

used as a substitute for DNBP. MCP (2-methyl, 4-chlorophenoxyacetic acid) may be substituted for 2,4-D. Fall applications of 2,4-D are more effective than spring.

Children and animals should be kept off lawns sprayed with PMA or DNBP until the first rain after application.

Crabgrass presents a rather special problem. In areas where other broadleaved weeds are killed in the spring, crabgrass often comes up before the turf grasses. Two of the most popular chemicals for fighting crabgrass that have been reported are PMA (phenyl mercuric acetate) and potassium cyanate.

### Spot Control Possible

When some weeds, notably the weedy lawn grasses such as orchard grass, timothy, quackgrass, goose grass and nimble will, occur in spot infestations on the lawn, an application of TCA (trichloroacetic acid) will kill them. The solution for spot killing is prepared by dissolving one-half pound of TCA in one gallon of water. Using a syringe or spot-sprayer, wet the crowns of the weedy grass plants. This solution can kill good grass too, so care must be taken in applying it.

Spot control of broadleaved weeds can be made too. To get rid of wild onion or wild garlic, use a five percent solution of 2,4-D in water, five ounces in one gallon. Place a rubber glove over your hand and then a cotton glove over the rubber one. Dip the gloved hand into the solution, then squeeze the tops of the weeds with it hard enough to break through the leaves' waxy coating.

To effect the same control for dandelions, plantain and curled dock, use the same solution, but apply it with a piece of sponge attached to a broom handle or stick.

### Treat Before Emergence

Pre-emergence control can be made in hothouses or park flower beds with SES (sodium 2,4-dichlorophenoxyethyl sulfate). This chemical does not kill growing weeds and has not been tested on all ornamentals, and therefore should be tried on a small area first. For weeds that sprout under high-branching shrubs, there are three compounds recommended, NIX (sodium isopropylxanthate), PCP (pentachlorophenol) and sodium arsenite.

On parking lots, tennis courts, patios and walks, some chemicals known as soil sterilizers will rid the area of all plant life as long as the chemicals remain potent in the soil. Caution should be used with them, as they can even kill roots of large trees in the area. Some are the arsenicals, boron compounds, combinations of sodium borate and sodium chlorate and CMU (3-p-chlorophenyl-1, 1-dimethyl urea).

In 1954, it was estimated that 85,000,000 pounds of herbicides were used for both farm and non-farm use. Much of it was used by various states to control weeds along the nation's highways. For instance, Ohio is reported to have plans for spraying 8,400 miles of highway this year.

Brush and broadleaved weeds along the highway can be fought with a combination of 2,4-D and 2,4,5-T. Some tall woody brush may require cutting and spraying. Spraying with the weed-killers mixed with oil also helps.

Poison ivy, one of the weeds most harmful directly to humans, may be killed by combining 2,4-D and 2,4,5-T, although several treatments may be required. AMMATE (ammonium sulfamate) is also a good poison ivy killer.

Weed killing specialists at the Beltsville station said that there are several groups of chemicals now being studied that show promise. Three such groups are the chlorinated propionic acids, substituted urea herbicides and the chlorinated benzoic acids.

The chlorinated propionic acids look promising for controlling weedy grasses. One closely related compound, TCA, has an advantage over older compounds—when applied to the leaves of such weeds as Johnson grass or quackgrass, it goes to the roots more readily.

### Tested on Cotton Acreage

The substituted urea herbicides are designed for pre-emergence and soil sterilization. They are receiving extensive testing in the South on cotton plantations, where they are applied to the top layer of soil at the time of planting. They have also shown promise in controlling poison ivy in shaded areas, long a weed problem.

The chlorinated benzoic acids look as if they have a future as pre-emergence treatments against broadleaved weeds, especially for corn farming.

New chemical weed-killers are being developed every day and some have been found where one would least expect to find them. Two recent chemicals that show herbicidal promise are INH, isonicotinic acid hydrazide, used in the past as an anti-tubercular drug, and aminotriazole, a little known chemical used in the photographer's darkroom.

Another attack being launched against weeds is the use of "Peter Pan" chemicals that inhibit growth. One such compound recently announced is MH-40, a growth regulator that controls growth of grass at hard-to-get-at bunker edges.

The fight against weeds is a big and expensive one. Farmers last year spent almost one-fifth of their total expenditures for fighting crop pests on weed spraying and equipment. But although the problem looms large each spring, summer and fall, the battle is being won.

Science News Letter, July 2, 1955

The African crested *porcupine* is the largest living porcupine, measuring over three feet in length and weighing between 40 and 60 pounds.

There is no cure for *cerebral palsy*, but adequate training can make one-third of its victims entirely self-supporting, while nearly another fifth can become partially self-supporting.

### METEOROLOGY

## Change Ideas About Birth of Tornadoes

► ATMOSPHERIC CONDITIONS where tornadoes are spawned differ from those in the immediately surrounding area.

This suggestion, changing previous ideas about tornado birth, was made at the American Meteorological Society meeting in Kansas City, Mo., by Dr. Robert G. Beebe of the Weather Bureau's Severe Local Storms Forecast Center in Kansas City.

He found that the usual overall conditions of a layer of warm moist air overlaid by cool dry air do not exist in the immediate vicinity of a twister, although such conditions, known as inversions, are "well marked" six to 12 hours before the tornadoes are born.

Disappearance of inversions occurs over a period of several hours, not suddenly, Dr. Beebe found. He studied data from 22 tornadoes taken by radio-sonde balloons released within 50 miles and not later than an hour after the storms started whirling.

Instead of being pinned down by the cool dry air, the warm moist air above the twister penetrates to much greater heights than previously thought, his studies showed.

Science News Letter, July 2, 1955

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