

Potassium Cyanate Passes Crabgrass Control Tests

By WILLIAM E. ZIMMERMAN

(American Cyanamid Company)

As a result of studies conducted the past two years at the laboratory of American Cyanamid Co. in Stamford, Conn., and leading eastern experiment stations, potassium cyanate, was discovered to possess herbicidal properties sufficient to kill many weeds growing as pests in agricultural crops. Crabgrass, (*Digitaria Sp.*), was noticeably affected by the chemical, in these 1946, '47 screening tests.

It looked like something had at last appeared promising for controlling crabgrass. There was a lot yet to be learned about the material. How would it work out in turf? Would it respond well in other sections of the country on principal turf varieties?

While testing chemicals for crabgrass control in the summer of 1948, at the New Jersey Agricultural Experiment Station, Drs. Gilbert Ahlgren, Dale Wolf and Ralph Engel, and their assistants, observed that the effectiveness of potassium cyanate was greatly increased when a wetting agent was added to the solution. Further observations and tests revealed that this combination would not only kill crabgrass without permanent turf injury, but the amount of chemical required for the job was materially reduced.

Further substantiation of these observations, in Rhode Island and Connecticut, in the 1948 season, indicated that perhaps something had been discovered for safe and effective material with which to combat crabgrass. Potassium cyanate looked so promising in the 1948 turf trials, a more complete study of the material was planned for the next season.

Testing During 1949

A comprehensive study was initiated during 1949 with potassium cyanate. Suggestions for its use as a crabgrass control chemical were sent to many leading research stations throughout the United States and parts of Canada. Tests at the various experiment stations were desired in order to try the material under as many variable conditions as possible. More information regarding weather, soil moisture, grass tolerances, number of applications and other factors was considered essential before statements could be made

regarding potassium cyanate as crabgrass killer.

In this program of testing, the Pennsylvania State College, the experiment station at Cornell University and the University of Maryland were instrumental in initiating several new series of crabgrass control plots at critical areas in their states. Many other studies were started at other state and federal experiment stations. Included in these were crabgrass studies at Beltsville, Maryland, where the Green Section of the USGA and Weed Investigations Section of the U.S. Bureau of Plant Industry, conducted cooperative field tests. Also the Georgia Coastal Plains Experiment Station at Tifton, Georgia, conducted a series of studies on the effectiveness of chemicals for crabgrass control on southern varieties. In addition to this program, Canadian and more intensive studies by American Cyanamid Co. personnel, and other commercial research workers in the Pennsylvania, New Jersey, New York and Connecticut areas resulted in much pertinent information regarding the use of potassium cyanate for crabgrass control.

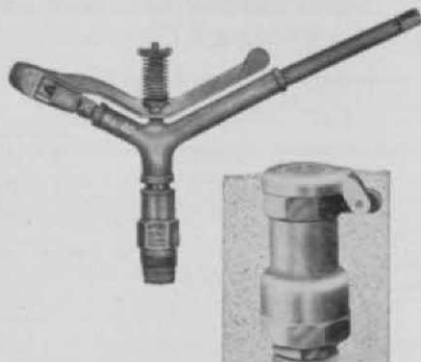
Potassium cyanate has proved itself to be a non-corrosive, non-combustible, and easy to apply chemical. Its low order of toxicity to humans and other warm blooded animals, marks it as an outstanding chemical for crabgrass control and will be available for such purpose during the 1950 season. In addition to these qualities, potassium cyanate will destroy many other weeds including chickweed, veronica, milky-spurge, knotweed, goosegrass and other difficult to kill weeds found in turf.

Rates for Crabgrass Control

Eight pounds of potassium cyanate per acre, applied twice or at the most three times, with 100 to 400 gallons of water, should be sufficient to kill crabgrass in branched, seed-head stage. Smaller seedling growth usually is killed with one eight-pound treatment.

Sixteen pounds applied once gives excellent kill under normal conditions and applied twice kills older matted crabgrass much better. Wetting agent, added to the solution, at the rate of 0.1% solution

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will try it, they will see that it is not toxic, it does not layer; and I feel they eventually will incorporate it into a part of their routine program.

References:

"The Soil and the Microbe"—Waksman and Starkey; John Wylie and Sons, New York, 1931.

"Fundamentals of Soil Science"—Miller and Turk; John Wylie and Sons, New York, 1943.

"Grass"—U. S. Dept. of Agriculture; U. S. Gov't Printing Office, Washington, D.C.

"Paper Presented at the Virginia-Carolinas Section FRPS, Durham, N. C., November 4, 1949 by A. C. McIntire, Chief of the Regional Forestry Division, U. S. D. A., Soil Conservation Service.

POTASSIUM CYANATE

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strength, improved the kill in most all cases—without injury to turf grasses.

Home-owners can use their small hand sprayers or sprinkling devices and greenkeepers their power equipment with equally satisfactory results. Sprays applied with 30 or more pounds pressure gave slightly better results. Solutions sprinkled had to be maintained at $\frac{1}{2}$ to

$\frac{3}{4}$ strength to equal the kill obtained by spraying.

The best time to apply potassium cyanate is in the spring, late summer and early fall. Poorest results were obtained during periods of extreme drought.

Principal turf varieties of both the north and south withstood extreme doses in tolerance tests. Bluegrass, Bermuda, St. Augustine, bents, fescues and others withstood as much as 64, 128 and 256 pounds of potassium cyanate per acre. This is 4, 8, and 16 times the amount required to kill crabgrass. Grasses growing under favorable conditions were not injured other than tip discoloration and many recovered within 5 to 10 days. Bents and fescues required 20 to 30 days for full recovery when extreme doses were used, but were not permanently injured, indicating a wide range of tolerance for many principal grasses commonly used as turf in the United States and Canada. With normal doses of 8 and 16 pounds, discoloration cleared up within 10 days and only discoloration from dead crabgrass, other weeds and the dead tips, was noticeable after the first cut following treatment.

Negotiations with several leading firms interested in formulating potassium cya-



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nate have recently been announced by American Cyanamid Co. Information regarding prices, package size and other details can be secured by writing to these firms.

PROS HELP LAPORTE

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bition July 2 involving Pros Jimmie Thomson and Marilynn Smith of the A. G. Spalding and Bros., Inc., staff. Also in the exhibition were Herman (Sonny) Uebele, son of the Beechwood pro, and Rudy Boyd, son of the junior program's initiator.

Young Uebele and Boyd, age 15 and 16 respectively, are topflight golfers in their own right and it was felt that interest in the program could be greatly stimulated if people could see how well junior golfers go around with pros. A \$1 admission charge was made for adults while children were admitted free to the exhibition.

The two young stars didn't disappoint the crowd of more than 500 which turned up to watch the show. Uebele and Thomson beat Boyd and Miss Smith by 14 points in a low-ball, low-aggregate match but Boyd's medal was 75, just three over Thomson's par-equaling 72. Uebele had a 77 while Miss Smith carded an 85.

Both Thomson and Miss Smith endeared themselves to LaPorte area fans with their willingness to demonstrate shots, sign scorecards and answer questions.

What pleased local fans, though, was the high praise the pros paid to the junior program.

"You have a fine program here," Thomson said. "I know of no finer thing you could do for your youngsters."

Miss Smith, who readily confessed a fondness for juniors, echoed his words.

The money raised by the exhibition was put into the fund to purchase clubs for the junior players. These clubs plus the renovated ones are placed in a pool and those wishing to use them for practice play or lessons may do so on a "library" plan—the youngsters sign for their clubs and then turn them in following play.

Under such a system a number of sets can be made available and should last for several years before replacements are needed.

A yearly exhibition series is planned for the future to help maintain a fund for equipment.

Mayor Taylor Ray of LaPorte and Sheriff Norman Reeg of LaPorte county have backed the program enthusiastically. Both have recognized its contribution to the fight against juvenile delinquency—an important part of any community's program.

Experience has shown that the children have learned a healthy respect for the golf course. The local pros say they are easier on the courses than the novice adult. With such encouragement, Boyd plans to lower



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