

of harmful climatic factors such as high humidity and temperature during summer months. All these factors—mostly the results of soil pollution could then be successfully treated and corrected with good results.

Conclusion

It has been in the mainstream of American tradition that specialized industries, in order to obtain a top quality product or service utilize industrial research as a solid scientific and economical base for prosperous business in the future. The American Academy of Science recommended research as a first step toward elimination of harmful effects of pollution in the air and water. Soil scientists in the U. S. look for new philosophy and policy in soil testing for higher yields of crops on unbalanced and polluted soils. The medical science recommends periodical check-ups in clinics for young and old and prescribe individual treatment. Superintendents must follow a similar path for turf improvement on "sick," contaminated and unbalanced soil environment. Individual research on each golf course and appropriate treatment, based on scientific principles, represent a new way for balanced soil environment. Year 1970 will be a milestone in common practice of turf management on golf courses in America.

REFERENCES

- ¹Houten, J. G.: "Aspects of Air Pollution in Agriculture" Landbouwkundig Tijdschrift 78 — 1, July 2, 1965, Netherlands.
- ²Zolman, V. J., "The Problem of Contaminated Water." *Turf-grass Times*, April, 1968. U.S.
- ³Zolman, V. J., "Atomic Turf Maintenance," *The Golf Superintendent*, March, 1967. U.S.
- ⁴Holmes, J. L., "Factors Influence Irrigation," *USGA Green Section Record*, March, 1966. U.S.
- ⁵Unpublished data of Brookside Research Laboratory, New Knoxville Ohio. U.S.

*"The Right Approach
to Good Turf"*

CHIPCO TURF PRODUCTS

HERBICIDES • INSECTICIDES • FUNGICIDES
MICRONUTRIENTS • WETTING AGENTS

Most Complete Line Under One Label

SEND FOR LITERATURE

RHODIA INC., CHIPMAN DIVISION
608 S. Dearborn St., Chicago, Ill. 60605

REPORT ON DDT

by Stanley Rachesky
Entomologist, University of Illinois

Recently in Illinois DDT has been restricted in its use for public health emergencies as designated by the Illinois Department of Public Health effective January 1, 1970.

Dr. H. B. Petty, Professor of Agricultural Entomology, University of Illinois College of Agriculture at Champaign-Urbana and the Illinois Natural History Survey just completed a comprehensive middle-of-the-road look at DDT. Following is a very short synopsis of his paper and a few added thoughts of my own.

In Illinois, DDT has been steadily phased out since the late 1940's. The last time DDT was agriculturally recommended was in 1964 on sweet corn for ear-worm and corn borer control. Since 1964 it has been recommended for use in Dutch elm disease spray and mosquito abatement and in a few isolated instances for the control of the bronze birch borer, iris borer and certain pine moths.

The World Health Organization has used more than half the total world production of DDT in recent years. For example, in India the annual loss of income because of malaria after World War II was near 1 billion dollars. By 1965 this was cut by 99.9 per cent. Deaths from malaria per year dropped from 750,000 to 1,500. The number of cases dropped from 7,500,000 to 150,000 per year. DDT, by prolonging human life, has without a question of a doubt contributed greatly to world overpopulation.

More research has been conducted on DDT and its fate on the environment than on any other pesticide. No human can possibly read and retain every written word. Confusion ensued. Data from research done was interpreted differently. Driven by public opinion to get to the bottom of whether DDT is bad or not we could have completely overlooked other possible pollutants, such as plasticizers, not to mention lead, zinc, carbon monoxide, etc.

How toxic is the pesticide you use around your home? Do you know the definition of pesticide? How about chemical cleaners like drain cleaners and soaps? Are they biodegradable? If you don't know, why are you using them?

The Federal Drug Administration continually checks our food supply by using "market basket" samples. Sampling is accomplished by purchasing food a 19 year old boy would consume. It was and continually has been concluded that the dietary intake of the DDT compounds remained constant and very well below the levels established by the Federal Drug Administration.

DDT is stored in the fat of humans. In the U.S.A. the average has dropped from 15.8 ppm in 1954 to

C. E. STEWART

Civil Engineer

Irrigation, Drainage, Water Supply, Pumping Plants
Design — Reports — Consultation — Supervision
18357 Homewood Ave. Homewood, Illinois

5.8 ppm in 1968. In other countries it ranged from a high in India of 23.3 ppm to a low in England of 2.2 ppm. What does this mean? — nobody really knows. Good or bad?

Men working in factories producing DDT contained 38 to 647 ppm. No problems developed. Leukemia studies concluded that addition of DDT to a diet has no bearing on the development of this problem. According to the American Medical Association journal an isomer of DDT is the only known treatment for adrenal cancer. More research is being done.

The effect on fish numbers of small amounts of DDT and other persistent pesticides is not too well known. In 1967, 2.96 per cent of the accidental fish kill in the U.S. was due to pesticides (329,130). On the other hand, 9 million fish were killed by industrial wastes, manure, sewage drainage, and mining combined. Sometimes fish thinning by pesticides is beneficial. When fish kills are reported in large numbers caused by pesticides they are always done in a derogatory manner. What is the public to think?

Fish catch figures are confusing. Since 1879 total poundage has varied from a low of 79 million pounds to a high of 146 million pounds. In 1967 the catch totaled 127 million pounds. Alewives are not used for human consumption. They accounted for 29 million pounds of fish caught in 1966. Lake trout populations had problems with the lamprey eel. Control of the eel increased the lake trout population. It is difficult to interpret the effect or lack of effect of insecticides using gross counts. So how do you come to a conclusion? Sport fishing is as good as it was 20 years ago.

Next — DDT and birds! Audubon members and bird lovers (I like birds, we have a feeder in our yard) don't get your feathers ruffled. Let's look at the facts!

In the past it was assumed that moderate amounts of insecticides found in any tissue of a bird caused its death. However, death, insecticide content, and application rate were often inconsistent and little correlation, except in massive exposures, could be established.

Eagles vs insecticides made frequent news stories in the past couple of years. Is the decrease in eagle population directly related to DDT? Well, exposure to DDT is nationwide as it is for most other animals. Occasionally enough insecticide is obtained to cause the bird harm, however, most of the eagles that die in the U.S. today die of other causes than pesticide poisoning.

Sterility in eagles? Eagles were fed doses of DDT in various studies at different dosage levels. It was determined that obvious testicular damage occurred only but not uniformly at dosage levels that were generally toxic to this big bird.

Much has been written in newspapers about egg shell thickness and breakage. Results of testing in Britain were duplicated here in the U.S. It was shown that egg shell thickness for eggs of the red-tailed hawk, the golden eagle, and the great-horned owl has not changed in 30 years, while thicknesses in the shells of the bald eagle, the osprey and the peregrine falcon has decreased in the past 30 years.

Bird population fluctuations since 1900 are difficult to access as are fish populations since man has

interfered so drastically with their environment. Audubon Christmas birds counts indicate increasing and decreasing bird species in number since 1945. It is quite apparent that while DDT has had an adverse effect on some bird species, DDT has not affected others. It is quite clear that man is the dominant force of change. Once undisturbed forest is now farmland, commercial factories, tract homes. Unknowingly man has selected habitats from one species and not another. In the year 1909 total bird population of the house sparrow, red-winged black bird, common grackle, meadowlark, morning dove, horned lark, Dick cissel, starling, bobolink and ten others numbered 40,230,000. In the year 1957 total numbers were 37,900,000. What was the people population of the U.S. in 1909 vs 1957? Think about land use then and now.

Many species of wildlife that have declined in numbers since the use of DDT were also declining prior to that time. Highways, airports, golf courses, suburban developments, farming, cars, exhaust fumes, etc., have all been increasing. It is difficult to assess all these factors but it is certain that the wildlife that will survive the future must adapt to man's conditions.

All authorities on the subject of pesticide use believe that insecticides must be a part of our future. Food production and quality must be maintained to feed an increasing population. Wiser use of pesticides will be accomplished.

Nels J. Johnson, Tree Experts, Inc.

SINCE 1930

Complete, economical tree service for Private Estates, Parks, Municipalities, Golf Courses Cemeteries, Schools, Industrial Areas.

All phases of Arboriculture, Diagnosing, Pruning, Treating, Transplanting, Fertilization, Hydraulic and Mist Spraying, Removals, Stump Routing, Municipal Forestry.

— FULLY INSURED —

GRADUATE FORESTERS • LICENSED ARBORISTS

MAIN OFFICE: 912 Pitner Avenue, Evanston, Illinois

Phones: GR eenleaf 5-1877 — GR 5-5255

Hinsdale, Illinois — FA 5-0970

BURDETT'S, INC.

Seeds • Fertilizers • Golf Course Supplies
Swift Road at North Avenue
P. O. Box 186 Lombard, Ill. 60148
Phone 312-629-1123



Uramite and NuGreen

Nelson

Sprinklers and Valves

Myers Sprayers and Pumps

All Insecticides and
Fungicides

Weed Killers —

Soil Sterilents

PROMPT SERVICE