

HOW NOT TO APPLY CHEMICALS

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(A 1964 Turfgrass Conference Summary)

All of us would agree that today's agricultural chemicals are becoming ever more potent, thus ever more capable of inflicting serious injury to people as well as to plants. What once would have been a small mistake can now become a chemical disaster. No wonder Rachel Carson was prompted to write the book *Silent Spring*. The true wonder is that this and other forms of public outcry have been so long in coming. And the burden of guilt rests on our shoulders, because we are the ones who have been careless. We have moved into new chemicals too rapidly. We have not tested adequately, we have become careless, and we have failed to teach our workers how to apply chemicals.

To Fail: Use the Wrong Chemical

A good place to start with failure would be to apply the wrong materials. Entirely different chemicals packaged by the same manufacturer can at a fast glance appear to be the same. This is caused by the manufacturer's desire to maintain brand image.

There are hundreds of examples. One well-known manufacturer, who incidentally makes excellent herbicides, packages many different forms of 2,4-D. Although each is different, all come in familiar red cans and the first word of the trade name is always the same whether it is a potent brush killer or a mild amine to kill dandelions.

We are great believers in the efficacy of sodium arsenite to use as an all purpose contact herbicide on turf. Yet it wasn't until two years ago that we realized one company manufactures both a four and a six pound material and packages both in similar containers. The standard rate to apply sodium arsenite on mature crabgrass and chickweed is one pound per acre. I think you can see what might happen if your help picked up the six pound material when you were set to apply the four pound solution.

We know of one instance where a superintendent ordered chlordane as a 50% wettable powder. The distributor's warehouse man filled the order with a 5% material instead. The mistake caused considerable loss of turf from grubs, as one might well expect.

To Fail: Use the Wrong Amount

An excellent way to fail is to apply the wrong amount. Spreaders are extremely useful tools. However, the setting suggested by the manufacturer of the calibration made by you is merely a guide as to the approximate amount the spreader will apply. It is not exact, yet recently we visited an experiment station where a spreader was relied on to compare two fertilizer materials. They were supposedly applied at the same time and same frequency to furnish the same amount of actual nitrogen. Actually one plot got 22½ pounds and the other only 8 pounds of actual nitrogen per thousand square feet. This could and did make a big difference in turf response. Spot check your spreaders periodically. Know the exact size of each turf area. Compare the square footage with the number of empty sack to see if the spreaders, the sprayers and the help are performing the way they should.

To Fail: Use Wrong the Concentration

Use the wrong concentration. A few years ago I visited a course in central Illinois that was applying 25% Aldrin at 12 pounds per acre in dry form. The rate was right, and as a spray I feel sure it would have given excellent grub control. As a dry application it was doomed to failure because coverage had to be poor. There was insufficient bulk to contact all grub-infested areas.

There are many occasions when a low-analysis, bulky material is the best buy though it costs more per unit of chemical desired. The companies who manufacture high analysis fertilizer are faced with increasing complaints from those who "run out" before they finish the job.

To Fail: Right Chemical — Wrong Pest

You can insure failure if you use the right material but apply it on the wrong pest! Sod webworm insect injury looks much like dollarspot disease in turf. There is no way of knowing how much fungicide has been sold to control webworm, and of course discourage dollarspot diseases in grasses. Rutgers University, and more recently Iowa State, have shown that the source of nitrogen is just as important as the amount used. Activated sludge has been outstanding in this respect.

Fertilizer is no more a substitute for fungicide than the other way around. To get the utmost mileage out of any chemical one must have good drainage, careful watering practices, favorable soil reaction, and protection from other pests as well as the correct plant food applied at the proper time. Then and only then can one expect chemicals to do their job.

To Fail: Mix Everything Together

Go ahead and dump everything into the tank at once to save time. This will give you plenty of free time to feel sorry about why the turf looks so lousy! Mixing everything in one pot seems to have more sex appeal than Brigitte Bardot. One man we know mixed phenyl mercuric acetate and insecticide and then added a little spreader-sticker to hold the mixture on the grass leaves. We never could tell whether this worked. Something in the combination killed the grass. You mix ammonia sulphate and hydrated lime together only once in a lifetime, with a similar result — the ammonia fumes kill the plant.

Before you get carried away with the potential of mixtures, keep in mind the wide range of things that might happen between a bad and good extreme. One chemical could directly knock out the effectiveness of another, yet you would be none the wiser because the kayoed chemical wasn't needed the day you treated. Further, you were lucky enough to put a few things together that didn't injure, and since it didn't harm anything you mark it down as being good.

Mixing insecticides and fungicides together for grass doesn't make sense to me. If you don't water the mixture after application, the insecticide volatilizes and goes off into the wild blue yonder where it can't possibly hurt your bugs. If you do water the mixture in, the fungicides lose their effectiveness.

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"Why don't the fungicide manufacturers make up compatibility charts to guide us on what might and might not be mixed together?" Obviously, I can't answer this frequent question completely, but would point out a few factors that should deter such a move. In formulating a single mixture, years of detailed work are involved. One major supplier recently held back offering a chemical that would control spring deadspot in Bermuda. They withdrew the material from the market at the last minute, not because the material failed, but because it was unstable in the package. Storing can be quite important. Even so, some manufacturers (I call them fly-by-night) will put anything in a bottle including several fungicides, insecticides, chlorophyll, stickers, spreaders, wetter-water and fertilizer too. You, of course, are the guinea pig.

In the time it takes to read one sentence an electronic computer can perform 3 million mathematical computations. Even this remarkable speed is nothing compared to the game of Chess, where today's fastest computer could not possibly work out all the moves in a human lifetime. I would liken compatibility to Chess. If I am correct, even a computer would fail to devise a complete compatibility chart. By the time it did, we would have changed the chemicals and thus make the chart worthless.

To Fail: Always Buy the Cheapest

Buy the cheapest product because all are exactly the same! Beware of bargain chemicals. Ruskin said many years ago: "There is always someone who will build something more poorly to sell it cheaper, and the person who buys on price alone is that man's lawful prey." Nothing, believe me, nothing is the same as, only cheaper, unless it is the very same product marked down to bargain prices. It could be a better or it could be a worse product, but it can't be the same product. In our economy you just don't buy Cadillacs at Chevrolet prices, or hire a \$20,000 a year superintendent for \$2,000. If everything was exactly the same as, only cheaper, all superintendents would be making \$2,000 or less per year.

To Fail: Ignore Instructions

Forget the manufacturer's instructions on the label. Use the product at a lower rate to save money, or double up to get a quicker knockdown. Many superin-

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tendents fail their clients and some even lose their jobs on this play. In an effort to save money they reduce the rate. Remember, if the club's reason for existence was to save money, it would close down and invest its money in stocks and bonds. This is a trite statement, yet all of us know about good old John who cut his budget to help pay for the new grille room. The course then suffers, so play falls off. The minute play slacks so does the grille room income, necessitating another budget cut. This means the new fairway mowers can't be purchased so the grass gets too tall. Then John is fired for doing such a lousy job. A new man is hired and the club goes through a costly renovation job.

Obviously, a golf course, park, school, etc., is no place to waste money. Protecting the turf is not wasteful. It is what we are paid for, and we are bound to see more protection in the years ahead. Fairway spraying with fungicides, as well as insecticides and herbicides, will become more commonplace, and it makes sense. Happy golfers mean full membership and good income in all phases of the club operation. I believe the clubs who fail to budget necessary monies will fall by the wayside much the way marginal motels are collapsing today in favor of the posh newcomers with a million dollar investment. Obviously, you pay more for a room in this new type of hostelry, but just as obviously, you get more for your money.

The analogy turfwise relates to a high budget course in Chicago. This club quite possibly has the highest salaried superintendent in the business. His club also took in \$44,000 over previous years in guest fees this year because they had such excellent turf. So spend what is needed to take care of the grass. Anything else is false economy.

How to Succeed

We have attempted to review some of the pitfalls involved in applying chemicals and have used reverse psychology for effect. In summation, we will re-

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peat the pitfalls in the right context.

1. Make sure you have properly diagnosed the problem before selecting the chemical.

2. Apply the right chemical for the job. Few materials are all-purpose.

3. Follow the manufacturer's recommendations in applying chemicals. The directions on each container are there for a purpose.

4. Apply the right amount, with equipment that is clean and properly adjusted.

5. Use the proper concentration. Remember that coverage is all important.

6. Don't apply every chemical at one time. In the long run this will cost more money, will be less effective, and may even kill the grass.

7. The cheapest chemical is seldom the best. A Chevy is not a bargain Cadillac — only a cheaper and more poorly built car.

8. Remember that chemicals won't solve all plant problems.

9. Be careful. Many agricultural chemicals have the power to kill people as well as plants.

P.S. Charles G. Wilson will be our speaker at Cedar River Country Club, Indian Lake, N. Y. on June 21. Don't fail to be present. Ed.

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