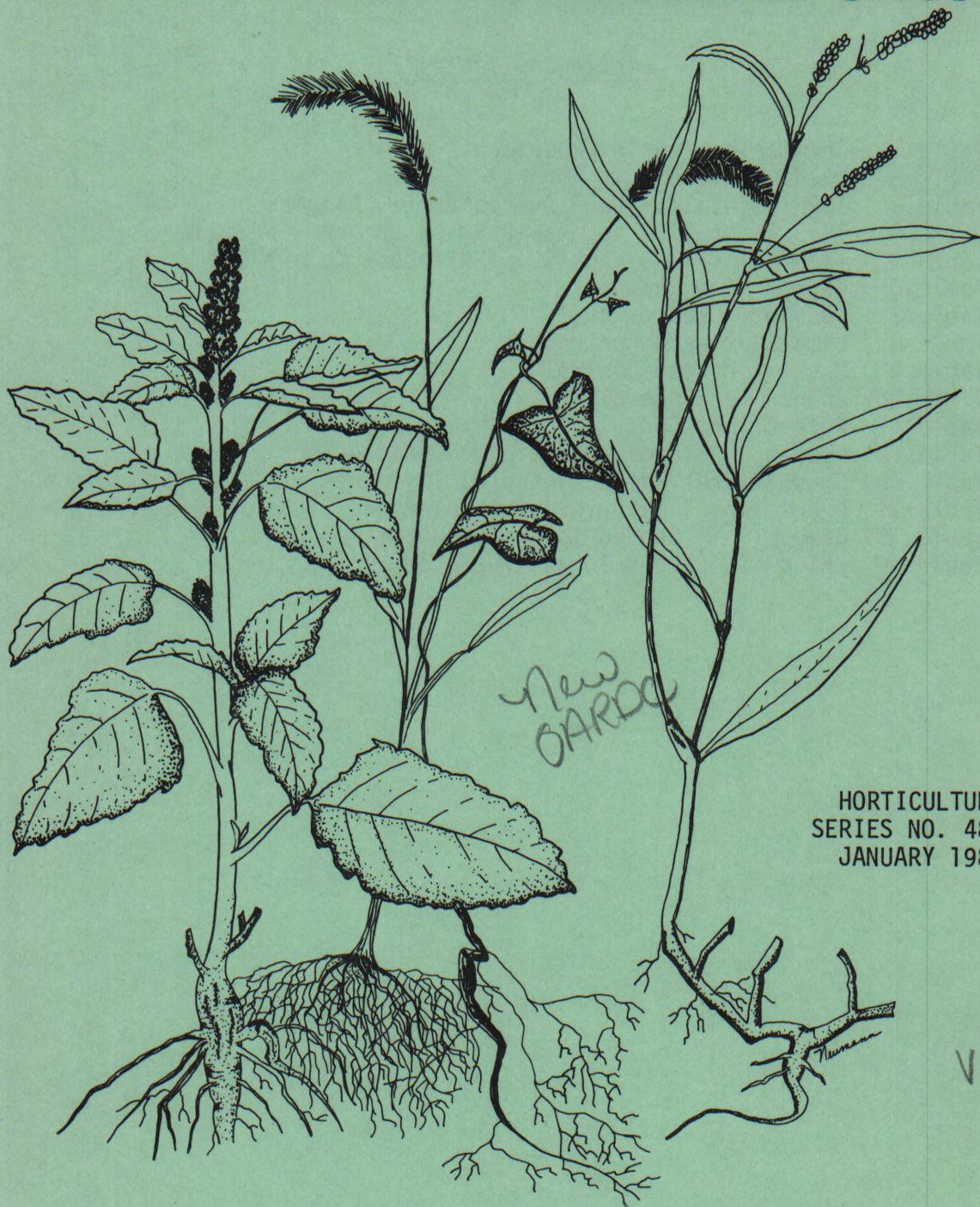


RESULTS OF WEED CONTROL STUDIES IN VEGETABLE CROPS



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HORTICULTURE
SERIES NO. 482
JANUARY 1980

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Results of Field Experiments
in Vegetable Weed Control - 1979

Stanley F. Gorske¹

General Materials and Methods

Abbreviations for herbicide application methods:

PPI - Preplant Incorporated

Pre - Preemergence to the weed and crop

Post - Postemergence to the weed and crop

All rates are in pounds of active ingredient per acre.

Sprayer:

Treatments were applied with a tractor-drawn sprayer. Spray pressure was 30 psi and spray volume was 24 gpa. Some treatments were applied with a CO₂ back pack type sprayer with a gpa of 40 and 30 psi.

Weed Ratings:

Weed counts were made by counting the number of weeds in a 1 square foot wire frame. Two counts were made for each replicate. Counts were made approximately 30 days after treatment. All plots were cultivated and hoed regularly after weed counts were taken (except unweeded check).

Statistical Analysis:

Duncans multiple range test at the 5% level was performed on all experiments.

¹Mailing Address: The Ohio State University, Department of Horticulture, 2001 Fyffe Court, Columbus, Ohio 43210.

Appreciation is given to the following people for their assistance in conducting these research studies:

Dr. E.K. Alban - Professor Emeritus
Mr. Gerald Myers - Farm Superintendant, Columbus
Mr. C.C. Willer - Branch Manager, Fremont
Ms. Sue Wallace - Summer Technician
Dr. Cass Jaworski - ARS-USDA, Tifton, GA

The cover illustration is by Ms. Jackie Neumann, Department of Horticulture, The Ohio State University.

TABLE 1. Chemicals Used in Experiments

Common Name	Trade Name
alachlor	Lasso
aldicarb	Temik
AXF 1045*	Unioii Carbide
bensulide	Prefar
carbofuran	Furadan
CDAA	Radox
CDEC	Vegedex
chloramben	Amiben/Vegiben
CP 55097 *	Monsanto
DCPA	Dacthal
diclofop	Hoelon
dinoseb	Premerge
diphenamid	Enide
DPX 6573 *	Dupont
EPTC	Eptam
ethalfluralin	Sonalan
linuron	Lorox
metolachlor	Dual
metribuzin	Sencor/Lexone
napropamide	Devrinol
naptalam	Alanap
nitrofen	Tok
paraquat	Paraquat
pebulate	Tillam
pendimethalin	Prowl
prometryn	Caparol
propachlor	Ramrod, Bexton
S-734 *	Uniroyal
trifluralin	Treflan

*Experimental compound, name of manufacturer is listed in place of trade name.

Table 2. Weeds Mentioned in Report

Common Name	Scientific Name
Barnyard Grass	Echinochloa crusgalli
Common Lambsquarter	Chenopodium album
Common Purslane	Portulaca oleracea
Fall Panicum	Panicum dichotomiflorum
Ladysthumb	Polygonum persicaria
Large Crabgrass	Digitaria sanguinalis
Redroot Pigweed	Amaranthus retroflexus
Sheperd's Purse	Capsella bursa-pastoris
Smallflower Galinsoga	Galinsoga parviflora

Table 3. 1979 Rainfall - Lane Avenue Farm
Columbus

Day	May	June	July	August	September
1		0.80			
2			1.10	0.50	
3					
4	0.80				
5	0.20		0.20		
6		0.50		0.30	
7					
8		0.50			
9			0.25		
10			0.50	0.60	
11		0.40	0.10		
12					
13	0.50			0.70	2.20
14					2.70
15					
16					
17					
18					
19					
20		0.60		0.50	
21		0.40		1.50	
22					
23					
24	0.70		0.30	2.90	
25	0.70		0.90		
26			0.10		
27				0.30	
28			0.70		
29	1.10		1.10	0.70	
30					
31					
TOTAL	4.00	3.20	5.25	8.00	4.90

Table 4. 1979 Rainfall - Vegetable Crops Branch
Fremont

Day	May	June	July	August	September
1				1.00	
2					
3					
4			1.58		
5				0.21	
6					
7					
8			0.95	0.07	
9			0.26	0.02	
10	0.09			0.28	
11					
12	0.17		0.02		
13				0.01	1.28
14	0.67			0.02	0.09
15					
16			0.12		
17		0.15		1.00	
18					
19					
20		0.87		0.36	
21		0.12			
22				0.02	
23			0.25	0.05	
24	0.37			0.32	
25			0.03		
26				0.57	
27		0.05			
28	3.13	0.24	0.01	0.44	
29					
30	0.13	1.11	0.06		
31	0.02		0.58	0.46	
TOTAL	4.58	2.54	3.86	4.83	1.37

Table 5. 1979 Rainfall - Muck Crops Branch
Celeryville

Day	May	June	July	August	September
1		0.50		0.20	
2			1.25	0.78	
3					0.50
4					
5	0.17		0.90		
6		0.52		0.20	
7					
8		0.78			
9				0.10	
10	0.09		0.50	0.40	
11	0.038	0.52			
12					
13			0.80	0.63	
14	0.025				1.90
15					
16	0.05				
17					0.15
18		0.02			
19					
20				0.76	
21		2.25		0.58	
22		0.015			
23			0.70		
24	0.03		0.17	0.70	
25	1.00		0.30		
26			0.75		
27				0.50	
28		0.020		0.14	
29	3.20	0.03		0.80	
30	0.08		0.18		
31	0.03				
TOTAL	4.713	4.655	5.55	5.79	2.55

Table 6. CARROT WEED CONTROL

Location: Muck Crops Branch
 Cultivar: Danvers 126
 Seeded: May 1
 Treated: Pre - May 2
 Post (3-leaf) - June 5
 Post (6-leaf) - June 19

Harvested: August 13
 Soil Type: Carlisle Muck, 75% O.M. pH 5.5
 Plot Size: 3 rows 20" apart on 5'x25' bed
 Plot Design: Randomized Complete Block with 4 reps

SUMMARY: The linuron was dissipated by mid season and some late season grass became established in the plot. There was no apparent phytotoxicity to the carrots from the post applications of metribuzin.

Treatment			No. weeds per sq. ft. 30 days after treatment								Yield lbs/15' row	
Herbicide	Method	Lb ai/A	Fall Panicum	Witch Grass	Large Crabgrass	Total Grass	Ladys Thumb	Redroot Pigweed	Common Purslane	Total BRDL	Total Plant Weight	Root Weight
Unweeded	-----	----	11.0	0.0	0.0	11.0	10.0	2.5	15.3	28.8	0.0	0.0
Handweeded	-----	----	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	39.5	15.8
Linuron 50WP	Pre	3.0	6.8	0.0	0.0	6.8	19.8	0.3	1.8	21.8	36.9	14.1
Linuron + Metribuzin 50WP	Pre Post (3-leaf)	3.0 0.5	3.3	1.8	5.8	10.8	0.8	0.0	0.0	0.0	35.2	17.3
Linuron + Metribuzin	Pre Post (6-leaf)	3.0 0.5	2.5	0.5	3.8	6.8	0.0	0.0	0.0	0.0	36.8	16.2
Linuron + Metribuzin + Metribuzin	Pre Post (3-leaf) Post (6-leaf)	3.0 0.5 0.5	5.5	1.0	3.0	9.5	0.3	0.0	0.0	0.3	37.4	16.4
LSD 5%			6.52	1.16	2.51	6.78	10.62	1.09	5.66	9.62	11.69	6.94

Table 7. CUCUMBER WEED CONTROL

Location: Vegetable Crops Branch
 Cultivar: Premier
 Seeded: June 19, 1979
 Treated: PPI and Pre 6/19/79
 Post - Diclofop, 7/24/79
 Post - Paraquat, 7/18/79

Harvested: Multiple Harvest
 Soil Type: Sandy loam, 3% O.M.
 Plot Size: 1 row 25' long, rows 5' apart
 Plot Design: Randomized Complete Block with 3 reps

SUMMARY: Weed pressure was very light in the entire plot. S-734 was phytotoxic to the cucumber plants and significantly reduced yield. The 2.25 lb. rate of Ethalfluralin was too high with good results being obtained from either the 1.12 or 1.75 lb. rate. Metolachlor significantly reduced yield at all rates tested, however no visible phytotoxic symptoms were observed. During 1979 there was no difference in cucumber yield when chloramben was applied as either the salt or methyl ester form.

Herbicide	Treatment	ai/A	No. weeds per sq. ft. 30 days after treatment				Yield (lbs/25' row)					Total Weight
			Large Crabgrass	Redroot Pigweed	Shepherds Purse	Total Broadleaf	1	2	3	4	Culls	
Unweeded	-----	----	1.0	0.7	2.7	3.7	3.9	6.6	4.4	1.5	3.3	19.7
Handweeded	-----	--	0.0	0.0	0.7	0.7	5.1	7.5	4.1	0.6	2.2	19.4
Bensulide +	PPI	4.00										
Naptalam	PPI	2.00	0.0	0.7	3.3	4.3	3.9	6.9	2.0	0.5	1.7	14.9
Naptalam +	Pre	2.00										
Diclofop 3.0 EC	Post	0.75	0.3	0.3	7.7	8.7	6.1	7.5	4.5	0.8	2.5	21.4
Naptalam +	Pre	2.00										
Diclofop 3.0 EC	Post	1.00	0.3	0.7	1.0	2.0	6.0	7.6	2.8	0.8	2.2	19.4
Naptalam +	Pre	2.00										
Diclofop 3.0 EC	Post	2.00	0.3	0.3	4.0	4.3	5.6	7.7	1.9	0.4	1.5	17.0
Naptalam +	Pre	2.00										
Diclofop 2.36 EC	Post	0.75	0.3	0.0	3.7	3.7	4.7	4.1	1.8	0.6	2.0	13.1
Naptalam +	Pre	2.00										
Diclofop 2.36 EC	Post	1.50	0.7	0.0	9.7	11.0	4.7	7.0	2.1	0.1	1.8	15.6
Paraquat	Post-directed (2-3 appl.)	0.25	0.3	0.0	5.0	6.0	4.0	6.7	5.7	1.0	2.9	20.3
Paraquat	Post-directed (2-3 appl.)	0.50	0.7	0.0	2.3	3.7	4.7	5.5	2.8	0.5	2.6	16.1
Paraquat	Post-directed (2-3 appl.)	1.00	0.3	0.0	5.0	6.0	3.8	3.9	2.4	0.9	1.6	12.7
Ethalfluralin	Pre	1.125	1.3	0.0	6.3	7.7	5.6	6.6	3.2	0.3	2.8	18.3
Ethalfluralin	Pre	1.75	0.3	0.3	3.0	4.0	5.9	6.1	1.6	0.2	2.1	15.8
Ethalfluralin	Pre	2.25	0.0	0.0	3.0	3.3	3.2	3.9	1.2	0.2	1.4	10.0
Ethalfluralin +	Pre	1.75										
Naptalam	Pre	2.00	0.3	0.0	4.7	5.0	4.5	7.7	1.8	0.6	1.7	16.4
S-734 +	PPI	0.50										
Naptalam	PPI	2.00	0.0	0.0	2.3	3.0	3.9	5.7	1.8	0.3	1.9	13.6
S-734	PPI	1.00										
Naptalam	PPI	2.00	0.0	0.0	0.3	0.3	2.3	2.5	0.9	0.0	1.0	6.7
S-734 +	PPI	2.00										
Naptalam	PPI	2.00	0.0	0.0	0.0	0.3	0.6	0.6	0.1	0.0	0.6	1.9
Chloramben*	Pre	2.00	0.0	0.0	2.3	2.7	5.8	5.9	1.8	0.2	1.9	15.7
Metolachlor +	Pre	1.50										
Naptalam	Pre	2.00	0.0	0.0	0.0	0.0	2.2	2.6	1.8	0.1	1.2	7.8
Metolachlor +	Pre	2.00										
Naptalam	Pre	2.00	0.0	0.0	0.0	0.3	3.3	4.0	0.9	0.2	2.0	10.6
Metolachlor +	Pre	2.50										
Naptalam	Pre	2.00	0.0	0.0	0.0	0.0	3.3	4.9	0.7	0.1	1.5	10.5
Chloramben** +	Pre	1.00										
Naptalam	Pre	2.00	0.0	0.0	0.7	0.7	6.1	7.0	1.8	0.6	1.8	17.4
Chloramben**	Pre	2.00	0.3	0.0	0.0	0.3	4.8	5.5	2.7	0.5	2.2	15.7
Duncans LSD 5%			NSD	0.47	5.60	5.91	2.45	3.63	2.12	NSD	1.22	8.17

* methyl ester

** salt

Table 8. LIMA BEAN WEED CONTROL

Location: Lane Avenue Farm
 Cultivar: Early Thorogreen
 Seeded: June 13, 1979
 Treated: PPI and Pre - June 13, 1979
 Post - July 6, 1979

Harvested: September 12, 1979
 Soil Type: Brookston Silty Clay Loam, 2% O.M.
 Plot Size: 1 row 25' long, rows 3' apart
 Plot Design: Randomized Complete Block with 3 reps

SUMMARY: Post directed applications of Paraquat and pendimethalin (PPI) did not significantly reduce the broadleaf population. No significant differences in bean germination or total yield existed between any of the treatments.

Treatment			No. weeds per sq. ft. 30 days after treatment					Yield lbs/15' row	
Herbicide	Method	Lb ai/A	Barnyard Grass	Smallflower Galinsoga	Redroot Pigweed	Common Purslane	Total Broadleaf	No. Plants	Bean Wt. (lbs)
Unweeded	-----	----	5.0	19.7	4.3	5.0	29.7	34.0	1.9
Handweeded	-----	----	0.0	0.0	0.0	0.0	0.0	45.0	2.8
Alachlor + Chloramben	PPI	2.00	0.0	1.3	0.0	0.0	1.3	34.3	3.2
Alachlor + Chloramben	PPI	2.00	0.0	0.3	0.0	0.0	0.3	30.3	2.8
Alachlor	PPI	2.00	0.0	1.7	0.0	0.7	2.7	30.3	3.7
Alachlor	Pre	2.00	0.0	0.0	0.0	0.3	0.3	31.3	3.2
Paraquat	Post-directed	0.25	0.7	18.7	2.0	9.7	30.3	27.0	1.0
Paraquat	Post-directed	0.50	0.7	21.7	1.3	9.0	32.0	33.7	1.7
Paraquat	Post-directed	1.00	0.7	3.7	2.7	3.7	10.0	34.7	2.6
Metolachlor	PPI	2.00	0.0	1.0	0.0	4.0	5.0	33.3	3.5
Metolachlor	PPI	2.50	0.0	0.0	0.0	0.7	0.7	32.7	3.9
Metolachlor	Pre	2.00	0.0	0.0	0.0	0.0	0.0	27.0	4.2
Metolachlor	Pre	2.50	0.0	7.7	0.0	0.0	7.7	29.0	4.1
Metolachlor + Chloramben	PPI	2.00	0.0	0.0	0.0	0.0	0.0	29.3	2.6
Metolachlor + Chloramben	Pre	2.00	0.0	0.0	0.0	0.0	0.0	29.7	3.5
Pendimethalin	PPI	2.00	0.0	26.7	0.7	0.7	28.0	35.0	3.4
Duncans LSD 5%			NSD	17.45	NSD	5.10	20.50	NSD	NSD

Table 9. MUSKMELON WEED CONTROL

Location: Lane Avenue Farm
 Cultivar: Burpee Hybrid
 Transplanted: June 7, 1979
 Treated: June 7, 1979

Harvested: Multiple Harvest
 Soil Type: Brookston silty clay loam, 2% O.M.
 Plot Size: 1 row 25' long, 2 plants/hill, 7 hills/row,
 rows 10' apart
 Plot Design: Randomized Complete Block with 3 reps

SUMMARY: Weed pressure in the entire plot was extremely light during 1979. The only weedy treatment was when diphenamid was impregnated into clear plastic. Soil applied diphenamid reduced the vigor of the muskmelon vines which resulted in a lower yield (non-significant reduction). All other treatments were satisfactory.

Treatment			No. weeds per sq. ft. 30 days after treatment		Yield lbs/25' row			
Herbicide	Method	Lb ai/A	Large Crabgrass	Common Purslane	No. of Marketable Fruit	Weight of Marketable Fruit	Total No. of Fruit	Total Weight of Fruit
Clear Plastic	-----	----	0.3	5.3	8.0	31.0	14.3	44.2
Black Plastic	-----	----	0.0	0.0	10.7	39.1	18.7	52.8
Photodegradable Brown Plastic	-----	----	0.0	0.0	11.3	42.1	16.3	52.2
Ethalfuralin	PPI	1.12	0.3	0.7	8.7	28.5	16.7	42.0
Ethalfuralin	Pre	1.12	0.3	0.0	7.7	29.9	14.0	40.5
Ethalfuralin	Pre	1.50	0.0	0.0	8.7	31.3	18.3	53.1
Ethalfuralin	Pre	3.00	0.0	0.0	10.0	33.3	18.0	44.9
Bensulide +	Pre	4.00						
Chloramben*	Pre	2.00	0.0	0.0	7.0	26.3	13.0	38.5
Bensulide +	Pre	4.00						
Chloramben**	Pre	2.00	0.3	0.7	7.3	26.2	15.0	39.8
Bensulide +	Pre	4.00						
Naptalam	Pre	2.00	0.3	2.0	9.0	35.0	17.7	48.2
DCPA	PPI	8.00	0.3	1.7	7.3	27.2	12.7	37.5
DCPA	PPI	12.00	0.0	0.0	8.3	33.6	14.0	47.3
Bensulide +	Pre	4.00						
Dinoseb	Pre	3.00	0.3	1.7	5.7	21.5	12.7	38.1
Diclofop +	Pre	1.50						
Naptalam	Pre	2.00	1.0	7.0	8.0	27.2	14.3	40.4
Metolachlor +	Pre	1.50						
Naptalam	Pre	2.00	0.0	0.3	9.0	33.5	15.7	47.2
Metolachlor +	Pre	2.00						
Naptalam	Pre	2.00	0.0	0.7	7.7	28.7	15.3	43.2
Diphenamid	Pre	2.00	0.3	0.0	3.7	14.3	10.3	24.9
Diphenamid - impregnated in plastic	-----	2.00	7.7	18.3	3.3	12.1	12.3	36.9
Duncans LSD 5%			NSD	NSD	NSD	NSD	NSD	NSD

* salt

** methyl ester

Table 10. ONION WEED CONTROL

Location: Muck Crops Branch
 Cultivar: 219B Super Elite
 Seeded: May 1, 1979
 Treated: Pre - 5/2
 Post - Nitrofen, 5/30/79
 Post - Diclofop, 6/5/79

Harvested: September 11, 1979
 Soil Type: Carlisle Muck, 75% O.M. pH 5.5
 Plot Size: 3 rows 20" apart on 60" bed 25' long
 Plot Design: Randomized Complete Block with 6 reps

SUMMARY: CP55097 significantly reduced onion yield at all rates tested. The 2.36 EC formulation of diclofop was more phytotoxic to seedling grasses than the 3.0 EC formulation, rate for rate. However there was no significant difference in onion yield for either formulation. Four pounds of propachlor was sufficient for good weed control and when followed by an application of nitrofen significantly increased yield.

Treatment		Lb ai/A	No. weeds per sq. ft. 30 days after treatment						Yield lbs/15' row	
Herbicide	Method		Fall Panicum	Redroot Pigweed	Ladysthumb	Smallflower Galinsoga	Common Lambsquarter	Total Broadleaf	No. of Bulbs	Weight of Bulbs
Unweeded	-----	----	19.6	2.0	3.4	0.2	33.4	40.6	0.0	0.0
Handweeded	-----	----	0.0	0.0	0.0	0.0	0.0	0.0	110.6	32.6
CP55097	Pre	1.50	1.2	0.2	0.2	0.0	4.8	5.4	17.4	4.4
CP55097	Pre	2.00	1.8	0.4	1.6	0.0	4.0	7.6	20.8	6.0
CP55097	Pre	3.00	1.6	0.0	1.8	0.0	2.0	5.4	19.4	7.3
Diclofop 3.0 EC +	Post	0.75								
Nitrofen WP	Post (no tank mix)	3.00	10.4	0.2	0.4	0.4	8.4	10.4	128.8	28.2
Diclofop 3.0 EC +	Post (no tank mix)	1.00								
Nitrofen WP	Post (no tank mix)	3.00	8.8	0.2	0.8	0.4	7.8	10.0	131.6	26.0
Diclofop 3.0 EC +	Post (no tank mix)	2.00								
Nitrofen WP	Post (no tank mix)	3.00	3.0	0.4	0.4	0.4	5.6	8.0	119.2	27.5
Diclofop 2.36 EC +	Post (no tank mix)	0.75								
Nitrofen WP	Post (no tank mix)	3.00	5.8	0.8	1.0	0.2	6.6	8.8	121.6	30.7
Diclofop 2.36 EC +	Post (no tank mix)	1.50								
Nitrofen	Post (no tank mix)	3.00	3.8	0.6	0.2	1.2	9.0	11.6	119.6	27.1
Propachlor	Pre	4.00	3.8	0.4	3.4	0.0	18.2	22.2	84.4	22.7
Propachlor	Pre	6.00	2.4	0.0	1.2	0.2	21.0	23.8	98.8	22.2
Propachlor +	Pre	4.00								
Nitrofen	Post	3.00	4.6	0.2	1.4	0.0	10.0	12.0	108.4	32.0
Propachlor +	Pre	6.00								
Nitrofen	Post	3.00	6.4	0.6	1.0	0.0	15.0	16.6	107.6	25.7
Duncans LSD 5%			4.89	1.03	NSD	0.61	10.27	9.64	32.39	8.64

Table 11. POTATO WEED CONTROL

Location: Lane Avenue Farm
 Cultivar: Kathadin
 Planted: May 10, 1979
 Treated: PPI and Pre - 5/10/79
 except linuron and dino-
 seb
 Delayed Pre - linuron and
 dinoseb 5/10/79
 Post - 6/28/79

Harvested: October 29, 1979
 Soil Type: Brookston Silty Clay Loam
 2% O.M.
 Plot Size: 1 row 35' long, rows 3' apart
 Plot Design: Randomized Complete Block with
 3 reps

SUMMARY: Due to the large amount of rain that fell during harvest season a large amount of the potatoes rotted in the field, resulting in the low yields. No accurate predictions can be made from this data.

Treatment		No. of weeds per sq. ft. 30 days after treatment					Yield	
Herbicide	Method	Lb	Fall	Redroot	Common	Total	Lbs. per row	
		ai/A	Panicum	Pigweed	Purslane	BRDL	Grade	Total
Unweeded	-----	----	1.7	2.0	8.7	10.7	7.5	11.1
Handweeded	-----	----	0.0	0.0	0.0	0.0	16.4	14.8
Metribuzin	Pre	0.50	0.3	0.3	1.0	1.3	7.7	15.5
Metribuzin	PPI	0.50	1.7	0.0	2.0	2.0	12.9	19.2
EPTC	PPI	4.00	0.7	0.7	10.7	11.3	11.2	20.1
EPTC + Metribuzin	PPI	4.00 0.50	0.0	0.0	0.0	0.0	11.2	20.2
Alachlor + Metribuzin	Pre	2.00 0.50	0.0	0.0	0.0	0.0	8.1	14.1
Alachlor	Pre	2.00	0.0	0.0	0.0	0.0	16.4	25.6
Alachlor + Metribuzin +	Pre	2.00 0.50						
Alachlor + Metribuzin	Directed Post	1.50						
Alachlor + Metribuzin	Directed Post	0.50	0.0	0.0	0.0	0.0	16.2	25.0
Alachlor + Metribuzin +	Pre	2.00 0.50						
Alachlor + Metribuzin	Directed Post	2.00						
Alachlor + Metribuzin	Directed Post	0.50	0.0	0.0	0.5	0.5	12.0	19.4
Alachlor + Metribuzin +	Pre	2.00 0.50						
Alachlor	Directed Post	1.00	0.0	0.0	0.0	0.0	14.9	23.8
Alachlor + Metribuzin +	Pre	2.00 0.50						
Alachlor	Directed Post	2.00	0.0	0.0	0.0	0.0	13.0	20.2
Metribuzin 4L + Pendimethalin	Pre	0.50 1.00	0.0	0.0	0.0	0.0	3.2	4.6
Metribuzin 4L + Pendimethalin	Pre	0.50 1.00	0.0	0.0	0.0	0.0	15.0	21.0
Linuron 4L + Pendimethalin	Pre	1.00 1.00	0.0	0.0	0.0	0.0	14.6	21.6
DP X 6573 WP	Pre	2.00	0.0	1.7	1.7	3.3	12.9	22.2
Metolachlor	PPI	2.00	1.0	2.0	14.0	16.0	11.8	18.6
Metolachlor	PPI	2.50	1.7	1.0	3.7	4.7	11.2	18.4
Metolachlor	Pre	2.00	0.0	0.0	0.0	0.0	14.4	21.6
Metolachlor	Pre	2.50	0.0	0.0	0.0	0.0	5.9	11.0
Metolachlor + Metribuzin	Pre	2.00 0.50	0.0	0.0	0.0	0.0	6.8	10.4
Metolachlor + Linuron	Pre	2.00 1.00	0.0	0.0	0.0	0.0	17.3	23.9
Metolachlor + Dinoseb	Pre	2.00 4.50	0.0	0.0	0.0	0.0	8.2	14.1
S-734	PPI	0.50	0.0	1.0	1.3	2.3	10.4	17.4
S-734	PPI	1.00	0.0	0.3	2.0	2.3	9.5	14.7
S-734	PPI	1.50	0.0	0.0	4.3	4.3	4.9	8.3
S-734 + Metribuzin	PPI	0.50 0.375	0.0	0.0	7.0	7.0	11.3	17.4
S-734 + Metribuzin	PPI	1.00 0.375	0.0	0.0	0.0	0.0	9.4	15.3
S-734 + Metribuzin	PPI	1.50 0.375	0.0	0.0	0.0	0.0	11.8	17.2
S-734 + Metribuzin	PPI	0.50 0.75	0.0	0.0	0.0	0.0	14.0	20.6
S-734 + Metribuzin	PPI	1.00 0.75	0.0	0.0	0.0	0.0	6.4	12.2
S-734 + Metribuzin	PPI	1.50 0.75	0.0	0.0	0.0	0.0	11.1	19.0
S-734 + Linuron	PPI	0.50 0.75	0.0	1.0	3.7	4.0	10.2	17.4
S-734 + Linuron	PPI	1.00 0.75	0.0	0.0	2.3	2.3	4.8	9.7
S-734 + Linuron	PPI	0.50 1.50	0.0	0.0	0.0	0.0	17.8	23.7
S-734 + Linuron	PPI	1.00 1.50	0.0	0.0	0.0	0.0	7.7	13.7
S-734 + Linuron	PPI	1.50 1.50	0.0	0.0	0.0	0.0	15.8	22.1
Duncans LSD 5%			0.97	NSD	7.29	7.86	NSD	NSD

Table 12. POTATO HERBICIDE/INSECTICIDE INTERACTION STUDY

Location: Lane Avenue Farm
 Cultivar: Kathadin
 Planted: May 10, 1979
 Treated: PPI and Pre 5/10 except for linuron and dinoseb delayed Pre, 5/30. Insecticides applied at planting in the furrow.

Harvested: October 30, 1979
 Soil Type: Brookston Silty Clay Loam, 2% O.M.
 Plot Size: 1 row 35' long, rows 3' apart
 Plot Design: Randomized

SUMMARY: Due to the large amount of rain that fell during harvest season a large amount of the potatoes rotted in the field, resulting in the low yields. No accurate predictions can be made from this data.

Treatment		Lb ai/A	Yield lbs/35' row			
Herbicide/Insecticide	Method		Grade A	Grade B	Cuts and Greens	Total
No herbicide, no insecticide	-----	----	2.9	2.2	1.4	6.4
Alachlor	Pre	2.00	3.6	2.3	2.1	8.0
Linuron	Pre	1.00	1.6	2.6	1.4	5.6
Dinoseb	Pre	3.00	3.4	1.5	1.4	6.4
EPTC	PPI	4.00	9.1	2.7	3.6	17.0
Metribuzin	Pre	0.50	3.1	1.2	3.9	8.2
Aldicarb	-----	3.00	6.8	3.5	3.1	13.5
Carbofuran	-----	3.00	4.2	2.1	2.1	8.4
Alachlor + Aldicarb	Pre	2.00				
		3.00	3.1	1.8	2.3	7.2
Alachlor + Carbofuran	Pre	2.00				
		3.00	28.4	5.0	2.6	36.0
Linuron + Aldicarb	Pre	1.00				
		3.00	8.6	1.8	2.6	14.0
Linuron + Carbofuran	Pre	1.00				
		3.00	4.9	1.1	2.1	8.1
Dinoseb + Aldicarb	Pre	3.00				
		3.00	4.7	1.9	4.0	10.6
Dinoseb + Carbofuran	Pre	3.00				
		3.00	2.5	0.6	1.1	4.2
EPTC + Aldicarb	PPI	4.00				
		3.00	5.3	1.2	4.0	10.5
EPTC + Carbofuran	PPI	4.00				
		3.00	0.4	0.9	0.7	2.0
Metribuzin + Aldicarb	Pre	0.50				
		3.00	3.7	1.6	2.4	7.7
Metribuzin + Carbofuran	Pre	0.50				
		3.00	4.5	2.1	2.3	8.9
Alachlor + Linuron	Pre	2.00				
		1.00	4.7	1.7	2.0	8.4
Alachlor + Aldicarb	Pre	2.00				
		1.00	7.3	3.9	4.1	15.4
Alachlor + Linuron + Carbofuran	Pre	2.00				
		1.00				
		3.00	2.7	1.0	0.9	4.6
Alachlor + Dinoseb	Pre	2.00				
		3.00	2.3	2.0	2.0	6.4
Alachlor + Dinoseb + Aldicarb	Pre	2.00				
		3.00	3.5	1.4	3.5	8.4
Alachlor + Dinoseb + Carbofuran	Pre	2.00				
		3.00	11.6	2.7	5.1	19.4
EPTC + Metribuzin	PPI	4.00				
		0.50	11.2	3.1	3.8	18.1
EPTC + Aldicarb	PPI	4.00				
		0.50				
		3.00	6.2	2.9	3.3	12.4
EPTC + Metribuzin + Carbofuran	PPI	4.00				
		0.50				
		3.00	2.4	0.5	1.6	4.5
Alachlor + Metribuzin	Pre	2.00				
		0.50	5.3	2.8	4.0	12.1
Alachlor + Metribuzin + Aldicarb	Pre	2.00				
		0.50				
		3.00	2.3	1.2	2.8	6.3
Alachlor + Metribuzin + Carbofuran	Pre	2.00				
		0.50				
		3.00	7.9	0.9	3.7	12.5
Duncans LSD 5%			6.85	NSD	NSD	10.82

Table 13. FRESH MARKET TOMATO VARIETAL
TOLERANCE STUDY TO METRIBUZIN

Location: Lane Avenue Farm

Cultivars:	Redpak	Floramerica
	Mainpak	Jetstar
	Better Boy	Supersonic
	Early Girl	

Treated: May 15, 1979 (All Treatments PPI)

Treatments:

- 1) Weeded Check
- 2) Trifluralin 0.5 lb. a.i./A
- 3) Metribuzin 0.5 lb. a.i./A
- 4) Trifluralin + 0.5 lb. a.i./A
Metribuzin 0.5 lb. a.i./A

Planted: May 15, 1979

Soil Type: Brookston silty clay loam, 2% O.M.

Harvested: Multiple harvests as fruit matured

Plot Size: 1 row 20' long, rows 5' apart, plants on 30" centers

Plot Design: Randomized Complete Block with 3 reps/cultivar and treatment

Summary:

None of the treatments significantly reduced fruit number or weight in any cultivar. There was no visible phytotoxic symptoms to plants of any cultivar. Weed control was excellent with the combination of trifluralin plus metribuzin. Trifluralin alone did not control Galinsoga spp. and metribuzin alone missed some grasses. All plots were hand hoed to prevent weed growth.

Table 13. (continued)

FRESH MARKET TOMATOES

Cultivar:	Treatment	Marketable Number	Marketable Weight	Cull Number	Cull Weight	Total Number	Total Weight
Redpak	Hand weeded	283	118	55	16	338	134
	Trifluralin	256	108	65	22	321	130
	Metribuzin	242	100	61	19	303	120
	Trifluralin + Metribuzin	303	128	68	21	371	149
Mainpak	Hand weeded	299	146	74	29	373	175
	Trifluralin	307	124	77	27	384	151
	Metribuzin	262	125	68	25	330	150
	Trifluralin + Metribuzin	314	140	80	30	394	170
Better Boy	Hand weeded	390	159	98	31	488	190
	Trifluralin	345	143	70	22	415	165
	Metribuzin	328	141	73	26	401	167
	Trifluralin + Metribuzin	358	149	78	26	437	175
Early Girl	Hand weeded	599	127	141	20	740	148
	Trifluralin	667	140	142	25	809	165
	Metribuzin	636	137	129	20	765	157
	Trifluralin + Metribuzin	628	142	155	23	783	165
Floramerica	Hand weeded	370	157	88	27	458	184
	Trifluralin	379	154	89	27	468	181
	Metribuzin	363	151	222	25	585	176
	Trifluralin + Metribuzin	417	173	93	29	510	202
Jetstar	Hand weeded	441	167	85	20	527	187
	Trifluralin	403	145	79	21	482	166
	Metribuzin	420	151	75	18	496	169
	Trifluralin + Metribuzin	473	168	85	22	558	190
Supersonic	Hand weeded	373	149	63	20	436	169
	Trifluralin	344	145	66	19	410	164
	Metribuzin	394	154	65	18	459	173
	Trifluralin + Metribuzin	407	157	79	23	486	180

Table 14. PROCESSING TOMATO VARIETAL
TOLERANCE STUDY TO METRIBUZIN

Location: Lane Avenue Farm and Vegetable Crops Branch

Cultivars:	UC 134-1-2	US 141
	Knox	US 28
	Red Rock	Hunt 208 F
	Purdue 73-28	Peto 80
	Libby 68	Hunt 62
	Libby 2981	Heinz 414
	Pacesetter 490	Heinz 2653
	Ohio 7663	Chico III
	Campbell 37	Heinz 1706

Treated: May 17, 1979 (All Treatments PPI)

Treatments:

- 1) Weeded Check
- 2) Trifluralin 1 lb. a.i./A
- 3) Metribuzin 0.5 lb. a.i./A
- 4) Trifluralin + 1 lb. a.i./A
Metribuzin 0.5 lb. a.i./A

Planted: May 18, 1979

Soil Type: Lane Avenue: Brookston silty clay loam, 2% O.M.
Fremont: Sandy loam, 3% O.M.

Harvested: Individual cultivars were harvested at 70% maturity.

Plot Size: Rows 5' apart, 25' long, plants on 1' centers

Plot Design: Randomized Complete Block with 4 reps/cultivar and treatment

Summary:

None of the treatments significantly reduced fruit weight in any cultivar at either location. A significant difference between treatments exists if harvest weights are combined for all cultivars. At Fremont the handweeded check had a significantly higher yield of marketable fruit than the other treatments. However, total yield was not affected by the treatments.

This could suggest that early growth and development was slowed by the herbicides which resulted in a significantly lower yield of marketable fruit. Growth during the remainder of the season could have been normal which would result in a greater number of immature green fruit at harvest and a nonsignificant treatment affect for total yield.

During 1979 the treatment affects were slight and harvest data for all 18 cultivars had to be combined to reveal a significant treatment affect to fruit yield.

Table 14. (continued)

PROCESSING TOMATOES

Cultivar:	Treatment	Yield (lbs. per 25 ft. row)					
		Columbus			Fremont		
		Marketable	Green	Total	Marketable	Green	Total
UC-134-1-2	Hand weeded	33	18	48	100	18	134
	Trifluralin	23	10	38	112	27	154
	Metribuzin	25	21	50	114	21	151
	Trifluralin + Metribuzin	18	14	38	102	19	137
Knox	Hand weeded	30	8	43	140	35	182
	Trifluralin	26	7	39	138	33	176
	Metribuzin	31	24	61	127	41	173
	Trifluralin + Metribuzin	23	16	44	107	22	136
Red Rock	Hand weeded	40	36	80	139	37	198
	Trifluralin	29	29	63	121	49	187
	Metribuzin	37	56	95	139	41	199
	Trifluralin + Metribuzin	28	37	69	134	46	193
Purdue 73-28	Hand weeded	51	20	80	123	33	174
	Trifluralin	47	18	71	116	36	173
	Metribuzin	66	29	101	123	36	178
	Trifluralin + Metribuzin	50	23	82	123	34	169
Libby 68	Hand weeded	49	25	82	173	33	231
	Trifluralin	49	26	79	155	53	230
	Metribuzin	41	54	100	164	35	224
	Trifluralin + Metribuzin	51	43	100	166	44	231
Libby 2981	Hand weeded	54	25	91	110	44	181
	Trifluralin	57	31	97	80	41	153
	Metribuzin	63	42	115	87	43	159
	Trifluralin + Metribuzin	50	26	83	87	51	157
Pacesetter 490	Handweeded	41	27	75	124	28	184
	Trifluralin	40	37	83	119	40	186
	Metribuzin	51	34	90	105	36	169
	Trifluralin + Metribuzin	45	31	71	107	42	174

Table 14. (continued)

	Columbus			Fremont			
	Marketable	Green	Total	Marketable	Green	Total	
Ohio 7663	Hand weeded	29	9	47	116	50	189
	Trifluralin	36	23	66	117	50	186
	Metribuzin	36	24	65	108	54	181
	Trifluralin + Metribuzin	30	17	52	103	49	170
Campbell 37	Handweeded	53	23	90	154	39	218
	Trifluralin	70	55	134	156	45	220
	Metribuzin	86	45	140	142	44	205
	Trifluralin + Metribuzin	64	38	110	131	46	197
US 141	Handweeded	34	24	65	137	64	217
	Trifluralin	43	29	77	132	68	215
	Metribuzin	34	38	79	112	80	205
	Trifluralin + Metribuzin	34	30	71	129	67	210
US 28	Handweeded	25	10	40	163	33	213
	Trifluralin	31	17	54	144	39	205
	Metribuzin	37	20	63	150	45	214
	Trifluralin + Metribuzin	31	20	57	146	44	213
Hunt 208 F	Handweeded	22	13	41	106	51	196
	Trifluralin	38	18	65	112	61	203
	Metribuzin	47	32	90	102	54	192
	Trifluralin + Metribuzin	46	24	82	104	63	198
Peto 80	Hand weeded	21	6	37	97	22	127
	Trifluralin	36	8	54	84	28	122
	Metribuzin	33	15	61	75	32	115
	Trifluralin + Metribuzin	27	17	53	79	32	119
Hunt 62	Hand weeded	23	14	43	97	44	146
	Trifluralin	20	15	40	92	58	156
	Metribuzin	22	14	39	89	60	155
	Trifluralin + Metribuzin	30	15	47	81	69	157
Heinz 414	Hand weeded	24	16	45	114	47	179
	Trifluralin	30	25	63	123	57	193
	Metribuzin	34	18	59	107	55	178
	Trifluralin + Metribuzin	29	19	52	103	60	179

Table 14. (continued)

	Columbus			Fremont			
	Marketable	Green	Total	Marketable	Green	Total	
Heinz 2653	Hand weeded	17	2	22	95	22	128
	Trifluralin	15	2	20	84	24	120
	Metribuzin	25	7	36	78	28	116
	Trifluralin + Metribuzin	20	4	27	76	34	122
Chico III	Hand weeded	25	8	39	141	45	209
	Trifluralin	29	18	54	132	49	202
	Metribuzin	37	11	56	124	49	197
	Trifluralin + Metribuzin	31	14	51	125	50	198
Heinz 1706	Hand weeded	30	9	43	159	32	206
	Trifluralin	39	14	57	156	32	201
	Metribuzin	34	12	49	154	27	193
	Trifluralin + Metribuzin	37	15	57	151	36	202

Table 14. (continued)

ALL CULTIVARS COMBINED

Treatment	Columbus	Fremont	Both Locations
Marketable Fruit (lbs. per 25 ft. row)			
Hand weeded	33.4	127.3	80.3
Trifluralin	36.5	120.6	78.6
Metribuzin	40.9	116.7	78.8
Trifluralin + Metribuzin	35.9	114.0	75.0
Duncans LSD 5%	4.56	6.32	3.90

Green Fruit (lbs. per 25 ft. row)			
Hand weeded	15.9	37.7	26.8
Trifluralin	21.2	43.8	32.5
Metribuzin	27.6	43.4	35.5
Trifluralin + Metribuzin	22.5	45.0	33.7
Duncans LSD 5%	4.54	3.87	2.98

Total Fruit (lbs. per 25 ft. row)			
Hand weeded	56.1	184.0	120.1
Trifluralin	64.1	182.3	123.2
Metribuzin	75.0	178.0	126.5
Trifluralin + Metribuzin	63.6	175.6	119.6
Duncans LSD 5%	7.63	NSD	NSD

Table 15. CAMPBELL 38 SEEDED TOMATO WEED CONTROL

Location: Lane Avenue Farm
 Cultivar: Campbell 38
 Seeded: May 22, 1979
 Treated: PPI and Pre May 22, 1979
 Diclofop & paraquat: 6/28/79
 Paraquat (2nd application)
 7/6/79
 Paraquat (3rd application)
 8/12/79

Harvested: September 12, 1979
 Soil Type: Brookston Silty Clay Loam 2% O.M.
 Plot Size: 1 row 20' long, rows 5' apart,
 plants on 1' centers
 Plot Design: Randomized Complete Block with
 3 reps

SUMMARY: Post applications of paraquat were not sufficient to provide good weed control. S-734 plus napropamide provided good weed control but was phytotoxic to the tomatoes when more than 0.5 lbs. of S-734 was applied. Napropamide alone provided good weed control with no phytotoxic symptoms to the tomatoes with either the 4F or 50W formulation. Pebulate slowed plant growth which resulted in lower yields (although non-significant). The 2.36 EC formulation of diclofop appeared to be more phytotoxic to the tomatoes than the 3.0 EC formulation.

Treatment		Lb ai/A	No. weeds per sq. ft. 30 days after treatment				Yield (lbs/20' row)		
Herbicide	Method		Barnyard Grass	Redroot Pigweed	Common Purslane	Total Broadleaf	Marketable Weight	Green Weight	Total Weight
Unweeded	-----	----	2.3	3.0	13.7	16.7	6.5	1.6	8.6
Handweeded	-----	----	0.0	0.0	0.0	0.0	22.0	21.6	46.9
Napropamide 4F	PPI	2.00	0.0	0.0	2.3	2.7	19.7	23.6	45.6
Napropamide 50W	PPI	2.00	0.0	0.3	3.0	4.3	23.2	20.2	45.2
Paraquat	Post-								
	Direct	0.25	0.0	3.3	7.3	11.0	11.6	6.1	19.3
Paraquat	Post-								
	Direct	0.50	0.3	0.3	12.0	12.3	11.5	10.9	26.3
S-734 +	PPI	0.50							
Napropamide	PPI	2.00	0.0	0.0	2.7	3.0	16.9	24.9	42.8
S-734 +	PPI	1.00							
Napropamide	PPI	2.00	0.3	0.0	3.0	4.3	4.5	5.8	10.5
S-734 +	PPI	2.00							
Napropamide	PPI	2.00	0.0	0.0	0.7	0.7	1.5	8.5	10.2
Diphenamid +	Pre	4.00							
Diclofop 3.0 EC	Post	0.75	0.0	0.0	10.0	10.3	23.6	25.1	50.3
Diphenamid +	Pre	4.00							
Diclofop 3.0 EC	Post	1.00	0.7	0.0	5.7	6.7	26.0	21.5	49.6
Diphenamid +	Pre	4.00							
Diclofop 3.0 EC	Post	2.00	0.0	0.3	8.7	9.7	19.4	16.4	38.0
Diphenamid +	Pre	4.00							
Diclofop 2.36 EC	Post	0.75	0.3	0.3	9.0	10.7	13.4	16.4	33.0
Diphenamid +	Pre	4.00							
Diclofop 2.36 EC	Post	1.50	0.3	0.0	7.7	8.0	17.9	22.9	43.1
Pebulate	PPI	4.00	0.0	0.0	5.7	6.0	19.4	14.3	35.6
Pebulate	PPI	5.00	0.0	0.3	1.7	2.3	11.4	16.1	28.3
Pebulate +	PPI	4.00							
Napropamide	PPI	1.00	1.3	0.0	0.7	1.7	16.0	17.0	34.3
Duncans LSD 5%			0.96	NSD	6.57	7.32	13.02	13.99	22.12

Table 16. CHICO III SEEDED TOMATO WEED CONTROL

Location: Lane Avenue Farm
 Cultivar: Chico III
 Seeded: May 22, 1979
 Treated: Pre - May 22
 Post - June 28

Harvested: August 28, 1979
 Soil Type: Brookston Silty Clay Loam, 2% O.M.
 Plot Size: 1 row 25' long, plants 1' apart, rows
 5' apart
 Plot Design: Randomized Complete Block with 3 reps

SUMMARY: Chico III is not a good tomato cultivar to raise in the Columbus area. A large amount of variability existed between individual plants and reps. This is evident from the differences in treatment yields with no statistical differences.

Treatment		Lb ai/A	No. weeds per sq. ft. 30 days after treatment					Yield lbs/25' row		
Herbicide	Method		Barnyard Grass	Common Purslane	Smallflower Galinsoga	Common Lambsquarter	Total Broadleaf	Marketable Weight	Green Weight	Total Weigh
Unweeded	-----	----	4.3	11.3	8.3	2.7	22.3	0.2	1.2	1.5
Handweeded	-----	----	0.0	0.0	0.0	0.0	0.0	9.4	7.6	18.0
Diphenamid + Diclofop 3.0 EC	Pre Post	4.00 0.75	0.7	11.7	4.7	0.0	16.3	8.3	8.2	16.7
Diphenamid + Diclofop 3.0 EC	Pre Post	4.00 1.00	1.7	17.3	6.0	0.3	24.3	11.2	9.7	21.6
Diphenamid + Diclofop 3.0 EC	Pre Post	4.00 2.00	0.7	16.0	3.3	0.3	21.3	8.7	11.0	20.5
Diphenamid + Diclofop 2.36 EC	Pre Post	4.00 0.75	0.0	12.7	7.3	0.7	21.0	9.7	10.1	20.4
Diphenamid + Diclofop 2.36 EC	Pre Post	4.00 1.75	0.3	11.0	4.0	0.3	16.0	7.7	10.7	18.6
Diphenamid	Pre	4.00	0.0	12.0	5.0	0.0	17.0	9.7	7.0	17.5
Diphenamid + AXF 1045	Pre Post	4.00 0.25	0.3	13.0	3.7	0.3	18.3	1.7	4.4	6.2
Duncans LSD 5%			1.44	7.97	2.07	NSD	9.78	NSD	NSD	NSD

Acknowledgments

Appreciation is given the following industries for their support. Without this support much of this work would not have been accomplished.

American Hoechst Corp.
Ortho Div., Chevron Chemical Corp.
Mobay Chemical Corp.
Ciba-Geigy Corp.
Uniroyal Chemical Corp.
Stauffer Chemical Co.
Monsanto Co.
E.I. duPont de Nemours
Diamond Shamrock Chemical Co.
Eli Lilly & Co.
Union Carbide Corp.
Ohio Food Processors Assn.
Edison Plastics Co.
Joseph Harris Co.
Burpee Seed Co.

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