

There's More to the Grass Seed
Business than Making a Dollar

The trend is away from persistent insecticides

Days are numbered for environmentally persistent insecticides. Some chlorinated hydrocarbons which were employed extensively by turf managers have been banned and others are being contested by the Environmental Protection Agency (EPA). Also a number of pests have built up resistance toward chlorinated hydrocarbon insecticides — Japanese beetles are an example.

The trend away from these types of products is apparent. For better or worse, chemical companies bringing new products to market aren't likely to spend much research money on new persistent chemicals to replace those banned because of EPA opposition.

According to Dr. Wayne Arthur, vice president of research and development for the agricultural division of the Ciba-Geigy Corp., it currently costs \$8-10 million to bring one compound from synthesis to the marketplace.

"Many chemical companies won't be willing to risk that kind of money on long-shot, though innovative, research on new classes of compounds," says Arthur. "Ciba-Geigy will continue to do innovative research, but will be more conservative in assessing whether to develop a compound.

"Cost, safety and the effect on the environment have to be taken into consideration and are major hurdles to pass, even though we may have a compound with excellent biological activity.

"Turf is often a secondary market in the eyes of chemical companies. In order to justify the high cost of research and development, it may be necessary for a product to be labeled for control of corn rootworm, for example, as well as Japanese beetle.

"On the other hand, turf is one of the applications considered in development of each new pesticide," says Arthur. "New materials with promise in the turf market are being tested by us right now. But it is too early for me to describe them in detail."

Because fewer truly new chemicals will be brought to market, Arthur says that turf managers will be making more use of established products like Diazinon or other versatile compounds. "Ciba-Geigy is making more effort to expand the

labeled uses of such established products. Major research dollars have already been spent and those products already are registered by EPA," he explains.

New turf pesticides being developed for the future will be "softer," according to Dr. Haney Camp, director of biochemistry at Ciba-Geigy. Softer pesticides will be characterized by less environmental persistence and narrower spectrum of control.

"Also EPA is asking us for data on the interaction of chemicals used as tank mixes," says Camp. "We are required to do extensive studies on how a combination of chemicals affect soil microorganisms and how these microorganisms affect the chemical. We must do pH studies, more leaching studies on various soil types, and hydrolysis studies to see how fast they break down. We are required to trace the movement of chemicals, if any, from the site of application to adjacent streams and find out if residues build up in fish.

"The time is fast approaching when a single product will no longer be available that controls several insects with one application for a long period of time," observe Camp. "Instead one product will be used for a narrow range of insect species. It will need to be applied several

NEW PRODUCTS, NEW PROBLEMS FOR TURF MANAGERS

times a year and even then will probably have to be applied against the most susceptible stage of pest development."

For example, one application of chlordane gives many years of control of grubs. But when using an organophosphate like Diazinon, applications may be required every year.

Narrow-spectrum products mean more work for turf managers and for chemical manufacturers. Historically, one product might control several insect species. In the future a tank mix of several products might be needed to do the same job.

According to Dr. Richard Miller, extension entomologist at Ohio State University, use of short-residual compounds requires a lot more expertise on the part of turf managers.

"With a chlorinated hydrocarbon, turf managers don't have to be quite so careful about observing the fine points of rates and application techniques because of the nature of the material," notes Miller.

"With some of the popular short-residual organophosphates,

special care must be taken. Many products need to be watered in thoroughly to get the material down to the insects. Too heavy a thatch layer, not enough water, or improper application techniques can all contribute to insect-control failure," reports Miller.

Miller outlines some basic principles turf managers should follow when using a short-residual chemical control program:

1. Every week inspect all turf areas, paying special attention to trouble spots. "Turf managers must take the time for thorough inspections," states Miller. "Turf is difficult to keep up with because of the many different insects and diseases that can abound during the year."

2. Identify turf problems quickly and accurately to determine whether the culprit is an insect or a disease. "If the wrong diagnosis is made, money is wasted on the wrong treatment," says Miller. "University extension entomologists, county agents, chemical manufacturers and distributors are more than willing to help when identification of a turf pest is in question."

3. Once the pest is diagnosed,

the appropriate product should be applied.

4. Application techniques often make the difference between success and failure. Proper rates, watering-in methods, and wind speed affecting distribution of the chemical, are some of the factors that need to be carefully observed. "The best insurance for good control is to follow the labeled instructions. Most of the failures I'm acquainted with aren't related to the material, but to the person who applies it," reports Miller.

5. Accurate records should be kept regarding what insects were controlled, when the chemical was applied and which chemical was used. "Taking it even further, it's wise to record the lot number of the chemical," advises Miller. "Sometimes chemicals get produced at plants where something went wrong. With good records, it can help experts determine the cause."

Times are changing, chemicals are changing and turf management will change as well. "More professionalism on the part of pesticide users can go a long way towards muting the demands of those who shortsightedly promote a total ban on all chemicals," says Miller. □

Dixie Cassell extracts pesticide residue from crop sample in Ciba-Geigy's Greensboro, N.C. labs.

