

Phenoxy Compounds and Turf Injury

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Turf injury from 2,4-D, 2,4,5-T, and silvex herbicides has been suspected and demonstrated on occasions. In a study nearing completion, silvex was injurious to both top and root growth of Colonial and creeping bentgrass. Injury to top growth occurred in most of the treatments and it appeared as discoloration and thinning. Root growth was reduced in total growth and extensiveness by most treatment rates. Other effects from silvex treatments were lower drought tolerance, decreased food reserves in roots, and tissue abnormalities of the roots.

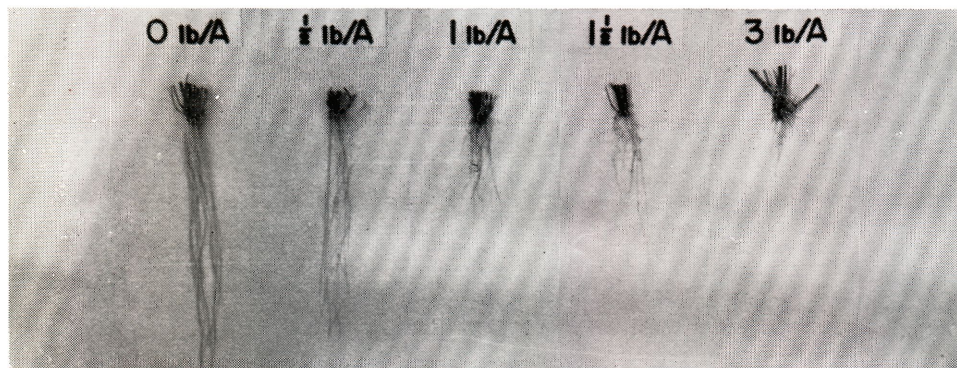
Since silvex and related compounds are very effective herbicides, it is still logical to use these chemicals and assume the risk of injury on many turf areas. If this is done, careful consideration might be given to factors that will reduce the chance of serious injury.

Bentgrass was more tolerant to silvex when grown at cooler temperatures. Early to mid-spring application of silvex after the first flush of new

growth was one of the safer periods for treatment. Applications in October, with cooler temperatures, appeared less safe. Late summer to early fall appears very risky if the weather is hot or the grass is weak. The amount of injury from treatments made in the later portion of the growing season was higher than expected. This result might be associated with the grass needs for recovery and rebuilding of food reserves during this period. Applications in late spring with the approaching hot weather are inadvisable especially if supplementary water is not available in dry, hot periods. Hot weather and summer treatments are not recommended if there is need for safety.

Seedling bentgrass was far less tolerant to silvex 2,4-D, and other phenoxy compounds than more mature bentgrass. Other grasses showed the same relationship, but they were less sensitive than bentgrass.

The minimal rate of $\frac{1}{2}$ pound per acre of silvex is much safer to bent-



Silvex, applied to Colonial bentgrass seedlings 10 weeks old, produced serious effects upon the root systems. From left to right, the plants in the photo were treated with 0, 1/2, 1, 1-1/2, and 3 pounds of silvex per acre, respectively.

grass than rates of $\frac{3}{4}$ to 1 pound per acre or higher. If the weed of concern is easy to kill, the lower rate of $\frac{1}{2}$ pound per acre is the logical choice. Higher rates should not be used without recognition of the greater risk that will be incurred.

Since a significant degree of risk is involved, chemicals such as silvex, 2,4-D, 2,4,5-T, and other phenoxy compounds might be used only on those portions of the turf area where there is a significant quantity of weeds.

ROYCE O. CORNELIUS
NACA News, April 1964

After sifting through the case histories and the conflicting reports of pesticide applications in the past, we reach a conclusion that is inescapable. Pesticides are of great benefit to society, yet they can be dangerous. Similarly, anesthetics, X-rays, and new drugs have been of incalculable value in alleviating suffering and restoring health to mankind. Yet these beneficial materials, unless used with scientific care, are deadly killers. So it is with pesticides, which have been used at times without a proper sense of understanding and responsibility. Certainly we must all work toward improving the understanding and careful use of these materials. While additional safety is desirable, this is not the time to build a pyramid of legislation and regulations on suppositions. Rather, this is the time to expand our already considerable knowledge. We must know more about pesticides rather than use them less.

Much of the criticism of pesticides has been general and sweeping. All users have been tarred with the same

brush. This is unfortunate, for hazard differs widely according to use.

TOXICOLOGY*

The 18-Hole Itch

The 51-year-old automobile-repair instructor had a flaming eczemalike eruption on his hands and arms, neck, face and legs. He told the University of Pennsylvania's Dermatologist Walter B. Shelley that he had first had it in 1959, soon after he took up golf. For the next two years it got bad in summer, better in winter. But after the 1962 season began, it stayed bad. He had noticed, the patient said, that it became "explosively worse" after he walked past workers spraying the greens. That was the doctor's clue.

The patient was given a cortisone-type drug and kept off the golf course. Within a week, he was much better. Then Dr. Shelley checked the spray used on the greens. It was a fungicide, and its active ingredient was thiram, a notorious cause of allergies. Since thiram is still used in processing rubber, Dr. Shelley notes in this week's A.M.A. Journal, "the thiram-sensitive individual must avoid such varied rubber products as art-gum erasers, bunion pads, eyelash curlers, condoms, gloves, goggles, dress shields, dental dams, bathing caps, headrests, garters, pessaries, elasticized garments, and mammary prostheses." And now, golf courses.

Dr. Shelley has added an extra hazard to the known perils of the 19th hole. Thiram is close chemical kin to disulfiram (Antabuse), which makes people sick when they drink. A golfer sensitized on the greens may have a *serious reaction* at the bar.

*Time Magazine, May 8, 1964

Editor's Note: Thiram is a widely used golf course fungicide. It has been used regularly on most golf courses for more than twenty years. It has been known to cause a temporary dermatitis, but apparently it is a very rare occurrence for one to be seriously affected by this material.