GLADIOLUS WEED CONTROL

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The use of chemicals for eradicating weeds from gladiolus was investigated on Long Island, starting the treatments in July, 1948. Gladiolus weeding is a costly operation, chiefly because it is a hand job.

Field tests conducted by Michigan State College demonstrated chemical weeding with 2,4-D is practicable as a pre-emergence soil treatment for broad-leaved weeds and crabgrass.

These preliminary field tests were conducted on the farm of Lawrence Westerhoven of Farmingdale, L. I. Potassium Cyanate and PMAS (Phenyl Mercuric Acetate), applied as post-emergence soil treatments, gave promising control of crabgrass and certain broad-leaved weeds without injury to the gladiolus. 2,4-D as a post-emergence treatment gave unsatisfactory control of crabgrass. Potassium Cyanate, marketed as Aero Cyanate by the American Cyanamid Company, was originally developed for weeding onions, and PMAS, sold as Tat C Lect by the O. E. Lincke Company, is being used for killing crabgrass in lawns.

PROCEDURE

Plots of 50 square feet each were planted on July 9, 1948 with 100 number 4 corms of Picardy gladiolus in a sandy clay loam previously cultivated bare of all weeds, of which 95% had been crabgrass. Twelve days after planting, the gladiolus leaves were 5 inches high, and hundreds of $\frac{1}{4}$ inch crabgrass seedlings dotted the soil, in addition to a small percentage of broad-leaved weeds, namely ragweed, smartweed, pigweed and lambs quarters.

While the weeds were in the seedling stage, sprays consisting of Potassium Cyanate, PMAS, Potassium Cyanate plus 2,4-D, PMAS plus 2,4-D and 2,4-D alone were applied over the area with a 3 gallon compressed air sprayer fitted with a fan spray nozzle. The spray was confined to the bases of the gladiolus in order to prevent any possible injury to the upper foliage and flower spike.

OBSERVATIONS AND RESULTS

When sprayed with Potassium Cyanate, crabgrass and the broad-leaved weeds turned brown within 24 hours and were scarcely visible after 3 days. PMAS produced no effect on the broad-leaved weeds, but killed crabgrass after 7 days, while 2,4-D completely eliminated the broad-leaved weeds, but merely retarded the growth of crabgrass, indicating that some type of grass killer should be used with 2,4-D. Uncultivated check plots were conspicuously covered with a 3 inch growth of crabgrass. In some plots weed control from the first spray lasted for about 3 weeks, after which a new population of crabgrass emerged. By applying a second spray to all the plots, some of them remained 100% weed free for the rest of the growing season. The effect of the various treatments on weed control and yield is summarized in the following table:

EFFECT OF POTASSIUM CYANATE, PMAS AND 2,4-D POST-EMERGENCE SOIL TREATMENTS ON WEED CONTROL AND YIELD OF PICARDY GLADIOLUS. (100 CORMS PER PLOT)

Treatment (2 replicates)	Pounds per Acre (2 sprayings)	Estimated Weed Control %	Corm Weight Increase %	Corms Flowering %	Ave. Stem Length Inches	Ave. No. Florets per Stem
PMAS	4	100	29.45	83.35	31.95	6.95
PMAS	2	95	13.70	81.75	30.00	5.95
PMAS	1.5	90	11.15	71.50	30.15	6.10
PMAS plus 2,4-D	4 1	100	38.15	74.50	32.10	7.30
PMAS plus 2,4-D	2 1	98	30.25	73.35	31.70	6.80
PMAS plus 2,4-D	1.5 1	98	29.95	76.40	31.60	6.55
2,4-D Sodium Salt	3	65	11.25	67.95	29.80	6.05
Potassium Cyanate	75	95	12.50	82.00	31.05	7.15
Potassium Cyanate	150	100	35.10	80.85	31.95	7.70
Potassium Cyanate plus 2,4-D	75 1	98	21.90	84.60	34.70	6.60
Potassium Cyanate plus 2,4-D	150 1	100	27.50	87.30	32.05	6.70
Uncultivated Check	0	0	16.00	53.45	29.95	4.40

No injury, discoloration or loss in weight occurred to the corms, flowers or leaves in any of the plots. While no injury resulted from the Potassium Cyanate except when applied directly to the upper foliage, rates of 75 and 150 pounds of actual material per acre are too expensive for commercial use. It is believed, however, that if Potassium Cyanate is applied in a 3 inch band on each side of the row as is done in commercial onion weeding, approximately 10 pounds of Potassium Cyanate per acre would be necessary for each spray. Similarly, much less PMAS and 2,4-D would be needed.

From planting time until harvesting the corms, the soil in all of the treated plots was neither cultivated, irrigated nor fertilized. Baking of the soil and subsequent cracking resulted from a lack of cultivation, but no harmful effects occurred to the plants. This suggests that the present practice of continually cultivating gladiolus not for weed control, but merely to loosen the soil, could be done less frequently.

This spring larger scale testing is contemplated with Potassium Cyanate and PMAS before commercial application is recommended. Smaller volumes and lower dosages of these materials will be retested under commercial conditions as well as a few weed killers that have been reported promising on gladiolus.

NO WEEDS WITH NO CULTIVATION.

FOREGROUND - POTASSIUM CYANATE.

BACKGROUND - NO TREATMENT.

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