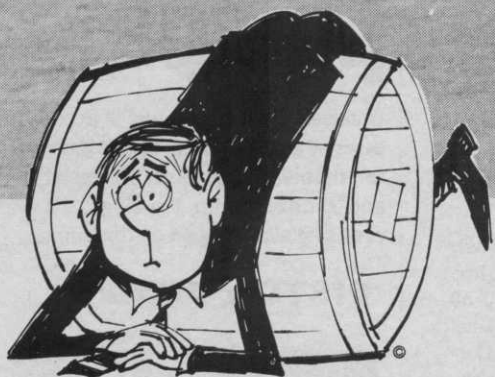




No mistake here. Louis Miller, superintendent of the Louisville Country Club, takes satisfaction in his Penncross fairways free of *Poa annua*.

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HOW TO FOUL UP A HERBICIDE PROGRAM

A SURPRISING NUMBER of methods can be employed to foul up a herbicide program. Some of the most effective ones can assist the superintendent in losing his job. Here are 10 you can risk trying:

1. SELECT THE WRONG CHEMICAL: It is possible to select a chemical to control *Poa annua* that prevents overseeding as long as 16 weeks. Just imagine the superintendent's position if the fairways were 95% *Poa annua*! Many pre-emergence herbicides only control crabgrass. This would be disturbing if the superintendent had used the chemical to control *Poa annua* and only controlled crabgrass.

Another sure-fire method is to apply a chemical under shrubs for broadleaf weed control.

2. FAIL TO READ THE LABEL: A golf course in Michigan applied Simazine thinking the Simazine was Chlordane. Simazine is an excellent chemical for killing all vegetation. It cost this club \$50,000 to rebuild nine greens. Many industrial soil sterilants will control grass and weeds for two to three years. The worker who applied this chemical never learned how to read!

3. SELECT THE WRONG FORMULATION: An excellent method of killing desirable shrubbery is to apply a butyl ester formulation of 2,4-D. The high volatility of this product insures effective kill of shrubs.

4. FAIL TO CALIBRATE EQUIP-

MENT: Many individuals have successfully removed desired grass by not calibrating equipment. There are several ways of fouling up application rates. Use the wrong nozzle. Using a five-gallon-per-acre nozzle is effective. Varying the speed may bring startling results. The incorrect boom height has caused unusual patterns. Double applications or overlapping creates an interesting pattern, but not always appreciated.

Mowing the greens immediately after applying MCPP may result in no control of clover.

5. DO NOT COMMUNICATE WITH GREENS COMMITTEE MEMBERS: One of the surest methods of creating an unfavorable climate for the superintendent is to initiate an extensive *Poa annua* removal program without discussing the program with the greens committee.

The superintendent should warn his members that under severe weather stress, *Poa annua* can be severely weakened. This would alleviate any surprise that might result from less-than-desirable playing conditions.

6. APPLY HERBICIDES UNDER STRESS CONDITIONS: An application of silvex, 2,4-D, or PMA 10 at 95° temperature, usually effectively removes grass in addition to the desired weed control. This condition may be even worse if disease is present. Golf carts also will help

speed up the removal process.

7. FOLLOW ONLY A PORTION OF RECOMMENDED PROGRAM: Many superintendents have attempted to remove *Poa annua* with tri-calcium arsenate without eliminating phosphorus in the fertilizer program. Others have overseeded onto a heavy thatch without getting seed against soil. Some superintendents have failed to drain the low pockets. Still others have adequate tile but poor surface drainage. Any of the above factors will foul up a gradual *Poa annua* removal program.

8. FAIL TO CLEAN OUT A SPRAY TANK: Herbicides such as Paraquat, 2,4-D and sodium arsenite must be cleaned out of the spray tank; especially a wooden tank. These residues left in the tank may effectively remove bentgrass.

9. NO FOLLOW-UP: Several thousand dollars can be wasted if a superintendent controls *Poa annua* with tri-calcium arsenate and fails to apply an annual maintenance follow-up application.

10. IMPROPERLY HANDLE AND STORE HERBICIDES: Superintendents and workers can create problems moving leaking containers. Herbicides spilled on clothing may be most irritating to areas of the skin.

Failure to wear protective clothing and masks when handling toxic materials may cause absorption through the skin.

If a worker should swallow a herbicide it could confuse the situation if no label was available for the physician to determine the chemical ingested.

Poison pesticides stored in a food locker in the club house could possibly cause some of the club members to be rather ill.

The golf course superintendent



Bill Haven, superintendent of the Greenbrier, shows excellent control of *Poa annua* with tri-calcium arsenate to Dick White-man of Rhodia, Inc., Chipman Div., and Bill Keehne of Higgs and Young, Inc. At right is Oscar Miles, Olympia Fields, Chicago, and Roy Scherdin of the George A. Davis Co., analyzing a *Poa annua* treatment.

today must be professionally trained in order to manage a herbicide program. All factors must be kept in balance. There can be no weak link.

Manufacturing firms, universities and experienced superintendents should be contacted before selecting the right chemical for your problem. Oscar Miles of Olympia Fields, Chicago, spent months of study and analysis of his own demonstration plots before deciding to treat with tri-calcium arsenate for gradual *Poa annua* removal.

Manufacturing firms spend between \$2 and \$15 million to secure approval of a label from USDA. It is, therefore, vital that the label be read, studied, and directions followed explicitly.

The amine formulation of 2,4-D should be used around shrubs and trees. This eliminates the volatility problem from gas vapors.

One of the most important approved practices is to correctly calibrate equipment. Manufacturers and universities supply methods of calibrating equipment for every existing chemical. Spray nozzle and accessory equipment companies supply catalogs with tip numbers that have computed the gallons per acre. Gallons per acre may be calculated from the following formula:

5.940 x Gallons per minutes

Miles per hour x width (nozzle spacing) in inches.

Spray equipment for applying herbicides on golf courses should apply from 20 to 40 gallons per acre of solution at 30 pounds per square inch and a tractor speed of 4 miles per hour.

Plan your herbicide program with your greens committee and members. They should know exactly

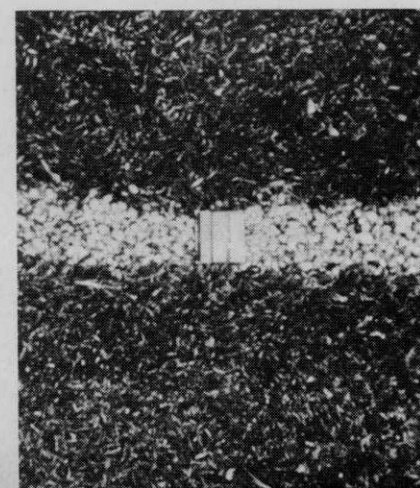
what to expect when an extensive fairway renovation program is initiated.

Bill Haven of Greenbrier prepared an attractive card for presentation to each golfer with each score card. This card explained why *Poa* fails, and warned that playing conditions may be less than ideal while removing a second-class, "failure grass" *Poa annua*. Haven emphasized the final objective was the creation of an ideal setting for future Greenbrier golfing enjoyment.

Carl G. Hoppman, superintendent of Aurora Country Club called a general meeting of the entire membership to acquaint them with his program plans for removing *Poa annua* with tri-calcium arsenate. He painted an extremely black picture of how their fairways would look before success was achieved. Carl Hoppman now has in excess of 90% bluegrass, and satisfied golfers.

Timing is important in any herbicide program. Herbicides control weeds more effectively when the weeds are young and rapidly grow-

A book of matches shows relative size of slit trench for drainage used by Supt. Ted Woehrle at Beverly Country Club.



ing. *Poa annua*'s sensitivity to tri-calcium arsenate is favored by short days, cloudy days, with low light intensity and cool weather. Never apply herbicides when the temperature is extremely high.

Complete the entire program. Louis Miller of Louisville Country Club has one of the nation's outstanding *Poa annua* removal fairway programs. This wasn't true until he completed an extensive drainage program. He kept some water soluble phosphate available as a check valve in case the *Poa* started dying too rapidly. Ted Woehrle followed this same approved practice while at Beverly Country Club in Chicago. The control level must be maintained. James W. Brandt, Danville Country Club, maintains control level with 100 lbs. per acre of tri-calcium arsenate applied alternate years for crabgrass.

Safe handling and proper storing of pesticides is essential. We must do an outstanding job of protecting wildlife and our streams or herbicides will not be available for us to use. Our economy would be in sad condition if turf experts and agriculturists were forbidden to use herbicides. We, therefore, cannot afford to foul up our herbicide programs.

Golf course superintendents should attend herbicide clinics, improve their equipment, train their workers and strive to become certified applicators.

Today's golfers are demanding fine turf. Golf course superintendents must fulfill the desires of their members. Superintendents are faced with a gigantic challenge of providing an ideal setting for the golfers enjoyment.