So, no matter how clean your pool looks, wash it and let it dry thoroughly before painting.

5. The surface must be dry. If it isn't, the moisture trapped beneath the paint will give trouble. When the hot sun shines on the pool, the moisture will expand and cause the paint to blister. That is the first step in peeling.

By following these major cautions you will save time, expense and disappointment. For additional help write the Inertol Co., 480-2 Frelinghuysen Ave., Newark 5, N. J. for a copy of "Handbook on Painting Swimming Pools No. 700-G." It tells how to prepare the surfaces of concrete and metal pools for best paint jobs; how

Edgewater Gulf Hotel pool, Edgewater Park, Miss. is one of 16,000 in the U. S. painted with Ramuc swimming pool enamel. An 18-hole championship course adjoins the hotel pool.

(Continued on page 124)

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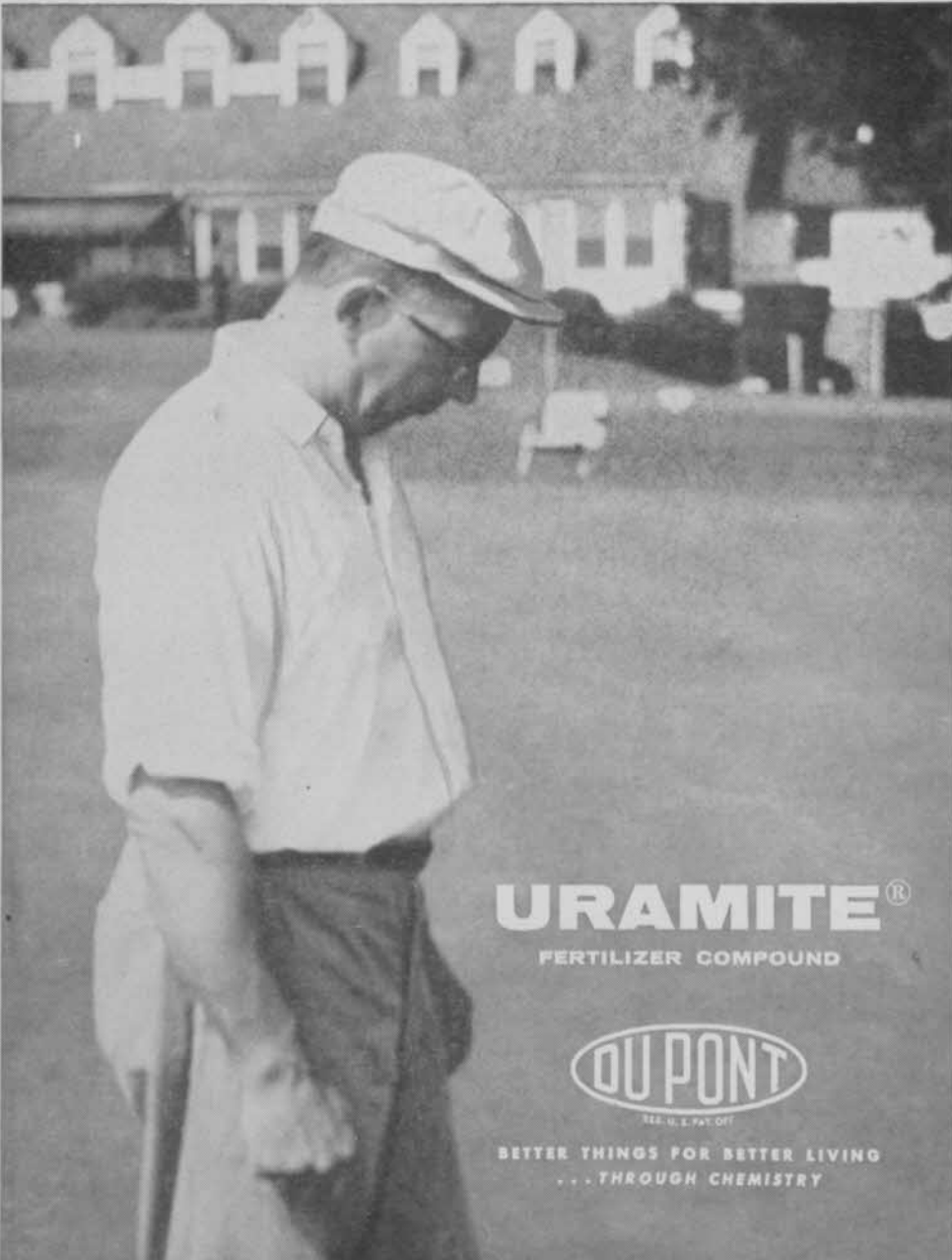
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# Fertilizer for Warm Season Grasses

By O. J. NOER

(At GCSA convention)

The basic principles of turf grass fertilization are the same essentially for warm and cool season grasses. Timing of the applications is the main difference. The problem is simply one of first eliminating any deficiency of phosphorus and/or potash and then furnishing enough nitrogen, at the right time, for dense, tight turf.

Lime should be used on Bermuda grass turf when the soil is moderate to strongly acid. Best practice is for lime applications to precede fertilization.

The soil supply of available magnesium is sometimes low in strongly acid soil. The laboratory should be asked to test for available calcium and magnesium when determining acidity. A dolomitic limestone containing 20 per cent magnesium, reported as the oxide, should be used on acid soils of low magnesium content. By applying it, grass is assured of an ample supply of magnesium.

Plants require as much sulphur as phosphorus. That fact has been ignored for an obvious reason. In the past sulphur requirements were satisfied automatically because mixed fertilizers have contained ammonium sulphate and superphosphate made by treating rock phosphate with sulphuric acid. These grades of superphosphate have a high content of calcium sulphate, in the form of gypsum.

The 45 per cent grade of superphosphate does not contain sulphur in appreciable amount. It is made using phosphoric acid instead of sulphuric acid. Unlike ammonium sulphate, the newer types of nitrogen fertilizer such as ammonium phosphate, ammonium nitrate, urea and the new synthetic organics of the urea-formaldehyde type do not furnish sulphur. The same is true of high analysis liquid fertilizers. An acute shortage of sulphur is not likely in the foreseeable future, but it is an eventual possibility.

Sulphur can be provided by using lower analysis grades of superphosphate, by applying gypsum, or supplying some of the nitrogen from ammonium sulphate. Any one of the heat-dried activated sludges contain about as much sulphur as phosphorus. A sulphur deficiency is not likely where they are used as the main source of nitrogen.

A nutritional disorder commonly called "iron chlorosis" is on the increase. It affects warm season as well as cool season grasses. Many of you have heard the word "chlorosis" and know its meaning. Others do not. The dictionary definition is, "A diseased condition in plants, shown by the yellowing of green parts".

The green pigment in the leaves of grass, and of all other plants, is chlorophyll. This complex substance contains a minute amount of iron. When deprived of it the leaf turns chrome yellow and becomes soft and tender. Then grass falls prey to every known type of disease, such as helminthosporium, curvelaria, anthracnose and other unknown ones. The disease strikes with devastating effect because the grass is in a weakened state.

Had there been no iron chlorosis, or had it been stopped promptly by the use of a little soluble iron such as ferrous sulphate, the grass could have resisted the casual organism. The same is true among humans. The puny, weak individual is plagued with many diseases which the strong, robust person can resist.

## Look for Work Faults First

When disease is secondary to something else, such as iron chlorosis, there is no point in rushing specimens to the overworked pathologist. A microscopic examination is almost sure to disclose parasitic organisms in any specimen of turf. It does not tell anything about weakness in fertilizer and maintenance practices, or in water management. The better way is to review and evaluate maintenance practices first and correct faulty ones. After doing that the microscopic examination may not be needed. Should disease persist, the pathologist is then in position to render a useful service. By reversing the order of procedure, turf will be better and superintendents will have fewer ulcers.

Iron chlorosis is inducted by a high soil pH. That is why it is so prevalent on all grasses in semi-arid regions. It is aggravated by high levels of soil phosphorus, by a high content of organic matter, and by excessive wetness, or high soil moisture content.

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Plants are unable to absorb it under the conditions enumerated above. Foliar feeding is the best to stop iron chlorosis. Promptness is important to restore plant vigor and prevent loss of turf. The secret is to deposit a small amount of an iron salt on the grass leaves with a minimum of water. In this way burning is prevented.

Ferrous sulphate (Copperas) is commonly used at not more than 2 oz. per 1,000 sq. ft. with not to exceed 5 gals. of water. On some courses a little ferrous sulphate is used each time fungicide is applied. The usual amount is about  $\frac{1}{2}$  lb. per green of approximately 5,000 sq. ft.

The newer chelated forms of iron have not lasted longer than ferrous sulphate on heavy soils. Several manufacturers claim to have produced longer lasting types. Their development will be a real contribution to turf grass maintenance in many places.

### Warm Season Fertilizer Needs

Bermuda grass has been and is the chief warm season golf turf grass for greens, tees, and fairways. Several other warm season grasses have been used in a limited way or are present on golf courses. The list includes carpet grass, Zoysia, Bahia, centipede, and St. Augustine grass. Information about their fertilizer requirements is less specific than for Bermuda grass because of their limited use.

Some of the carpet grass fairways on low-lying, damp, dark colored soils are good. Carpet grass responds to fertilizer, especially nitrogen, but the amount needed is less than for Bermuda grass.

The Zoysias have received much publicity in recent years. They are shade tolerant and may be the answer to summertime turf on shaded tees in the warm season grass belt and possibly farther north. Slow turf formation is the principal deterrent to fairway use. Generous fertilization after planting is said to hasten turf development. After that Zoysia is presumed to do well with much less fertilizer than other warm season grasses, excepting centipede.

Centipede is called the "poor man's grass" because of its low fertility requirements. It will never find wide use on golf courses where there is an adequate budget for the development of Bermuda grass turf. Centipede seems to require an acid soil. Iron chlorosis appears and persists unless the soil is moderately acid. One course in Florida lost their centipede fairways by applying lime. It proved a blessing in disguise because they now have an excellent

## Looking Ahead on Spalding Line



Spalding executives and pro consultants assembled recently at Chicopee, Mass., factory to work on designs for Spalding's 1957 golf clubs. Top secret features had the experts excited. Among pros at the gathering: Wiffy Cox, Al Watrous, Jimmy Nichols, Jimmy Thomson, Shelley Mayfield, Ralph Hutchinson, Harry Cooper, Jay Hebert and Al Brosch.

cover of Bermuda on all fairways.

St. Augustine grass finds its way into golf course roughs and fairways in the deep South. Its main use has been for lawns because it is more shade tolerant than Bermuda grass. Zoysia is fast replacing St. Augustine on lawns because of its greater resistance to the chinch bug, which ruins St. Augustine turf and is hard to control because of the constant succession of broods.

In Florida and in the Houston, Tex., areas clubs have been successful in eliminating St. Augustine from fairways by using sodium arsenite to kill it. From three to four treatments are needed spaced 7 to 10 days apart. They use 2 to 4 lbs. per acre each time. Fertilizer is applied generously after the first treatment to foster growth of Bermuda. Over-seeding with hulled Bermuda seed is desirable on large bare areas. Seeding is done before spraying the last time.

### Bermuda Responds Quickly

Because Bermuda grass is so common and widespread in the South, many assume it will grow and thrive anywhere without care or fertilization. Nothing is farther from the truth. No other grass responds as quickly to good care and the use of fertilizer. An excellent turf can be developed in a matter of weeks. It takes one to two years or more to accomplish the same result with cool season grasses.

The Bermuda grasses can grow in moderate to strongly acid soil. This fact is misleading and has blinded some to the benefits derived from the use of lime.