WEED CONTROL IN GARDEN CHRYSANTHEMUMS *

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A major problem facing the commercial grower of garden chrysanthemums is weed control in the field. The cost of labor for weeding and the scarcity of efficient seasonal labor make the problem relatively complex. A study was undertaken at the University to determine whether weeds in chrysanthemum plantings could be safely controlled chemically or with a black plastic mulch.

The effectiveness of pre- and post-planting applications of liquid and granular materials was studied over a five-year period. Four varieties, Chippewa, Minnbronze, Purple Star and a numbered selection, were used in 1955. Wanda was used in the succeeding years. Primary weeds present in the plots were purslane (Portulaca oleracea), redroot pigweed (Amaranthus retroflexus), foxtails (Setaria spp.), crabgrasses (Digitaria spp.) and lamb's quarter (Chenopodium album).

All herbicides applied as sprays were put on in about 120 gallons of water per acre at 30 psi using a knapsack sprayer with a flat spray nozzle. Herbicides in granular form were applied with a shaker can. The area was cultivated immediately before herbicide application. Application was made in June, one to seven days after planting.

All treatments were replicated and the effectiveness of the chemicals was determined by counting the weeds in a 1 by 6-foot area in the center of each plot. Weed counts were made between 4 and 7 weeks after application of the herbicide.

Results

The soil sterilants Vapam (SMDC) and Mylone (DMTT) applied as pre-planting treatments provided satisfactory weed control for 4 to 6 weeks. Vapam was applied at the rate of 5, 10 and 15 pounds (1 quart = 1 pound) in 100 gallons of water followed by an additional application of 150 gallons of water per 1000 square feet. Mylone was applied at the rate of 5, 7½ and 10 pounds (4, 6 and 9 pounds active) in 100 gallons of water followed by an additional application of 340 gallons of water per 1000 square feet.

The lighter rate of application is suggested for sandy soils and the heaviest rate for heavy or organic soils. The follow-up application of water serves to move the soil sterilant down into the soil and to seal the surface to prevent the premature escape of the chemical from the soil. Such water requirements may make the use of these chemicals impractical in some field situations.

Soil sterilants should not be applied until the soil warms to a minimum temperature of 50° F. and preferably 60° F. Planting of the chrysanthemum plants cannot take place until the soil sterilant residue has left the soil. The waiting time is usually between 1 and 2 weeks.

Herbicides which provided satisfactory weed control are listed in Table 1.

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Table 1: Best herbicides for garden chrysanthemums.

Trade name	Symbol	Form of application	Rate of application per 1000 sq. ft.	Percent active	Active 1000 sq.ft.	Weed Control
Chloro IPC	CIPC	spray	63 cc	47	1.1 ounces	Good
" "	"	spray	126 cc	47	2.2 ounces	Excellent
" "	"	spray	177 cc	47	3.0 ounces	"
" "	"	granular	3.33 pounds	5.5	3.0 ounces	"
Telvar	monuron	spray	10 grams*	80	8 grams*	"
Telvar†	monuron†		5 grams*-	80	4 grams*-	
sesone	2,4-DES	spray	1.4 ounces	90	1.3 ounces	Excellent
Chloro IPC†	CIPC†		3.0 ounces	47	1.4 ounces-	
TCA	TCA	spray	2.1 ounces	90	1.9 ounces	Excellent

*28.35 grams 1 ounce

In general, application of the herbicide as a spray and in granular form gave similar results. Excellent weed control was obtained with 3.3 pounds granular Chloro IPC per 1000 square feet.

Mulching the soil around chrysanthemum plants with black plastic film provided very good weed control.

Discussion and Conclusions

Weeds in field plantings of garden chrysanthemums can be controlled safely and efficiently with herbicides. The individual grower must decide which chemical is preferable for his situation. Granular formulations may be preferable if a spreader is available. Granular Chloro IPC did not injure any chrysanthemum foliage in the University plantings when applied in broadcast fashion with a spreader.

Although numerous other herbicides were included in the study, they were not discussed here because they either failed to give satisfactory weed control, injured the chrysanthemum plants, or are not available except for experimental purposes.

A few other factors should also be noted. Chrysanthemums should not be cultivated following the application of an herbicide. Cultivation lessens the degree of chemical weed control by either burying the herbicide, or by diluting it by mixing with subsurface soil which may not contain any of the herbicide. In addition, cultivation might serve to bring untreated weed seeds to the surface where they can germinate. Late-season cultivation may be necessary, however, once the effectiveness of the herbicide has diminished appreciably.

Growers who have not had experience with herbicides may wish to try chemical weed control on a limited portion of their crop the first season.

Literature Cited

1. Stadtherr, R. J., and R. E. Widmer. Chemical weed control in garden chrysanthemums. Weeds 7:82-87. 1959.

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