

2,4-D AT USUAL RATES HARMLESS TO SOIL

2,4-D applied at usual rates to kill weeds is non-injurious to soil bacteria and breaks down into harmless compounds in a few weeks. The foregoing has proved true in laboratory trials here and elsewhere. For these trials, the herbicide was applied to the soil media in concentrations far greater than any ever employed for killing weeds.

Farmers, agricultural scientists and others are sure to feel somewhat relieved at this assurance. The use of growth-control substances (2,4-D is one of the most common) is fast becoming a regular farm practice.

The chemical vanished in soil media, in tests, in one to six weeks, depending on whether the organic-matter content of the soil was high, whether the soil had been used previously in the trials and was adapted to 2,4-D and whether the herbicide was applied as the amine or the salt.

Organic-matter content of soil is a good measure of its fertility. Humus in soil is decomposed gradually, nitrate-nitrogen being made available for plant use by certain races of bacteria during the process. 2,4-D was added to soils in tests here at two concentrations, 500 and 250 parts per million. The usual 2-pound-per-acre application made on farms is at the rate of 4 parts per million. The nitrifying capacity of the soils was only slightly depressed at the higher concentration of the herbicide and was not depressed by the lower concentration.

Herbicide vanishes suddenly. Two very interesting developments became apparent as the 2,4-D disappeared:

1. Although nitrification tended to continue at usual rates and the 2,4-D content of the soil was unchanged for a period, the herbicide all but vanished in a few days when the bacteria became adapted to it.
2. Soil once adapted to 2,4-D did not have to go through the full preliminary period again to dispose of 2,4-D. Apparently, the bacteria were

COMING EVENTS

- August 3:** Field Day, Purdue University, West Lafayette, Ind. W. H. Daniel
- August 10:** Field Day, Texas Turf Association, City Auditorium, Wichita Falls, Texas. A. B. La Gasse, Director of Parks and Recreation, Wichita Falls, Texas, in charge.
- August 11:** Field Day, Rutgers, Rutgers University, New Brunswick, N. J. Ralph E. Engel.
- August 19-20:** Twenty - Second Annual Greenkeepers Turf Field Days, University of Rhode Island, Kingston, R. I. J. A. De France.
- September 8-9:** Turf Field Day, Pennsylvania State College, State College, Pa. H. B. Musser. (Starts at noon September 8 and ends at noon September 9.)
- October 21-22:** Fourth Annual Central Plains Turf Foundation Turf Conference, Manhattan, Kans. William F. Pickett.
- November 16-20:** American Society of Agronomy Meetings, Dallas, Texas. L. G. Monthey.

able to renew quickly their power to disintegrate 2,4-D and disposed of it much sooner than in unadapted soils.

The first soil tested contained 22 per cent organic matter, a higher content than many farm soils. 2,4-D was found to disappear rather rapidly from this sample. To approach usual conditions, soil was obtained from plot 16 of the Jordan Fertility Plots. This plot receives manure at the rate of 6 tons per acre every other year and is limed as needed. In comparative trials, the 500-parts-per-million dosage of 2,4-D actually disappeared from the high-organic-matter soil in one test sooner than the 250-parts-per-million dose. After the soils became adapted to dosages of 2,4-D, the chemical disappeared in about one fourth of the time required for the first application.

Editor's Note: This report by J. J. Reid, Professor of Bacteriology, appeared in the March issue of SCIENCE FOR THE FARMER. These tests were run at the Pennsylvania Agricultural Experiment Station, State College, Pa. Applications of 2,4-D have become part of the regular management practices of golf-course superintendents.