

Pesticides - Boon or Bane?

By **Marvin H. Ferguson**, Mid-Continent Director, National Research Coordinator, USGA Green Section

The use of pesticides has accounted for a great deal of the progress that has been made in golf course management in the last two decades. Chemicals for the control of specific weeds, for the control of insects, for the control of diseases, for growth regulating purposes, and for repelling pests such as rabbits and deer are examples of uses for which we depend upon the products of pesticide research.

Our use of chemical materials on the golf course is paralleled by similar uses in other phases of agriculture. Our dependence upon pesticides has provided a tremendous market and the burgeoning agricultural chemical industry seeks to provide the needs of a consumer who, technologically is becoming increasingly sophisticated.

An example of the speed with which this industry is moving may be seen in the number of listings in *The Pesticide Handbook* by D. E. H. Frear. In 1958, the Handbook listed 6,129 pesticide products. In 1962, a total of 9,444 products was listed.

Research in all state supported agricultural experiment stations seeks to find more completely specific herbicides. We need materials which have residual effects of varying lengths of time. We need pre-emergence materials and post-emergence materials. A constant search is underway for cheaper, more specific, more effective, safer, and more predictable products.

In the areas of insecticidal and fungicidal research, the investigator likewise seeks effectiveness over a controlled period of time. He seeks low mammalian toxicity and low phytotoxicity. He seeks selectivity.

Above all, the investigator seeks a

product that can be handled safely by anyone who may have occasion to use it. The matter of safety to human health, to birds, to fish, and to animals has come to be a matter of considerable interest on the part of the American public.

Much unfavorable, unfortunate, and unfair publicity has been generated by writers who produce sensational "scare type" headlines. Exaggeration of fish kills, bird kills, and sensational accounts of accidental human poisonings have combined to feed the fears of those who may have been impressed by the dangers of pesticide usage.

Testing Procedures

The truth of the matter is that the developers of any kind of pesticide must go through such a rigorous and expensive series of testing procedures that many potentially useful (and perhaps safer and more specific) products are not processed because the developer may doubt that the available market will justify his expenditure. That the procedure is technically involved and expensive is borne out by statements of Dr. J. Everett Bussart in another article in this issue. He estimates the cost of developing and preparing a new product for market to range between \$775,000 and \$3,100,000.

The producers and users of agricultural chemicals are not alone in the dilemma that seems always to accompany technological progress. Drug manufacturers are haunted by possible harmful side effects of compounds which successfully combat specific ills. The enormous benefits that may accrue from the use of nuclear energy are accompanied by the potentially dangerous presence of increased

radioactivity in the human environment. Even the marvels of modern transportation and automation are not without the detracting spectre of more deaths by accident.

It would appear then, that the duty of responsible spokesmen in this area of science would be to paint a realistic picture for the American public. Most of the people concerned are not scientifically trained. They are ill equipped to evaluate the writings of the responsible reporter in comparison with those of the sensationalist.

Pesticides are necessary in the agriculture of this era. The population of the United States could not be fed without the use of agricultural chemicals. Golf courses would revert to much less pleasant conditions without modern methods of controlling weeds, insects, and diseases.

Pesticides handled properly present

very little danger to man, to wildlife, to fish, or to the other factors contributing to man's environment. The key words of the foregoing statement are "handled properly." These words might be applied just as appropriately to automobiles, to fire, to electricity, or to mouthwash. All can be lethal when not "handled properly."

It would appear that all who are involved in the use or commerce of pesticides have an obligation to be aware of the potential dangers inherent in the materials they use. Used carefully in accordance with the instructions of the manufacturer, stored safely, and handled with a knowledge of possible effects upon plants, animals, and man, pesticides can continue to do an increasingly more effective and safe job of controlling the pests that beset us.



COMING EVENTS

July 7

Turfgrass Field Day
Texas A&M University
College Station, Texas

August 12-13

Turfgrass Field Days
Rutgers University
New Brunswick, N. J.

September 9

Turfgrass Field Day

Virginia Polytechnic Institute
Blacksburg, Virginia

September 14-15

Midwest Regional Turf Field Days
Purdue University
Lafayette, Indiana

September 18

Fall Field Day
Illinois Turfgrass Foundation
Urbana, Illinois