

HERBICIDES FOR CABBAGE, CAULIFLOWER AND BROCCOLI

D. S. BURGIS

Gulf Coast Experiment Station

Bradenton

Herbicide testing on crucifers at the Gulf Coast Station was first reported by Burgis (1) in 1955. Since that time promising chemicals have been screened and tested on these crops, but it was not until 1960 that the herbicide Dacthal (dimethyl 2,3,5,6,tetrachloroterephthalate) (2) was reported as a selective chemical when used preemergence to these crops. In the same year Dallyn and Sawyer (3) reported that DAC 893 (Dacthal) gave good weed control with no significant reduction in the yield of cauliflower. The following year Dallyn and Sawyer (4) reported that Dacthal had given no crop injury with broccoli. In 1962 LeBaron (6) in Virginia and Hargan et al. (5) in New York concluded that Dacthal had a wide margin of safety when used on seeded or transplanted broccoli, cabbage or cauliflower.

This paper is a summary of three seasons of herbicide testing on seeded cabbage, cauliflower and broccoli on the sand lands of the west coast of Florida. It is hoped that this report will encourage the use of chemical weed control by growers.

METHODS AND RESULTS

Each experiment was arranged in a randomized block design with 4 replications on a Leon fine sand (pH 5.8 to 6.5). Each experimental unit was field-seeded and thinned to 1 plant per foot. All experiments were watered by open ditch seep irrigation. All preemergence treatments were applied as sprays at approximately 40 psi with a knapsack sprayer using a single 85° Tee Jet nozzle. Treatments were applied as a 24-inch band over the planted row. Data for each crop were obtained by harvesting and weighing the total heads produced. In the case of broccoli only the large curd from the bud of each plant was cut and weighed. A statistical analysis of data based on average weight per head was used as the criterion for determining differences among treatments. Herbicide rates are reported as lb./A. of active material on a broadcast basis.

Weed control data in the 1961 spring and fall tests were obtained by making weed counts in a

3 square foot area taken at random in each treatment replicate. In the 1962 Spring test 3 observers made estimates on a percent basis so that zero showed no control while a rating of 100 showed complete control, and the average values are reported.

1961-Spring. A herbicide test was conducted to evaluate the herbicide Dacthal on field-seeded cabbage. Thirty-foot plots were seeded to the variety Early Glory and treated with Dacthal on February 14. Treatments are shown in Table 1.

There was no reduction in the weight of head regardless of rate of Dacthal used. The yields from each Dacthal treatment was greater than from the hoed check, but these differences were not significant (Table 1).

Table 1. The influence of Dacthal on yield of seeded cabbage and weed control. (Spring 1961).

	Total yield	Avg. wt. per head	Percent weed* control
Check, hoed	185	3.0	0
Dacthal, 4 lbs./A.	209	3.6	25
Dacthal, 6 lbs./A.	213	3.5	22
Dacthal, 8 lbs./A.	200	3.4	15
Dacthal, 12 lbs./A.	227	3.7	30
L.S.D. .5%	NS	NS	

*The weeds shown here were dogfennel.

Most of the weeds counted (Table 1) were dogfennel (*Anthemis cotula* L.). There were only a few weeds and grasses, but all plots had to be hoed 3 weeks after treating in order to eliminate dogfennel. However, late season observation showed that Dacthal at all rates stunted the few crabgrass (*Digitalis sanguinalis* (L.) Scop.) and goosegrass (*Eleusine indica* (L.) Gaertn.) plants that were present.

1961-Fall. Three herbicides were tested in 50-foot plots preemergence to seeded cabbage (var. Copenhagen Market). Chemicals, rates and application methods are shown in Table 2.

Lorox killed the plants of the original seeding, and the plots were re-set with plants from the check plots when the plants were thinned 5 weeks later. Harvest records showed that Lorox reduced the average weight of head significantly (Table 2).

Neither Dacthal nor EPTC (at either rate) injured the seedling cabbage, nor did either reduce the total yield or average weight of head (Table 2). However, EPTC treatment caused

Table 2. The influence of preemergence herbicides on yield of seeded cabbage and weed control. (Fall, 1961)

	Total yield	Avg. wt. per head	Percent weed control
Check, hoed	164	2.1	0
EPTC, 8 lbs./A. ¹	148	2.1	91
EPTC, 3 lbs./A. ¹	134	1.8	90
Dacthal, 10 lbs./A.	145	1.9	92
Lorox, .75 lb./A.	49	1.0	99
L.D.S. 5%	53	.4	

¹Both EPTC treatments were sprayed over the seeded row; however, only the 3-pound rate was incorporated.

the plants in treated plots to produce leaves having very little bloom (wax); as a result of this the foliage was quite glossy and appeared lighter green in color.

Dacthal or EPTC at either rate gave better than 90 percent control (Table 2) of all weeds. The predominant weeds were: crabgrass; goosegrass; watergrass, *Cyperus* sp.; and cudweed, *Gnaphalium obtusifolium* L.

1962-Spring. Three preemergence herbicides were applied to 3 field-seeded cruciferous crops: cabbage, var. Copenhagen Market; cauliflower, var. Snowball; and broccoli, var. Early Green Sprouting. The experimental plots were 25 feet long. Chemicals and rates are shown in Table 3.

Table 3. Influence of preemergence herbicides on weed control and on seeded cabbage, cauliflower and broccoli. (Spring 1962)

	Avg. wt. per head (lbs.)			Percent weed control
	Cabbage	Cauliflower	Broccoli	
Diphenamid, 5 lbs./A.	2.5	2.3	.63	100
Dacthal, 10.5 lbs./A.	2.6	2.2	.59	97
R3415 (Stauffer) 4 lbs./A.	2.7	2.3	.67	87
Check, hoed	2.6	2.2	.42	0
L.S.D. 5%	NS	NS	.17	

No significant reduction was found in weight of head for cabbage or cauliflower. Broccoli heads were significantly heavier from herbicide-treated plots than from hoed check plots (Table 3). Although not shown in Table 3 the total

yields for all three crops showed the same difference among treatments.

The predominant weed species of the experimental area were the same as for the 1961 fall test. Dacthal gave 97 percent control of all weeds for 9 weeks. Diphenamid gave 100 percent control of all annual grasses and broadleaved weeds for 5 to 7 weeks but failed to control watergrass. The R3415 was effective for 7 to 8 weeks (Table 3).

DISCUSSION

The herbicide Dacthal appears to be well adapted for the preemergence control of most annual weeds and grasses on Florida sand lands. The crucifers grown in the tests reported here showed tolerance to an extent that indicates a wide margin of safety. Dacthal has failed to control dogfennel (*Anthemis cotula* L.), Bermudagrass (*Cynodon dactylon* (L.) Pers. and purple nutgrass (*Cyperus rotundus* L.).

Other herbicides included in these tests (Tables 2 and 3) have not shown enough selectivity for use on crucifers.

CONCLUSIONS

As a result of testing which indicates a wide margin of safety to cruciferous crops, it is recommended that Florida growers of field-seeded cabbage, cauliflower or broccoli use Dacthal for the control of annual weeds.

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LIME AND MINOR ELEMENT STUDIES WITH WATERMELONS

S. J. LOCASCIO AND H. W. LUNDY¹

Watermelons are often grown on newly cleared land that is usually quite acid. The requirements of such land for lime and minor ele-

ments are generally not known. The effect of lime applications has been reported by various workers to decrease (4), increase (5), or not affect watermelon yield (3).

The purpose of these experiments the first season was to study the effect of lime, nitrogen and potassium on the yield of watermelons. The design of the experiment was altered in the

¹Assistant Horticulturist, Vegetable Crops Department, Gainesville, Fla., and Associate Agronomist, Suwanee Valley Station, Live Oak, Fla.
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