Horticulture Department Series No. 640 March 1994

RESULTS OF WEED CONTROL STUDIES IN VEGETABLE CROPS AND POPCORN - 1993

Dr. Stanley F. Gorski

Department of Horticulture
The Ohio State University
Ohio Agricultural Research and Development Center
Columbus, OH

TABLE OF CONTENTS

This publication also reports research involving pesticides. It does not contain recommendations for their use, nor does it imply that the uses discussed here have been registered. All uses of pesticides must be registered by appropriate State and Federal agencies before they can be recommended.

Results of Field Experiments in Vegetable Crops 1993

Dr. Stanley F. Gorski[1]

GENERAL MATERIALS AND METHODS

Abbreviations for herbicide application methods:

PPI	-Preplant incorporated
Pre	-Preemergence to the weed and crop
Del Pre	-Delayed preemergence, just prior to crop emergence
Post	-Postemergence to the weed and crop

Sprayer:
Treatments were applied with a CO_2 backpack type sprayer with a gpa of 25. Other volumes used are noted in individual studies.

Weed Ratings:
Weed counts , for the control plots, were made by counting the number of weeds in a 1 square foot wire frame. Counts were made approximately 30 days after treatment. Comparing to the control, treated plots were visually rated for % weed control. All plots were cultivated and hoed regularly after weed counts were taken (except unweeded check).

Injury rating:
Visual rating was done on a percent injury basis with 0 denoting no injury and 100 indicating plant death.

Statistical Analysis:
Fishers LSD at the 5% level was performed on all experiments.
Plot design was a Randomized Complete Block (RCB) with 3,4, or 5 reps.

Spray Additives:
Some postemergence applications were with crop oil concentrate (C.O.C.) or a nonionic surfactant (X-77).

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

Mr. Mark Schmittgen - Farm Superintendent, Columbus
Dr. Richard Hassell - Branch Manager, Celeryville
Mr. Ken Scaife - Branch Manager, Fremont

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

1993 Rainfall - Lane Avenue Farm - Columbus

DAY	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1			2.38		
2		0.14	0.07		
3	0.01	0.04			
4	0.73	0.03			
5	0.01	0.02			
6		0.03			
7		0.01			
8		0.01			
9		0.01			
10		0.01			
11		0.01			
12	0.46	0.01			
13	0.13				
14		0.20			
15					
16				0.08	
17				0.17	
18	0.18	0.11			
19	0.01				
20		0.09		0.02	
21	0.11	0.12			
22		0.04			
23	0.13	0.01			
24	0.09	0.05			
25		0.99			
26		0.20			
27		0.75			
28	0.32	0.91			
29	0.26				
30	0.27	0.91			
31	0.22				
TOTAL	2.91	4.70	2.45	0.27	

1993 Rainfall - Vegetable Crops Branch - Fremont

DAY	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1			0.11		0.01
2			0.12	0.12	0.02
3			0.15		0.39
4		0.02		0.11	0.33
5	0.17	0.43			
6					0.01
7		0.02	0.16		0.06
8		1.03	0.48		
9			1.02		
10			0.03		0.02
11			0.03	0.25	
12			0.33		
13					
14					
15		0.01			0.21
16					
17					
18					
19	0.02		0.07		
20		0.02	0.02	0.01	
21		0.36			0.02
22					
23	0.05				0.02
24	0.18				0.11
25	0.02		0.01		
26		1.34			0.67
27					
28					0.09
29	0.11				0.10
30					
31	0.42			0.15	
TOTAL	0.92	3.23	2.53	0.64	2.06

TABLE 1: Chemicals Used in these Studies

TRADE NAME	COMMON NAME
Accent	DPX-M6316 + Atrazine
Alanap	Naptalam
Amiben	Chloramben
Beacon	CGA-136872
Command	Clomazone
Curbit	Ethalfluralin
Dacthal	Desmedipham
Devrinol	Napropamide
Dual	Metolachlor
Fusilade 2000	Fluazifop
Goal	Oxyfluorfen
Gramoxone Extra	Paraquat
Kerb	Pronamide
Lentagran	Pyridate
MON-8422	Monsanto
MON-8435	Monsanto
MON-13211	Monsanto
Poast	Sethoxydim
Prefar	Bensulide
Pursuit	Imazethapyr
Pyramin	Pyrazon
Ro-Neet	Cycloate
Sencor	Metribuzin
Sonalan	Ethalfuralin
Stinger	Clopyralid
Treflan	Trifluralin
Trific	Trifluralin
Tillam	Pebulate

TABLE 2: Weeds Mentioned in Report

COMMON NAME	SCIENTIFIC NAME	WSSA CODE
Barnyard grass	Echinochloa crusgali	ECHCG
Black nightshade	Solanum nigrum	SOLNI
Canada thistle	Cirsium arvense	CIRAR
Common lambquarter	Chenopodium album	CHEAL
Common purslane	Portulaca oleracea	POROL
Common ragweed	Ambrosia artemisiiflora	AMBEL
Fall panicum	Panicum dichoromiflorum	PANDI
Hairy galinsoga	Galinsoga ciliata	GASCI
Johnsongrass	Sorghum halepense	SORHA
Knoweed	Polygonum aviculare	POLAV
Ladysthumb smartweed	Polygonum persicaria	POLPE
Large crabgrass	Digitaria sanguinalis	DIGSA
Livid amaranth	Amaranthus lividis	AMALI
Love grass	Eragristus pilosa	AMACH
Shepardspurse	Capsella bursa-pastoris	CAPBP
Smooth pigweed	Amaranthus retroflexus	AMARE
Velvetleaf	Abutilon theophraste	ABUTH
Venice mallow	Hibiscus trionum	HIBTR
Witchgrass	Panicum capillare	PANCA
Yellow foxtail	Setaria lutescens	SETLU
Yellow nutsedge	Pyperus esulentus	CYPES

This page intentionally blank.

CABBAGE WEED CONTROL

This study combined both a preemergence study under a postemergence study. Command at 0.38 and 0.75 lbs ai/A was used as the underlayment treatment. Lentagran treatments were then applied postemergence over both underlayment treatments. Fifteen cabbage varieties were seeded into the command treatments. The primary objective of this study was to evaluate cabbage varietal differences to Command and Lentagran.

Cabbage varieties differed in their response to the preplant treatments of Command. Command injury to the cabbage was in the form of bleached leaves (or parts of leaves), reduced germination, of stunting. The higher rate of Command was more injurious to the cabbage than the low rate. Injury ratings for the high rate of Command varied from 3% to 100%. Cabbage injury was much less for the low rate of Command.

Postemergence treatments of Lentagran at the 0.9 lbs ai/A rate alone or in combination with Poast were not injurious to the cabbage. At this rate only an occassional cabbage plant showed minor (5%) injury. There were no varietal effects from these treatment. Injury was more severe from the 2X treatment. Injury was not severe and was confined to the treated leaves.

PURSUIT LETTUCE PHYTOTOXICITY STUDY

The entire study area was treated with Amiben at 1 lb ai/A immediately after seeding. Pursuit treatments were applied when the lettuce was 2 inches tall. As the rate of Pursuit increased the amount of lettuce stunting also increased. Lettuce plants in most treatments outgrew this stunting by harvest. However, some treatments have significantly lower yields where the lettuce was not able to outgrow this early stunting.

PREEMERGENCE AND POSTEMERGENCE WEED CONTROL IN POPCORN

This study was established solely to examine popcorn sensitivity to several currently registered preemergence herbicides. Environmental conditiond encountered during the 1993 growing season were not suitable for good popcorn yields. Therefore, yield values are low. Even with the poor growing conditions encountered during 1993 there was no evidence of injury to any of the popcorn varieties due to herbicide phytotoxicity.

This page intentionally blank.

DELAYED PREEMERGENCE WEED CONTROL IN POTATOES

Weed control with E 9636 alone was not acceptable for most weed species present in this study. The addition of Lexone to E 9636 improved weed control. The highest rate tested provided the best weed control with no crop injury. Potato yields were good for the weather Columbus experienced this season. There were no varietal differences to delayed preemergence treatments.

POSTEMERGENCE WEED CONTROL IN POTATOES

Weed control with E 9636 postemergence was much more acceptable than its' use preemergence. Control was acceptable for all weed species except for common purslane. The addition of Lexone to E 9636 improved weed control in many cases. There was essentially no crop injury from any of the treatments. Yields were acceptable and there were no varietal differences from any of the treatments.

SWEET CORN WEED CONTROL

Weed control with all treatments was excellent. There was no evidance of crop injury at any stage of corn growth. Raccoon and bird damage to the developing ears prevented the presentation of total yield per plot. Damage was not uniform throughout the study but was confined to certain areas. Therefore, yield is presented as average weight (lbs.) per ear.

SWEET CORN VARIETY TOLERANCE TO METRIBUZIN

Weed control with all treatments was excellent. There was no evidance of crop injury at any stage of corn growth to any of the varieties tested. Raccoon and bird damage to the developing ears prevented the presentation of total yield per plot. Damage was not uniform throughout the study but was confined to certain areas. Therefore, yield is presented as average weight (lbs.) per ear.

TOMATO PREEMERGENCE WEED CONTROL

All weed control values in this table represent the level of weed control that was achieved with the PPI or Pre treatments ONLY. Yields represent those obtained from the full treatment listed.

Cobra provided excellent control of black nightshade. Control of other broadleaf weeds was also excellent, even at the lowest rate of Cobra tested. Grass control was unacceptable with Cobra alone. The postemergence treatments (applied June 30) provided 100% of all grasses present (rating date July 7). Yields were excellent for all Cobra treatments. (continued on next page)

This page intentionally blank.

Sencor applied PPI provided excellent early season weed control. The application of Select 94 over this Sencor treatment provided 100% grass control on July 15. Select 94 had no activity on black nightshade.

E 9636 provided acceptable weed control (except for black nightshade) at the highest rate tested without causing crop injury.

POSTEMERGENCE TOMATO WEED CONTROL

Due to the wet June weather these treatments were applied to weeds 2 to 4 inches tall. Previous experience has revealed that the weeds must be smaller than this to obtain consistent control. Black nightshade was even a little larger with some plants as large as 6 inches tall. Lentagran controlled the black nightshade 100% regardless of the size. However, control of the other weed species was 0 to 10%. E 9636 treatments were the only treatments that were phytotoxic to the tomatoes. While injury was light (10 to 20%) it was a reason for concern.

TOMATO PLANTING DEPTH STUDY

The entire study area was treated with a preplant incorporated treatment of Treflan at 1 lb ai/A and Sencor at 3/8 lb ai/A. Herbicides were incorporated with a roto-tiller cutting 2 inches deep. Throughout the growing season there was an obvious plant size difference that existed between the various treatments. Plants in the shallowest planting (0.5 inch) were approximately 60% the size of the plants in the deepest planting (4 inch). Plants in the 1 inch planting depth treatment were approximately 80% the size of those in the 4 inch planting depth. Yields reveal that the shallowest planting depth (0.5 inch) resulted in lower yields. This is probably due to a plant establishment problem rather than increased sensitivity to herbicides.

TOMATO SENSITIVITY TO METRIBUZIN

The study area was treated with metribuzin (Sencor/Lexone) at the stated rates and incorporated in the soil with a roto-tiller to a 2 or 4 inch depth (PPI2 or PPI4). Plant were planted at the normal planting depth (1 to 2 inches). Plant growth throughout the season appeared normal with slight variations in plant size (see data). Yields were good with no differences between metribuzin treatments.

This page intentionally blank.

TITLE: CABBAGE WEED CONTROL

LOCATION: FREMONT
PERSONNEL:

PLOT INFORMATION:

SOIL TYPE:	SILTY LOAM
CULTIVAR:	VARIOUS SEE
DATE PLANTED:	JUNE 3, 1993
RATING DATE:	JUNE 30, & JULY 29
HARVEST DATE:	VARIOUS
PLOT SIZE:	5 FT BY 10 FT
PLOT DESIGN:	RCB WITH 3 REPS

CABBAGE VARIETIES

1. Titanic
2. King Cole
3. Hinova
4. Blue Gem
5. Cardinal
6. Head Start
7. Conquest
8. Green Cup
9. Royale
10. Bountivoy
11. Rio Verde
12. Rookie
13. Quisto
14. Blue Vantage
15. Strukton Yr

HERBICIDE APPLICATION DATA:

DATE:	6/3/93	7/12/93
TIME OF DAY:	AM	PM
TYPE:	PRE	POST
SOIL SURFACE:	MODERATE	MOIST
SOIL TEMP:		
RELATIVE HUMIDITY:		65%
WEATHER:		
WIND, mph:	CALM	2 TO 3
SKY COVER:	P. CLOUD	CLEAR
AIR TEMP:	75 F	85 F
GROWTH STAGE:		
CROP:	PRE	6 TO 8 LEAF
WEED:	PRE	4 TO 6"

HERBICIDE APPLICATION EQUIPMENT:

SPRAYER:	CO2 BACKPACK
GPA:	24.8
PSI:	30
TIPS:	8002
HEIGHT:	18"
NOZZLE SPACING:	18"

INCORPORATION EQUIPMENT: ROTO TILLER CUTTING 2 TO 3 INCHES DEEP

CABBAGE WEED CONTROL

	% CROP INJURY						
	COMMAND 0.38 LBS ai/A			COMMAND 0.75 LBS ai/A			LENTAGRAN 1.9 LBS ai/A
VARIETY	STUNTING	STAND	BLEACHING	STUNTING	STAND	BLEACHING	% INJURY
1	0.0	0.0	0.0	0.0	0.0	10.0	5.0
2	10.0	5.0	10.0	0.0	0.0	10.0	5.0
3	0.0	10.0	15.0	20.0	5.0	15.0	1.7
4	50.0	0.0	30.0	99.0	99.0	0.0	11.7
5	0.0	0.0	0.0	10.0	50.0	0.0	6.7
6	0.0	15.0	10.0	0.0	50.0	10.0	10.0
7	5.0	0.0	5.0	30.0	20.0	20.0	0.0
8	5.0	0.0	10.0	10.0	0.0	20.0	8.3
9	20.0	10.0	15.0	30.0	70.0	20.0	1.7
10	25.0	0.0	20.0	75.0	50.0	50.0	20.0
11	0.0	5.0	0.0	10.0	25.0	5.0	6.7
12	20.0	10.0	20.0	40.0	70.0	25.0	1.7
13	0.0	20.0	5.0	20.0	60.0	10.0	5.0
14	0.0	0.0	10.0	20.0	15.0	15.0	5.0
15	35.0	25.0	20.0	75.0	50.0	25.0	15.0
LSD(.05)	6.2	6.3	7.7	7.3	6.8	8.0	7.4
St. Dev.	3.72	3.78	4.59	4.34	4.05	4.77	4.44
CV	32.79	56.69	40.50	14.82	10.78	30.44	61.49

Ohio State Univ. Dept. Horticulture
Cabbage weed control.
Conducted at Freemont by Dr. Stanley F. Gorski
All rates are specified as lb/A

TREATMENT NAME	AI #/gal	FD RATE	GROW STGE	Weihgt (lb) Command 0.38lb/A 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Control				3.90	2.93	2.07	2.60	2.50	3.37	2.90	3.37	2.67	1.83	5.70	2.63	4.67	3.63	2.53
Lentagran	45	WP 0.9	post	3.37	2.90	2.70	2.93	2.83	3.13	3.47	3.20	3.27	1.50	6.90	2.53	5.23	3.73	2.50
Lentagran	45	WP 1.8	post	3.60	3.20	2.40	2.53	2.93	3.73	2.77	3.33	3.10	1.63	5.13	2.80	4.53	3.80	2.83
Lentagran	45	WP 0.9	post	2.83	3.20	2.33	2.50	2.80	3.13	2.73	2.90	3.07	1.43	5.03	2.63	4.80	3.73	2.00
Poast	1.5	L 0.2	post															
LSD (.05)	=			0.91	1.38	1.44	1.62	1.08	2.06	1.20	1.19	1.17	0.75	1.85	1.01	2.34	1.39	1.61
Standard Dev.	=			.45703	.68859	.72322	.81308	.54031	1.0331	.59976	.59558	.58523	.37527	.9266	.50662	1.1699	.69762	.80432
CV	=			13.34	22.52	30.45	30.78	19.53	30.92	20.22	18.61	19.35	23.45	16.28	19.12	24.33	18.73	32.61

Ohio State Univ. Dept. Horticulture
Cabbage weed control.
Conducted at Freemont by Dr. Stanley F. Gorski
All rates are specified as lb/A

TREATMENT NAME	AI #/gal	FD RATE	GROW STGE	var. 1	2	3	4	5	Weight 6	(lb) Command 0.75lb/A 7	8	9	10	11	12	13	14	15
Control				5.03	4.90	4.07	0.0	4.27	3.63	4.63	3.67	3.50	1.70	7.03	4.33	7.77	5.37	1.77
Lentagran	45	WP 0.9	post	6.17	3.63	3.57	0.0	3.73	4.30	4.73	3.03	2.93	1.27	6.73	2.73	7.13	5.30	1.30
Lentagran	45	WP 1.8	post	4.27	4.90	4.07	0.0	4.80	4.23	4.93	3.50	2.83	1.43	6.97	3.03	5.33	5.77	2.20
Lentagran	45	WP 0.9	post	4.17	4.47	4.07	0.0	4.37	4.00	4.27	3.60	3.33	1.43	7.90	3.90	6.00	5.40	1.47
Poast	1.5	L 0.2	post															
LSD (.05)	=			1.01	1.33	1.57	0	1.70	1.82	1.60	1.00	0.92	0.77	1.72	2.90	2.35	1.80	1.60
Standard Dev.	=			.50744	.66562	.78369	0	.85032	.91028	.79999	.49888	.46097	.38478	.862	1.4517	1.1785	.90108	.79913
CV	=			10.34	14.87	19.88	0	19.81	22.52	17.24	14.46	14.63	26.38	12.04	41.48	17.97	16.51	47.47

Ohio State Univ. Dept. Horticulture
Pursuit Lettuce Phytotoxicity Study.
Conducted at Seleryville by Dr. Stanley F. Gorski

TITLE: Pursuit Lettuce Phototoxicity Study.

LOCATION: Celeryville
PERSONNEL:

PLOT INFORMATION:
- SOIL TYPE: Carlisle Muck
- CULTIVAR: Boston

- DATE PLANTED: Jun 15,93
- RATING DATE: Jul 15,93
- HARVEST DATE: Aug 6,93
- PLOT SIZE: 5'x 5'
- PLOT DESIGN: RCB w/ 6 reps

HERBICIDE APPLICATION DATA:
- DATE: Jul 6,93
- TIME OF DAY: 11 am
- TYPE: Post
- SOIL SURFACE: Dry
- SOIL TEMP: 81 F
- RELATIVE HUMIDITY: 75 %
- WEATHER:
  - WIND, mph: 5
  - SKY COVER: P.Cloudy
  - AIR TEMP: 85 F
- GROWTH STAGE:
  - CROP: 2" tall
  - WEED: 4-8 leaf

HERBICIDE APPLICATION EQUIPMENT:
- SPRAYER: CO2 backpack
- GPA: 29.8
- PSI: 30
- TIPS: 8002
- HEIGHT: 18"
- NOZZLE SPACING: 18"

INCORPORATION EQUIPMENT:None

Ohio State Univ. Dept. Horticulture
Pursuit Lettuce Phytotoxicity Study.
Conducted at Seleryville by Dr. Stanley F. Gorski
All rates are specified as lb/A

TREATMENT NAME	AI #/gal	FD	RATE	GROW STGE	STUNDING (%)	YIELD (lb)
control					0.0	6.57
Pursuit	2	E	.016	post	0.0	8.03
X-77		L	0.25	post		
Pursuit	2	E	.024	post	17.5	6.38
X-77		L	0.25	post		
Pursuit	2	E	.032	post	14.2	6.93
X-77		L	.25	post		
Pursuit	2	E	.04	post	20.0	6.98
X-77		L	.25	post		
Pursuit	2	E	.048	post	19.2	7.07
X-77		L	.25	post		
Pursuit	2	E	.056	post	30.0	6.43
X-77		L	0.25	post		
Pursuit	2	E	.064	post	32.5	5.67
X-77		L	.25	post		
LSD (.05) =					11.4	1.25
Standard Dev.=					9.71	1.0596
CV =					58.26	15.68

TITLE: PREEMERGENCE WEED CONTROL IN POPCORN

LOCATION: FREMONT
PERSONNEL:

PLOT INFORMATION:

SOIL TYPE:	SANDY LOAM
CULTIVAR:	HW-115 & SH475
DATE PLANTED:	MAY 7, 1993
RATING DATE:	JUNE 6
HARVEST DATE:	OCTOBER 11
PLOT SIZE:	7.5 FT BY 30 FT
PLOT DESIGN:	RCB WITH 3 REPS

HERBICIDE APPLICATION DATA:

DATE:	MAY 10
TIME OF DAY:	4 PM
TYPE:	PRE
SOIL SURFACE:	DRY
SOIL TEMP:	68 F
RELATIVE HUMIDITY:	40 %
WEATHER:	
WIND, mph:	2 TO 3
SKY COVER:	CLEAR
AIR TEMP:	75 F
GROWTH STAGE:	
CROP:	PRE
WEED:	PRE

HERBICIDE APPLICATION EQUIPMENT:

SPRAYER:	CO2 BACKPACK
GPA:	24.8
PSI:	30
TIPS:	8002
HEIGHT:	18"
NOZZLE SPACING:	18"

INCORPORATION EQUIPMENT:NONE

Ohio State Univ. Dept. Horticulture
Preemergence weed control in popcorn.
Conducted at Fremont by Dr. Stanley F. Gorski
All rates are specified as lb/A

TREATMENT NAME	AI #/gal	FD	RATE	GROW STGE	...YIELD (lb).... HW 115	SH 475
Weedy					4.647	0.987
AAtrex	4	L	3.0	pre	4.213	1.827
Bladex	4	L	3.0	pre	3.590	1.733
Lasso	4	EC	2.5	pre	3.227	0.687
Dual	8	E	2.5	pre	3.600	1.647
Extrazine II	90	DF	3.25	pre	5.637	2.027
Lariat	4	E	3.0	pre	5.397	2.173
Bicep	6	L	3.0	pre	4.140	1.507
Surpras	6.4	EC	2.5	pre	6.907	2.333
Harness Plus	7	EC	2.5	pre	5.413	0.733
Harness Plus Battalion	7 15	EC DF	1.75 0.065	pre pre	4.043	1.707
Harness Plus Battalion	7 15	EC DF	1.75 0.075	pre pre	3.700	1.973
Harness Plus AAtrex	7 4	EC L	1.75 1.5	pre pre	4.907	2.533
LSD (.05) =					3.863	1.485
Standard Dev.=					2.2922	.88117
CV =					50.15	52.39

Ohio State Univ. Dept. Horticulture
Conducted by Dr. Stanley F. Gorski

TITLE: POSTEMERGENCE WEED CONTROL IN POPCORN

LOCATION: FREMONT
PERSONNEL:

PLOT INFORMATION:
- SOIL TYPE: SANDY LOAM
- CULTIVAR: HW-115 & SH 475

- DATE PLANTED: 5/7/93
- RATING DATE: 7/7
- HARVEST DATE: 10/11
- PLOT SIZE: 7.5 FT BY 30 FT
- PLOT DESIGN: RCB WITH 3 REPS

HERBICIDE APPLICATION DATA:
- DATE: 6/16
- TIME OF DAY: 4 PM
- TYPE: POST
- SOIL SURFACE: DRY
- SOIL TEMP: 73 F
- RELATIVE HUMIDITY: 55 %
- WEATHER:
  - WIND, mph: 3 TO 4
  - SKY COVER: P. CLOUD
  - AIR TEMP: 83 F
- GROWTH STAGE:
  - CROP: 2 TO 8 AT WHORL
  - WEED: 2 TO 6"

HERBICIDE APPLICATION EQUIPMENT:
- SPRAYER: CO2 BACKPACK
- GPA: 24.8
- PSI: 30
- TIPS: 8002
- HEIGHT: 18"
- NOZZLE SPACING: 18"

INCORPORATION EQUIPMENT:NONE

Ohio State Univ. Dept. Horticulture
Postemergence weed control in popcorn
Conducted at Freemont by Dr. Stanley F. Gorski
All rates are specified as lb/A

TREATMENT NAME	AI #/gal	FD	RATE	GROW STGE	...YIELD (lb).... HW 115	SH 475
Basagran	4	EC	1.0	post	2.600	2.513
Weedar 64	3.8	EC	0.475	post	2.567	3.710
Weedone LV4	3.8	EC	0.23	post	1.647	2.547
Ladddock	1.66	F	0.53	post	1.573	2.280
DASH		L	1.0	post		
Ladddock	1.66	F	0.53	post	2.810	2.607
28% N		P	1.0	post		
Beacon	75	WG	0.036	post	2.493	2.013
Banvel (E)	4	EC	0.5	post	2.887	1.433
Banvel (L)	4	EC	0.25	post	2.917	1.270
Marksman	3.2	EC	1.4	post	1.837	1.573
Accent	75	WP	0.031	post	2.813	1.933
Bladex	90	DF	2.0	post	2.130	1.473
Buctril	2	EC	0.375	post	3.093	3.240
AAtrex	4	L	2.0	post	2.807	3.000
Crop oil conc		P	1.0	post		
LSD (.05)	=				2.392	2.042
Standard Dev.	=				1.4191	1.2114
CV	=				57.34	53.22

Ohio State Univ. Dept. Horticulture
Delayed preemergence weed control in potatoes.
Conducted at Columbus by Dr. Stanley F. Gorski

TITLE: Delayed Preemergence Weed Control in Potatoes

LOCATION: Columbus
PERSONNEL:

PLOT INFORMATION:
- SOIL TYPE: Brookston Silty Clay Loam
- CULTIVAR: A - Atlantic, B - Langlade C - Superior, D - Conestoga
- DATE PLANTED: 05/27/93
- RATING DATE: 07/09/93
- HARVEST DATE: Various
- PLOT SIZE: 6' x 25'
- PLOT DESIGN: RCB / 3reps

HERBICIDE APPLICATION DATA:
- DATE: 06/10
- TIME OF DAY: 2 pm
- TYPE: Del-Pre
- SOIL SURFACE: Wet
- SOIL TEMP: 74 F
- RELATIVE HUMIDITY: 75 %
- WEATHER:
  - WIND, mph: 2
  - SKY COVER: P.cloudy
  - AIR TEMP: 86 F
- GROWTH STAGE:
  - CROP: Crack-ing
  - WEED: Cotyle-don

HERBICIDE APPLICATION EQUIPMENT:
- SPRAYER: CO2 backpack
- GPA: 24.8
- PSI: 30
- TIPS: 8002
- HEIGHT: 18
- NOZZLE SPACING: 18

INCORPORATION EQUIPMENT:None

Ohio State Univ. Dept. Horticulture
Delayed preemergence weed control in potatoes.
Conducted at Columbus by Dr. Stanley F. Gorski
All rates are specified as lb/A

TREATMENT NAME	AI #/gal	FD	RATE	GROW STGE	% Weed Control PANDI	ECHCG	CHEAL	POROL	HIBTR	AMARE	Yield (lbs) Atlantic	Yield Langlade	Yield Superior	Yield Conestog
Weedy					0.0	0.0	0.0	0.0	0.0	0.0	18.33	18.63	20.00	17.20
Hand weeded					99.0	99.0	99.0	99.0	99.0	98.7	21.97	17.57	21.33	18.50
Dual	8	E	2.0	pre	96.3	97.3	99.0	97.7	99.0	99.0	30.97	27.13	23.23	24.53
Lexone	75	DF	.25	pre										
E 9636	25	DF	.0156	pre	66.7	70.0	91.7	50.0	97.7	90.0	29.83	18.87	20.70	18.73
E 9636	25	DF	.0238	pre	71.7	70.0	88.3	50.0	97.7	90.0	26.43	16.80	19.83	22.50
E 9636	25	DF	.0313	pre	81.7	85.0	91.7	88.3	99.0	95.0	22.37	18.10	20.53	19.57
E 9636	25	DF	.0156	pre	76.7	80.0	88.3	86.7	97.7	90.0	27.73	20.93	20.83	21.73
Lexone	75	DF	.125	pre										
E 9636	25	DF	.0238	pre	86.7	81.7	90.0	86.7	99.0	95.0	30.37	19.93	21.03	24.00
Lexone	75	DF	.1875	pre										
E 9636	25	DF	.0238	pre	97.7	97.3	96.3	94.3	99.0	99.0	27.77	22.43	20.67	20.23
Lexone	75	DF	.25	pre										
LSD (.05) =					3.8	2.2	3.5	3.6	2.3	0.3	7.34	2.83	3.35	5.25
Standard Dev.=					2.1974	1.2946	1.9989	2.1071	1.3332	.19122	4.2418	1.6321	1.9342	3.0345
CV =					2.92	1.71	2.42	2.91	1.52	0.23	16.19	8.14	9.25	14.60

Ohio State Univ. Dept. Horticulture
Postemergence weed control in potatoes
Conducted at Columbus by Dr. Stanley F. Gorski

TITLE: Postemergence Weed Control in Potatoes

LOCATION: Columbus
PERSONNEL:

PLOT INFORMATION:
- SOIL TYPE: Brookston Silty Clay Loam
- CULTIVAR: A - Atlantic, B - Langlade, C - Superior, C- Conestoga
- DATE PLANTED: 05/27/93
- RATING DATE: 07/09/93
- HARVEST DATE: Various
- PLOT SIZE: 6' x 25'
- PLOT DESIGN: RCB / 3reps

HERBICIDE APPLICATION DATA:
- DATE: 06/21
- TIME OF DAY: 9 am
- TYPE: Post
- SOIL SURFACE: Wet
- SOIL TEMP:
- RELATIVE HUMIDITY: 70 %
- WEATHER:
  - WIND, mph: 4-5
  - SKY COVER: p.cloudy
  - AIR TEMP: 74 F
- GROWTH STAGE:
  - CROP: 3-5 "
  - WEED: PANDI 2"
ECHOG 2"
POROL 1"
AMARE 3"

HERBICIDE APPLICATION EQUIPMENT:
- SPRAYER: CO2 backpack
- GPA: 24.8
- PSI: 30
- TIPS: 8002
- HEIGHT: 18
- NOZZLE SPACING: 18

INCORPORATION EQUIPMENT:None

Ohio State Univ. Dept. Horticulture
Postemergence weed control in potatoes
Conducted at Columbus by Dr. Stanley F. Gorski
All rates are specified as lb/A

(165)

TREATMENT NAME	AI #/gal	FD	RATE	GROW STGE	% Weed Control PANDI	ECHCG	POROL	AMARE	Yield Atlantic	Yield Langlade	Yield Superior	Yield Conestog
Control					0.0	0.0	0.0	0.0	22.53	17.13	21.27	18.20
Lexone	75	DF	0.25	post	99.0	99.0	99.0	99.0	21.87	18.97	20.07	18.77
Poast	1.5	E	0.2	post								
E 9636	25	DF	.0156	post	94.7	94.7	40.0	86.7	20.20	16.07	16.93	13.67
E 9636	25	DF	.0238	post	99.0	99.0	46.7	93.3	18.23	16.83	17.80	19.37
E 9636	25	DF	.0313	post	97.7	99.0	43.3	93.3	24.13	18.73	21.37	16.27
E 9636	25	DF	.0156	post	99.0	99.0	99.0	99.0	19.37	20.23	18.97	14.77
Lexone	75	DF	.125	post								
E 9636	25	DF	.0238	post	99.0	99.0	99.0	99.0	23.80	24.77	19.63	22.73
Lexone	75	DF	.1875	post								
E 9636	25	DF	.0313	post	99.0	99.0	99.0	99.0	19.97	27.10	20.77	20.90
Lexone	75	DF	0.25	post								
LSD (.05) =					3.3	2.8	4.9	7.2	12.43	4.59	3.08	6.61
Standard Dev.=					1.8756	1.5943	2.7817	4.1007	7.0954	2.6181	1.758	3.7731
CV =					2.18	1.85	4.23	4.90	33.37	13.10	8.97	20.87

TITLE: Sweet Corn Weed Control

LOCATION: Columbus
PERSONNEL:

PLOT INFORMATION:

SOIL TYPE:	Brookston Silty Clay Loam
CULTIVAR:	Zenith
DATE PLANTED:	05/27/1993
RATING DATE:	08/03/1993
HARVEST DATE:	08/17/1993
PLOT SIZE:	25' x 5'
PLOT DESIGN:	RCB - 3 reps

HERBICIDE APPLICATION DATA:

DATE:	5/27	7/09
TIME OF DAY:	4pm	9 am
TYPE:	Pre	Post
SOIL SURFACE:	Dry	Moist.
SOIL TEMP:	70 F	
RELATIVE HUMIDITY:	70 %	50 %
WEATHER:		
WIND, mph:	2-3	Calm
SKY COVER:	P.cloudy	Clear
AIR TEMP:	76 F	82 F
GROWTH STAGE:		
CROP:	Pre	18"
WEED:	Pre	

HERBICIDE APPLICATION EQUIPMENT:

SPRAYER:	CO2 backpack
GPA:	24.8
PSI:	30
TIPS:	8002
HEIGHT:	18
NOZZLE SPACING:	18

INCORPORATION EQUIPMENT:None

Ohio State Univ. Dept. Horticulture
Sweet corn weed control
Conducted at Columbus by Dr. Stanley F. Gorski
All rates are specified as lb/A

TREATMENT NAME	AI #/gal	FD	RATE	GROW STGE	% Weed Control CHEAL	% Weed Control ABUTH	Ave ear wt (lbs)
Weedy					0.0	0.0	0.527
Dual	8	E	2.0	pre	98.7	98.7	0.497
Partner	65	DF	2.0	pre	99.0	99.0	0.507
Battalion	15	DF	.065	pre			
Partner	65	DF	2.0	pre	99.0	99.0	0.543
Battalion	15	DF	.075	pre			
Bullet	4	EC	3.75	pre	99.0	99.0	0.483
Harness Plus	7	EC	1.75	pre	99.0	99.0	0.543
Battalion	15	DF	.065	pre			
Harness Plus	7	EC	1.75	pre	99.0	99.0	0.487
Battalion	15	DF	.075	pre			
Harness Plus	7	EC	1.75	pre	99.0	99.0	0.527
AAtrex	4	L	1.5	pre			
Partner	65	DF	2.5	pre	99.0	99.0	0.537
Permit	75	DF	.032	post			
X-77	100	L	.25	post			
LSD (.05) =					0.3	0.3	0.055
Standard Dev.=					.1915	.1915	3.1994
CV =					0.22	0.22	6.19

TITLE: Sweet Corn Variety Tolerance

LOCATION: Columbus
PERSONNEL:

PLOT INFORMATION:

SOIL TYPE:	Brookston Silty Clay Loam
CULTIVAR:	A - Candy Store, B - Snow White, C - Pinnacle 301
DATE PLANTED:	05/27/93
RATING DATE:	08/03/93
HARVEST DATE:	08/17/93
PLOT SIZE:	5' x 25'
PLOT DESIGN:	RCB / 3reps

HERBICIDE APPLICATION DATA:

DATE:	06/01	07/09
TIME OF DAY:	1 pm	9 am
TYPE:	Pre	Post
SOIL SURFACE:	Moist.	Moist.
SOIL TEMP:	62 F	
RELATIVE HUMIDITY:	45 %	50 %
WEATHER:		
WIND, mph:	5-7	Calm
SKY COVER:	p.cloudy	Clear
AIR TEMP:	65 F	82 F
GROWTH STAGE:		
CROP:	Pre	18"
WEED:	Pre	None

HERBICIDE APPLICATION EQUIPMENT:

SPRAYER:	CO2 backpack
GPA:	24.8
PSI:	30
TIPS:	8002
HEIGHT:	18
NOZZLE SPACING:	18

INCORPORATION EQUIPMENT:None

Ohio State Univ. Dept. Horticulture
Sweet corn varietel tolerance to Sencor
Conducted at Columbus by Dr. Stanley F. Gorski
All rates are specified as lb/A

TREATMENT NAME	AI #/gal	FD	RATE	GROW STGE	% Weed Control CHEAL	% Weed Control ABUTH	Average Ear Weight (lbs.) A	B	C
Control					0.0	0.0	0.547	0.513	0.577
Sencor	75	DF	.094	post	98.7	93.0	0.547	0.520	0.510
Basagran	4	EC	0.5	post					
X-77	100	L	.25	post					
UAN (28%)	1	EC	1.0	post					
Sencor	75	DF	.094	post	99.0	99.0	0.547	0.523	0.630
2,4D	4	LV	.17	post					
Sencor	75	DF	.094	post	99.0	99.0	0.530	0.537	0.567
2,4D (amine)	4	EC	.25	post					
Sencor	75	DF	.094	post	99.0	99.0	0.580	0.483	0.587
Banvel	4	EC	.25	post					
Sencor	75	DF	.094	post	99.0	91.0	0.517	0.497	0.497
Buctril	2	EC	.25	post					
Laddock	1.66	F	0.53	post	99.0	99.0	0.503	0.473	0.537
DASH	100	L	1	post					
LSD (.05)	=				0.4	9.7	0.073	0.110	0.164
Standard Dev.	=				.21892	5.4379	4.1135	6.2022	9.2057
CV	=				0.26	6.56	7.64	12.24	16.51

Ohio State Univ. Dept. Horticulture
Tomato preemergence weed control.
Conducted at Freemont by Dr. Stanley F. Gorski

TITLE: TOMATO PREEMERGENCE WEED CONTROL

LOCATION: FREMONT
PERSONNEL:

PLOT INFORMATION:

SOIL TYPE:	SILTY LOAM
CULTIVAR:	8245
DATE PLANTED:	JUNE 1, 1993
RATING DATE:	JUNE 30, JULY 15
HARVEST DATE:	SEPTEMBER 13
PLOT SIZE:	5 FT BY 30 FT
PLOT DESIGN:	RCB WITH 3 REPS

HERBICIDE APPLICATION DATA:

DATE:	5/26	6/30
TIME OF DAY:	3 PM	10 AM
TYPE:	PRE/PPI	POST
SOIL SURFACE:	DRY	MOIST
SOIL TEMP:	70	63
RELATIVE HUMIDITY:	45	65
WEATHER:		
WIND, mph:	5-6	2-3
SKY COVER:	CLEAR	CLOUDY
AIR TEMP:	74	68
GROWTH STAGE:		
CROP:	PRE	10 INCH
WEED:	PRE	GRASS 2 TO 3" BRDL 2 TO 4"

HERBICIDE APPLICATION EQUIPMENT:

SPRAYER:	CO2 BACKPACK
GPA:	24.8
PSI:	30
TIPS:	8002
HEIGHT:	18
NOZZLE SPACING:	18

INCORPORATION EQUIPMENT:ROTO-TILLER CUTTING 2 INCHES

Ohio State Univ. Dept. Horticulture
Tomato preemergence weed control.
Conducted at Freemont by Dr. Stanley F. Gorski
All rates are specified as lb/A

TREATMENT NAME	AI #/gal	FD RATE	GROW STGE	%control PANDI	ECHCG	DIGSA	CHEAL	POROL	SOLNI	YIELD (lbs) RED
Weedy				0.0	0.0	0.0	0.0	0.0	0.0	77.50
Hand weeded				99.0	99.0	99.0	99.0	99.0	99.0	102.17
Cobra	2	EC 0.25	pre	78.3	78.3	76.7	99.0	97.7	99.0	180.67
Lexone	75	DF 0.38	post							
Poast	1.5	EC 0.19	post							
COC	4	EC 1.0	post							
Cobra	2	EC 0.38	pre	75.0	75.0	55.0	99.0	98.3	99.0	179.00
Lexone	75	DF 0.38	post							
Poast	1.5	EC 0.19	post							
COC	4	EC 1.0	post							
Cobra	2	EC 0.5	pre	80.0	78.3	78.3	99.0	99.0	99.0	161.00
Lexone	75	DF 0.38	post							
Poast	1.5	EC 0.19	post							
COC	4	EC 1.0	post							
Sencor	75	DF 0.38	PPI	94.3	94.3	94.3	98.0	97.0	0.0	179.83
Select 94	0.94	EC 0.094	post							
COC	4	EC 1.0	post							
Sencor	75	DF 0.38	PPI	86.3	86.3	89.7	98.0	94.3	0.0	146.83
Select 94	0.94	EC 0.125	post							
COC	4	EC 1.0	post							
Sencor	75	DF 0.38	PPI	94.3	94.3	94.3	98.0	94.3	0.0	154.17
Poast	1.5	EC 0.19	post							
COC	4	EC 1.0	post							
E 9636	25	DF .0078	pre	56.7	56.7	75.0	61.7	81.7	8.3	131.50
E 9636	25	DF .0156	pre	78.3	80.0	93.0	75.0	97.0	3.3	160.67
E 9636	25	DF .0313	pre	93.3	93.3	96.3	96.3	98.3	31.7	165.50
LSD (.05) =				15.1	14.8	21.3	15.1	11.6	8.5	51.91
Standard Dev.=				8.8832	8.7049	12.494	8.8463	6.8115	4.9696	30.48
CV =				11.69	11.46	16.14	10.54	7.83	12.44	20.46

TITLE: POSTEMERGENCE TOMATO WEED CONTROL

LOCATION: FREMONT
PERSONNEL:

PLOT INFORMATION:
- SOIL TYPE: SANDY LOAM
- CULTIVAR: 8245

- DATE PLANTED: 6/1/93
- RATING DATE: 7/15
- HARVEST DATE: 9/13
- PLOT SIZE: 5 FT BY 30 FT
- PLOT DESIGN: RCB WITH 3 REPS

HERBICIDE APPLICATION DATA:
- DATE: 6/30
- TIME OF DAY: 10 AM
- TYPE: POST
- SOIL SURFACE: MOIST
- SOIL TEMP: 63 F
- RELATIVE HUMIDITY: 65 %
- WEATHER:
  - WIND, mph: 2 TO 3
  - SKY COVER: CLOUDY
  - AIR TEMP: 68 F
- GROWTH STAGE:
  - CROP: 10"
  - WEED: 2 TO 4"

HERBICIDE APPLICATION EQUIPMENT:
- SPRAYER: CO2 BACKPACK
- GPA: 24.8
- PSI: 30
- TIPS: 8002
- HEIGHT: 18"
- NOZZLE SPACING: 18"

INCORPORATION EQUIPMENT:NONE

Ohio State Univ. Dept. Horticulture
Postemergence tomato weed control.
Conducted at Freemont by Dr. Stanley F. Gorski
All rates are specified as lb/A

TREATMENT NAME	AI #/gal	FD	RATE	GROW STGE	YIELD RED (lb)
Weedy					77.50
Hand weeded					102.17
Lexone	75	DF	0.38	post	131.17
Poast	1.5	EC	0.19	post	
COC	4	EC	1.0	post	
E 9636	25	DF	.0078	post	91.50
E 9636	25	DF	.0156	post	140.50
E 9636	25	DF	.0313	post	120.17
Lentagran	45	WP	0.45	post	102.67
Poast	1.5	EC	0.2	post	
Lentagran	45	WP	0.45	post	107.33
Fusilade	1	EC	0.2	post	
Lentagran	45	WP	0.45	post	107.83
Sencor	75	DF	0.25	post	
Lentagran	45	WP	0.45	post	134.00
Sencor	75	DF	0.25	post	
Poast	1.5	EC	0.2	post	
Lentagran	45	WP	0.45	post	116.67
Sencor	75	DF	0.25	post	
Fusilade	1	EC	0.2	post	
LSD (.05) =					62.28
Standard Dev.=					36.567
CV =					32.66

TITLE: TOMATO PLANTING DEPTH STUDY

LOCATION: FREMONT
PERSONNEL:

PLOT INFORMATION:
- SOIL TYPE: SANDY LOAM
- CULTIVAR: 8245

- DATE PLANTED: 6/1/93
- RATING DATE: 6/30
- HARVEST DATE: 9/13
- PLOT SIZE: 5 FT BY 30 FT
- PLOT DESIGN: RCB WITH 3 REPS

HERBICIDE APPLICATION DATA:
- DATE: 5/26
- TIME OF DAY: 3 PM
- TYPE: PPI
- SOIL SURFACE: DRY
- SOIL TEMP: 70 F
- RELATIVE HUMIDITY: 45 %
- WEATHER:
  - WIND, mph: 5 TO 6
  - SKY COVER: CLEAR
  - AIR TEMP: 74 F
- GROWTH STAGE:
  - CROP: PRE
  - WEED: PRE

HERBICIDE APPLICATION EQUIPMENT:
- SPRAYER: CO2 BACKPACK
- GPA: 24.8
- PSI: 30
- TIPS: 8002
- HEIGHT: 18"
- NOZZLE SPACING: 18"

INCORPORATION EQUIPMENT:ROTOTILLER CUTTING 2 INCHES

Ohio State Univ. Dept. Horticulture
Tomato planting depth study
Conducted at Fremont by Dr. Stanley F. Gorski

TREATMENT NAME	AI #/gal	FD RATE	GROW STGE	Yield red (lb)
0.5 in.-406				103.33
1 in.-406				133.00
2 in.-406				136.50
4 in.-406				159.17
0.5 in.-288				125.83
1 in.-288				175.50
2 in.-288				173.67
4 in.-288				170.83
LSD (.05)	=			33.35
Standard Dev.	=			19.042
CV	=			12.93

Ohio State Univ. Dept. Horticulture
Conducted by Dr. Stanley F. Gorski

TITLE: TOMATO SENSITIVITY TO METRIBUZIN

LOCATION: FREMONT
PERSONNEL:

PLOT INFORMATION:
- SOIL TYPE: SANDY LOAM
- CULTIVAR: 8245

- DATE PLANTED: 6/1/93
- RATING DATE: 6/16 & 6/30
- HARVEST DATE: 9/13
- PLOT SIZE: 5 FT BY 30 FT
- PLOT DESIGN: RCB WITH 3 REPS

HERBICIDE APPLICATION DATA:
- DATE: 5/26
- TIME OF DAY: 3 PM
- TYPE: PPI
- SOIL SURFACE: DRY
- SOIL TEMP: 70 F
- RELATIVE HUMIDITY: 45 %
- WEATHER:
  - WIND, mph: 5 TO 6
  - SKY COVER: CLEAR
  - AIR TEMP: 74 f
- GROWTH STAGE:
  - CROP: PRE
  - WEED: PRE

HERBICIDE APPLICATION EQUIPMENT:
- SPRAYER: CO2 BACKPACK
- GPA: 24.8
- PSI: 30
- TIPS: 8002
- HEIGHT: 18"
- NOZZLE SPACING: 18"

INCORPORATION EQUIPMENT:ROTOTILLER CUTTING 2 OR 4 INCHES DEEP BY TREATMENT

Ohio State Univ. Dept. Horticulture
Tomato sensativity to metribuzin.
Conducted at Fremont by Dr. Stanley F. Gorski
All rates are specified as lb/A

TREATMENT NAME	AI #/gal	FD RATE	GROW STGE	Height Jun 16	Height Jun 30	Yield red
Weeded 288				7.3	12.0	109.33
Sencor 288	75	DF .375	PPI2	8.0	14.0	177.50
Sencor 288	75	DF 0.5	PPI2	8.0	13.3	144.83
Sencor 288	75	DF .375	PPI4	7.7	13.7	159.00
Weeded 406				6.7	13.0	112.17
Sencor 406	75	DF .375	PPI2	6.0	10.3	174.83
Sencor 406	75	DF 0.5	PPI2	5.7	10.7	126.83
Sencor 406	75	DF .375	PPI4	7.0	11.0	134.00
LSD (.05)	=			0.8	1.6	59.39
Standard Dev.	=			.42955	.92259	33.911
CV	=			6.10	7.53	23.83

Appreciation is given to the following industries and individuals for their support. Without their support much of this work would not have been possible.

Du Pont Agricultural Products
FMC Corp.
Gowan
Mid America Food Processors
Miles Inc.
Monsanto Agricultural Products Co.
Muck Crop Growers Association
Ohio Vegetable and Potato Growers Association
Valent Corp.
K. W. Zeller & Son

This page intentionally blank.

This page intentionally blank.


T · H · E
OHIO
STATE
UNIVERSITY
OARDC