New and Improved Chemicals Boon to Turf Maintenance*

By T. C. RYKER

The greenkeeper today may select from a large array of chemicals for control of numerous diseases, insects and weeds affecting turf. And still newer chemicals are being constantly added as extensive research by industry and various research agencies uncover new materials and improved formulations.

If we compare the pest control chemicals we have today with those available ten years ago we find newcomers not only greater in number but very different from the older chemicals. The newer chemicals are in general safer to crop plants, more effective for specific pests, have longer residual action, and are less hazardous to use.

With the chemicals used ten years ago, operators had little to choose from and the cure was often worse than the bite. There were mercurials for diseases, arsenate of lead for insects, and arsenicals for weeds. With the mercurials, severe burning often occurred when recommended dosages were used, particularly during hot weather. Heavy or repeated dosages which were often necessary to control disease induced a build-up in plant injury and the risk of coming up with a sickly yellow turf on tournament day. The arsenical weed killers were equally risky.

Safer for Plants

Many of the present day chemicals are far safer for plants. As an example we might choose one of the newcomers, Thiram, which you know as "Tersan." These organic sulphur products can be applied at several times the recommended dosage without risk of injuring the turf. It is almost possible to say you can't injure turf with Thiram. When there is little or no disease a minimum dosage of this fungicide is effective, thereby permitting an economy. When weather conditions favor an outbreak of disease, or the troublesome greens begin to show infection, the dosage may be stepped up. With this type of fungicide it is possible to use a spray program without risk of causing even slight yellowing of the turf.

Many of the newer insecticides and herbicides are likewise safer than the old. DDT or Chlordane may be used without risk of injuring the turf. Similarly there are fairly broad limits within which 2, 4-D may be safely used to control many of the broadleaf weeds on the fairways. This is a great step from the days of hazardous arsenicals that tended to kill everything. Actually, one effect of 2, 4-D is to turn grass a darker green, which has mistakenly been looked upon as stimulation. It is, of course, not safe to use 2, 4-D on bent grasses.

In addition to being safer for plants, the new chemicals are more effective but somewhat specific in their action. This is exemplified in the treatment of the two major diseases of turf, brown patch and dollar spot. For these diseases, for which the mercurials have been generally used, Thiram is highly effective for brown patch but is only moderately effective on dollar spot. Where dollar spot is severe, it is desirable to use a different fungicide. The Cadmium fungicides are outstanding in the control of dollar spot, but are ineffective for brown patch and most of the other diseases. A further example of specificity is indicated in the recent report that a new experimental compound controlled Helminthosporium blights for which none of the other fungicides has proven satisfactory.

It was the high effectiveness of 2,4-D (less than one pound per acre), coupled with its specificity for broad-leaf weeds, that revolutionized our concept of weed killers. It is no longer necessary to tolerate the unsightliness of dandelions and plantains in our fairways. We now look for the weed killer that will do for crab grass what 2,4-D did for broad-leaf weeds. This is a big order, but some measure of success has been attained with such contact herbicides as PMAS, Potassium Cyanate and others. The specificity of action in the case of these herbicides is dependent upon differential wetting. Crabgrass with its somewhat fuzzy leaves is more readily wetted than the more waxy turf grasses.

Control for Major Insects

Many of the newer insecticides are highly effective in controlling turf insects. It is no longer necessary to apply 200 to 400 pounds per acre of arsenate of lead to control white grubs. Newer organic insecticides are broadly effective, and recent results indicate that Chlordane and the related compounds Dieldrin and Aldrin may be effective for the control of all the major insect pests of turf.

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We have seen how these newer pesticides differ from older ones in their safety to plants and in their specific action. Now let us consider their longer residual action. Most of the newer fungicides and insecticides are organic compounds that are relatively insoluble in water. This insolubility permits longer activity. They are formulated as wettable powders. The length of their action depends largely on the rate used, weathering conditions, and how rapid is the breakdown of the chemical in the soil. This breakdown may vary from a few weeks, as in the case of Thiram, to a number of years, as is true of DDT. Cadmium fungicides have held back the development of dollar spot for some weeks after applications were stopped. DDT at the rate of 25 pounds per acre is effective in the control of Japanese Beetle for at least five years, due to its residual action.

The last consideration is that of poisonous action. If we go by some of the news items that appear today, we might think we are developing more hazardous pesticides. I doubt that this is so. I think the important fact is that we are becoming more conscious of this important consideration for any pesticide. We have only to look at the old mercurials and arsenicals to know where we stand. Thiram may be irritating, but it certainly can't be classed as a poison. The cadmium fungicides are not even irritating. The greatest criticism in regard to toxicity has been directed toward the newer insecticides, but since these are effective in such small amounts, it is possible to use them safely. With the old weed killing arsenicals, livestock had it rough. Today, 2,4-D may be used without any thought of toxicity to man, livestock, or fish. The same may be said of "Ammate" Weed Killer which can be used to control brush and poison ivy without fear of killing someone's goat. It would be remiss not to mention maleic hydrazide, a chemical newcomer which shows the peculiar physiological action of suppressing plant growth. It has been suggested that this compound could be used as a substitute for mowing.

To summarize, the newer chemicals that the greenkeeper has today for his war on pests are different weapons from those he had formerly. Today it is possible for him to control diseases, insects and weeds without risk of damaging his green. He has pesticides that are more efficient, while also more specific in their action, exhibit longer residual action, and are less hazardous to use.

It is the responsibility of the greenkeeper to learn what these new products are, which ones are most suitable to his purposes, and when to apply them.

Midwest Park Executives at Chicago, March 14-15

The Midwest Institute of Park Executives will hold its Tenth annual educational conference March 14-15 at the Chicago Park District Administration Building, 424 East 14th Boulevard, Chicago, Ill. The sessions will start at 8:30 A.M. and run to 5:00 P.M. on both days.

The registration fee of $3.00 includes a copy of the entire proceedings.

ANNUAL TURF CONFERENCES

Feb. 12-14—Texas Turf Conference, Texas Turf Association, College Station.

Feb. 26-Mar. 1—20th Annual Turf Conference, Pennsylvania State College, State College, Pa.

Mar. 5-8—Annual Turf Conference, Midwest Regional Turf Foundation, Purdue Univ., Layfayette, Ind.

Mar. 6, 7—Fourth Annual Turf Conference, Cornell University, Ithaca, N. Y.

Mar. 21, 22 — Fourth Annual Turf Conference, State College of Washington, Pullman.

Mar. 8, 9—Annual Turf Conference (Concluding 10-Weeks Winter School), Univ. of Mass., Amherst.

Mar. 12-14—17th Annual Turf Conference, Iowa Greenkeepers Association, Iowa State College, Ames.

Mar. 7-9—Annual Turf Conference and Short Course, Minnesota Greenkeepers Association.

April 16-17 — Annual Turf Conference, Montana-Wyoming Turf Assn., Butte, Mont.

May 10-11—Southern Turf Conference, Tifton, Ga.

June 12—Central Turf Foundation Field Day, Manhattan, Kans. CC.

Oct. 24-26—Central Plains Turf Conference, Kansas State College.