

HORTICULTURE

No Excuse For Weeds

The annual weed battle is on. Promising new chemicals, being developed every day to help the farmer, gardener and homeowner, mean a new vocabulary for the public.

By HOWARD SIMONS

► MORE THAN three centuries ago, a gardener in one of Shakespeare's plays decided:

"I will go root away
The noisome weeds which without
profit suck
The soil's fertility from wholesome
flowers."

Today's gardener, whether he is a farmer or a homeowner, still faces the problem of getting rid of weeds. But the backaches undoubtedly suffered by Shakespeare's gardener in Richard II have given way to chemical compounds, spray guns, garden hose attachments and pellets.

Weeds are still a major agricultural problem and a nuisance. Hundreds of millions of dollars are lost to the "noisome weeds" each year and inestimable riches are robbed by weeds in home gardens, lawns and along the nation's highways.

Weedless World Foreseen

Weeds can be controlled. A combination of good gardening practices and the proper use of chemicals can eliminate weeds. Scientists are developing weed-killing chemicals and techniques at a rapid rate and the day is not too far distant when we may have a weedless world.

Weed-killing compounds, known as herbicides, are cropping up almost as fast as their intended enemies, the weeds. They are proving to be effective. They are also presenting the home gardener and the farmer with a new alphabetical vocabulary to master, with such abbreviated nicknames as NIX, SES, 2,4-D, AMMATE, 2,4,5-T, CMU and PCP.

Proper Gardening Required

The use of these chemicals to get rid of weeds from gardens and farms is not the whole story, however. Proper gardening is also a must. Agriculturists point out that healthy plants and lawns are as much weed controllers as are man-made weapons.

To keep a lawn or turf area free from weeds, U. S. Department of Agriculture specialists at the plant industry station, Beltsville, Md., recommend that gardeners adequately fertilize their lawns and gardens; plant turf grasses that are best suited to the particular soil; mow most grasses to a height of one and one-half to two inches; use proper watering practices, and control insects and plant diseases.

One of the fastest growing industries in the United States is the combined herbicide and spraying equipment business. Farmers alone spent an estimated \$50,000,000 last year to control weeds. Although spraying is widely practiced and accepted, it must be done with care.

Spraying is faster, easier and can be cheaper than hand-pulling weeds. But sprays must be used with caution or they might kill flowers or valuable crops at the same time they are killing unwanted weeds and grasses.

Rules for Use

Here are a few do's and don'ts in the use of sprays:

1. Do not spray when it is windy. Sprays drift.
2. Watch the weather. A chemical that is otherwise safe may damage wanted plants when the temperature is above 90 degrees Fahrenheit.
3. Use low pressure when spraying. High pressure is not needed to kill weeds.
4. Consult your local agricultural authorities to learn about differences in soils and

the way weeds grow in different parts of the country.

5. READ LABEL CAREFULLY AND FOLLOW DIRECTIONS. If used properly, herbicides are not dangerous.

Spraying can be done best during either the spring or the fall. Much of the chemical's effectiveness depends on the weather.

Three Methods of Fighting

There are three prescribed methods for fighting the weed war. They are known as pre-planting, pre-emergence and post-emergence. Pre-planting treatment is made on the soil before any seed is planted in the ground. Pre-emergence control is done after seeds have been sown, but before a desired plant pushes up through the ground. Post-emergence is designed to kill undesirable plants that exist in areas where plants are already growing.

Weeds can be best controlled either in the spring or the fall. For the control of broad-leaved weeds on home lawns this fall a mixture containing one ounce or two tablespoons of an amine salt of 2,4-D (2,4-dichlorophenoxyacetic acid) and four ounces or eight tablespoons of an ammonium salt of DNBP (4,6-dinitro ortho secondary butyl phenol) in one gallon of water per 1,000 square feet will give good control of chickweed, dandelions, curled dock, wild onion, wild garlic and henbit. KOCN can be



SPRAYING AWAY TROUBLE—A growth-inhibiting chemical, maleic hydrazide, is used here on a golf course to control the growth of grass on a hard-to-get-at bunker edge. Mixed together with 2,4-D, a herbicide, these two chemicals cut grass growth and kill weeds.

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

Have You Ever Played Nim With A Computer? GENIAC,

the first electrical brain construction kit, not only plays NIM but you can build over twenty-five other semi-automatic computers which display intelligent behavior, run on only one flashlight battery and require no soldering.

GENIACS are simple enough for intelligent boys and girls to put together yet interesting to anyone because they demonstrate in easily constructed models a fascinating variety of computing and reasoning circuits.

GENIAC is the result of five years of development by prominent computer designers to bring experimental reasoning machinery within the budget of the amateur scientist.

Some of the 33 GENIACS you can build from the completely detailed instruction manual are:

LOGIC MACHINES: Comparing; Reasoning; Syllogism Machine; Intelligence Tester.

GAME PLAYING MACHINES: Tic-Tac-Toe; Nim (Think you can beat the machine?)

ARITHMETICAL MACHINES: (Binary and Decimal): Adder; Subtractor; Multiplier; Divider; Arithmetical Carrying.

CODE MACHINES: Secret Coder; Secret Decoder; Combination Locks.

SIMPLE MACHINES: Burglar Alarm; Automatic Oil Furnace Circuit.

PUZZLE SOLVERS: The Space Ship Airlock; The Fox, The Hen, The Hired Man and the Corn; The Uranium Shipment and the Space Pirates.

ACTUARIAL: Douglas MacDonald's Will. GENIAC parts are specially manufactured to high tolerance; they include a special six deck switch of unique design and over 400 components plus a sixty-four page book "GENIACS, SIMPLE ELECTRICAL BRAIN MACHINES AND HOW TO MAKE THEM." GENIAC is a remarkable buy for

only \$19.95

Kit and instructions are returnable for full refund in seven days. This is a perfect father and son project; your whole family and your friends will enjoy the finished machines. You can design new computers from the adaptable parts.

-----"MAIL THIS COUPON"-----

SCIENCE KITS, SL1, 29 St. Marks Place, New York 3, N. Y.

Please send me:
1 GENIAC Electric Brain Construction Kit and Manual.

\$19.95 (East of Mississippi)

\$20.95 (Elsewhere in United States)

\$21.95 (Outside the United States)

Returnable in seven days for full refund if not satisfied. I enclose \$ in full payment.

My name and address are attached.