HORTICULTURAL REPORT

1999 WEED CONTROL RESEARCH ON HORTICULTURAL CROPS

NUMBER 58 **NOVEMBER 1999**

By
Bernard H. Zandstra
William R. Chase
Joseph G. Masabni
Jerome Hull, Jr.

Department of Horticulture
Michigan State University
East Lansing, Michigan

WEED CONTROL IN HORTICULTURAL CROPS - 1999
FORWARD

This report summarizes the results of weed control experiments on horticultural crops in Michigan in 1999. It is intended to inform industry and university research and extension colleagues of our current results.

We greatly appreciate the support for our weed control research and extension program from commodity groups, chemical companies, MSU Extension, and the Michigan Agricultural Experiment Station. The following companies and organizations provided financial support, chemicals, equipment, seeds, plants, or other support for our program:

AGREVO USA CO.
AMERICAN CYANAMID CO.
ASGROW SEED CO.
ATOCHEM NORTH AMERICA INC.
BASF CORP.
BAYER, INC.
BEJO SEEDS
DAISY FARMS
DOW AGRISCIENCES
DUPONT CHEMICAL CO.
FMC CORP.
GERBER PRODUCTS CO.
GOWAN CHEMICAL CO.
GRIFFIN CORP.
GROWER SERVICE CO.
HARRIS MORAN SEED CO.
IR-4 PROJECT OF USDA
JOHNNY'S SEED CO.
LOVELAND CHEMICAL CO.
MBG MARKETING
MICHIGAN AGRI-BUSINESS ASSOCIATION
MICHIGAN ASPARAGUS RESEARCH BOARD
MICHIGAN CARROT COMMITTEE
MICHIGAN CELERY RESEARCH, INC.
MICHIGAN MINT COMMITTEE
MICHIGAN ONION COMMITTEE
MICHIGAN STATE HORTICULTURAL SOCIETY
MICHIGAN VEGETABLE COUNCIL, INC.
MONSANTO CHEMICAL CO.
MOORE SEED FARM
NOURSE FARMS
NOVARTIS CROP PROTECTION, INC.
PICKLE PACKERS INTERNATIONAL
PLATTE CHEMICAL CO.
RHONE POULENC AG. CO.
RISPENS SEED CO.
ROHM AND HAAS CO.
SEDAGRI INC.
SEEDWAY INC.
SPRAYING SYSTEMS CO.
STOKES SEED CO.
TEEJET NORTHEAST
UNIROYAL CHEMICAL CO.
UNITED AGRI-PRODUCTS CO.
VALENT USA CORP.
WILBUR ELLIS CO.
ZENECA AG PRODUCTS

For Additional Information, Contact the Following Researchers:

William R. Chase, Dept. of Horticulture, Michigan State University, East Lansing, Michigan 48824. (517)353-6677.

Jerome Hull, Jr., A338 Plant and Soil Science Building, Michigan State University, East Lansing, Michigan 48824. (517)353-5194.

Joseph G. Masabni, A438 Plant and Soil Science Building, Michigan State University, East Lansing, Michigan 48824. (517)353-9807.

Bernard H. Zandstra, A440 Plant and Soil Science Building, Michigan State University, East Lansing, Michigan 48824. (517)353-6637.

TABLE OF CONTENTS

PAGE

PAGE

B. Fruit Crops

METHODS

Chemical Application and Incorporation

Herbicides were applied with a small plot sprayer using carbon dioxide as a source of pressure. Spray volumes are specified in each experiment. All herbicide rates are expressed as pounds of active ingredient per acre.

Visual Evaluations

In most instances, weed control ratings were made on individual weed species. General ratings for broad-leaved weeds and grasses were sometimes used in orchard studies or for late-season assessments.

Weed control and crop injury are rated on a 1 to 10 scale; 1 = no visible injury or reduction in growth; 10 = complete kill of plants. The ratings can be roughly translated into percentages as follows:

10 = 100% kill, all the plants are dead or none are visible.
9 = 90-100% kill or reduction in growth and stand.
8 = 80-90% kill or reduction in growth and stand.
7 = 70-80% kill or reduction in growth and stand.
This is a still commercially acceptable control.
6 = 60-70% kill or reduction in growth and stand.
5 = 50% kill or reduction in growth and stand.
4 = 30-40% kill or reduction in growth and stand.
3 = 20-30% reduction in growth and stand.
2 = 10-20% reduction in growth and stand.
1 = 0-10% reduction in growth, no obvious effect of herbicide.

Experimental Design and Statistical Analysis

Experiments were set up and analyzed in the program Agriculture Research Manager (ARM) version 6.0, from Gylling Data Management, Inc. (RR 4 405 Martin Boulevard, Brookings, SD 57006). Unless otherwise specified, the experiments were laid out as randomized complete blocks. The data were subjected to analysis of variance and the means were compared with the LSD test at the 5% level. Since data transformations were not used, the coefficient of variation for skewed ratings or weed densities may be misleading. In some instances, yields for weeded check plots may be low because of severe early weed competition. In these cases, it may be more desirable to compare new herbicides with standard treatments.

WEED LIST

Abbreviations for the common names of weeds correspond to those presented in the NCWSS proceedings volume 28 (1973), 143.

Abbr.	Common Name	Botanical Name
ANBG	annual bluegrass	*Poa annua* L.
BHPL	buckhorn plantain	*Plantago lanceolata* L.
BRPL	broadleaf plantain	*Plantago major* L.
BSPL	blackseed plantain	*Plantago rugelii* Dcne.
BYGR	barnyardgrass	*Echinochloa crus-galli* (L.) Beauv.
CATH	Canada thistle	*Cirsium arvense* (L.) Scop.
CAWE	carpetweed	*Mollugo verticillata* L.
COBU	cocklebur	*Xanthium strumarium* L.
COCW	common chickweed	*Stellaria media* (L.) Cyrillo
COGR	common groundsel	*Senecio vulgaris* L.
COLQ	common lambsquarters	*Chenopodium album* L.
COPU	common purslane	*Portulaca oleracea* L.
CORW	common ragweed	*Ambrosia artemisiifolia* L.
CUDO	curly dock	*Rumex crispus* L.
CWBS	catchweed bedstraw	*Galium aparine* L.
DAND	dandelion	*Taraxacum officinale* Weber
EBNS	eastern black nightshade	*Solanum ptycanthum* Dun.
FAPA	fall panicum	*Panicum dichotomiflorum* Michx.
FIPA	field pansy	*Viola rafinesquii* Greene
FIPC	field pennycress	*Thlaspi arvense* L.
GIRW	giant ragweed	*Ambrosia trifida* L.
GORO	goldenrod	*Solidago nemoralis* Ait.
GIFT	giant foxtail	*Setaria faberi* Hermm.
GRFT	green foxtail	*Setaria viridis* (L.) Beauv.
GFPW	greenflower pepperweed	*Lepidium densiflorum* Schmd.
HOAL	hoary alyssum	*Berteroa incana* (L.) DC.
HOWE	horseweed (marestail)	*Conyza canadensis* (L.) Scop.
JIWE	jimsonweed	*Datura stramonium* L.
LACG	large crabgrass	*Digitaria sanguinalis* (L.) Scop
LATH	ladysthumb	*Polygonum persicaria* L.
MATA	marestail (horseweed)	*Conyza canadensis* (L.) Scop.
MAYC	marsh yellowcress	*Rorippa islandica* (Oeder) Barbs
MECW	mouseear chickweed	*Cerastium vulgatum* L.
MONO	monolepis	*Monolepis nuttaliane* Greene
MWCH	mayweed chamomile	*Anthemis cotula* L.
NLLQ	narrowleaf lambsquarters	*Chenopodium desiccatum* A. Nels
OEDA	oxeye daisy	*Chrysanthemum leucanthemum* L.
PAWE	pineappleweed	*Matricaria matricariodes* (Less)C.L.Porter
PESW	Pennsylvania smartweed	*Polygonum pennsylvanicum* L.
POIV	poison ivy	*Rhus radicans* L.
PRKW	prostrate knotweed	*Polygonum aviculare* L.
PRLE	prickly lettuce	*Lactuca serriola* L.
PRSP	prostrate spurge	*Euphorbia maculata* L.
PRPW	prostrate pigweed	*Amaranthus blitoides* S. Wats.
PUSW	purslane speedwell	*Veronica serpyllifolia* L.

WEED LIST

Abbr.	Common Name	Botanical Name
QUGR	Quackgrass	*Agropyron repens* (L.) Beauv.
RECL	red clover	*Trifolium pratense* L.
REFE	red fescue	*Festuca rubra* L.
RESO	red sorrel	*Rumex acetosella* L.
ROFB	rough fleabane	*Erigeron strigosus* Muhl. ex Willd.
RRPW	redroot pigweed	*Amaranthus retroflexus* L.
RUTH	russian thistle	*Salsola iberica* L.
SHPU	Shepherdspurse	*Capsella bursa-pastoris* (L.) Medic.
TUPW	tumble pigweed	*Amaranthus albus* L.
VELE	Velvetleaf	*Abutilon theophrasti* Medic.
VIPW	Virginia pepperweed	*Lepidium virginicum* L.
VOAS	volunteer asparagus	*Asparagus officinalis* L.
WHCA	white campion	*Silene alba* (Mill.) E.H.L. Krause
WHCL	white clover	*Trifolium repens* L.
WIBW	wild buckwheat	*Polygonum convolvulus* L.
WICA	wild carrot	*Daucus carota* L.
WICH	wild chamomile	*Matricaria chamomilla* L.
WIGR	witchgrass	*Panicum capillare* L.
WIMU	wild mustard	*Sinapis arvensis* L.
WIRA	wild radish	*Raphanus raphanistrum* L.
WLDGRP	wild grape	*Vitis* sp.
WLDRASP	wild raspberry	*Rubus* sp.
YEFT	yellow foxtail	*Setaria glauca* (L.) Beauv.
YENS	yellow nutsedge	*Cyperus esculentus* L.
YERO	yellow rocket	*Barbarea vulgaris* R. Br.

CHEMICAL LIST

COMMON NAME	TRADE NAME	FORMULATION	MANUFACTURER
2,4-D amine	Weedar 64	3.8 L	Sedagri Inc.
acetochlor	Harness	7 EC	Monsanto
acetochlor	Surpass	6.4 EC	Zeneca
acifluorfen	Blazer	2 EC	BASF
alachlor	Lasso	4 EC	Monsanto
atrazine	Aatrex	90 DF	Novartis
azafenidin	Milestone	80 DF	DuPont
bensulide	Prefar	4 EC, 6 EC	Gowan
bentazon	Basagran	4 L	BASF
bromoxynil	Buctril	2 EC	Sedagri Inc.
bromoxynil	TADS 13169	20 WP	Sedagri Inc.
carfentrazone	Aim	40 DF	FMC
CGA 248757	Action	4.75 WP	Novartis
chlorimuron	Classic	25 WG	DuPont
clethodim	Select	2 EC	Valent
clomazone	Command	4 EC,3 ME	FMC
clopyralid	Stinger	3 EC	Dow Agrisciences
cyanazine	Bladex	90 DF, 4 L	DuPont
cycloate	Ro-Neet	6 EC	Zeneca
desmedipham	Betanex	1.3 L	Agrevo
dicamba	Banvel	4 EC	Sandoz
diclobenil	Casoron	50 WP	Uniroyal
dimethenamid	Frontier	6 EC	BASF
diquat	Diquat	2 EC	Zeneca
diuron	Karmex	80 DF	Griffin
endothall	Desicate	0.52 EC	Atochem
ethalfluralin	Curbit	3 EC	Platte
ethofumesate	Nortron	4L	Agrevo
flumioxazin	Valor	50 WP	Valent
fluazifop-P	Fusilade DX	2 EC	Zeneca
flufenacet	BAYFOE 5043	60 DF	Bayer
flufenacet + metribuzin	Axiom	68 DF	Bayer
flumiclorac	Resource	0.86 EC	Valent
fomesafen	Reflex	2 LC	Zeneca
glufosinate	Rely	1 L	Agrevo
glufosinate	Liberty	1.67 EC	Agrevo
glyphosate	Roundup	4 L	Monsanto
halosulfuron	Permit	75 WG	Monsanto
imazamox	Raptor	1 AS	American Cyanamid
imazaquin	Scepter	1.5 EC	American Cyanamid
imazethapyr	Pursuit	2 L	American Cyanamid
isoxaben	Gallery	75 DF	Dow Agrisciences
isoxaben .5% + trifluralin 2%	Snapshot	2.5 G	Dow Agrisciences
isoxaben 20% + oryzalin 60%	Snapshot	80 DF	Dow Agrisciences
isoxaflutole	Balance	75 WG	Rhone Poulenc
linuron	Lorox	50 DF	Griffin

CHEMICAL LIST

COMMON NAME	TRADE NAME	FORMULATION	MANUFACTURER
metolachlor	Dual	8 EC	Ciba
metribuzin	Sencor	75 DF	Bayer
napropamide	Devrinol	50 DF	United Phosphorus
naptalam	Alanap	2 EC	Uniroyal
nicosulfuron	Accent	75 DF	DuPont
norflurazon	Solicam	80 DF	Novartis
oryzalin	Surflan	4 AS	Dow Agrisciences
oxyfluorfen	Goal XL	2 L	Rohm and Haas
paraquat	Gramoxone Extra	2.5 L	Zeneca
pendimethalin	Prowl	3.3 EC	American Cyanamid
phenmedipham	Spin-Aid	1.3 L	Agrevo
phenmedipham + desmedipham	Betamix	1.3 L	Agrevo
phenmedipham + desmedipham + ethofumesate	Betamix Progress	1.8 L	Agrevo
primisulfuron	Beacon	75 WDG	Novartis
primisulfuron + prosulfuron	Exceed	57 WG	Novartis
prometryn	Caparol	4 L	Novartis
pronamide	Kerb	50 WP	Rohm and Haas
prosulfuron	Peak	57 WG	Novartis
pyrazon	Pyramin	4.2 FL, 68 DF	BASF
pyridate	Lentagran	45WP	Novartis
pyridate	Tough	3.75 EC	Novartis
quizalofop	Assure II	0.88 L	DuPont
rimsulfuron	Matrix	25 DF	DuPont
rimsulfuron	Shadeout	25 DF	DuPont
s-dimethenamid	BAS65607 H	6 EC	BASF
s-metolachlor	Dual Magnum	7.6 EC	Novartis
s-metolachlor II	Dual Magnum II	7.6 EC	Novartis
sethoxydim	Poast	1.53 EC	BASF
simazine	Princep	90 DF	Novartis
sulfentrazone	Authority	75 DF	FMC
sulfosate	Touchdown	6 L	Zeneca
terbacil	Sinbar	80 WP	DuPont
triclopyr	Grandstand	3 EC	Dow Agrisciences
trifluralin	Treflan	4 EC	Dow Agrisciences
triflusulfuron	Upbeet	50 WG	DuPont

ADJUVANTS

TRADE NAME	ABBREVIATION	DESCRIPTION	MANUFACTURER
Activator 90	NIS	nonionic surfactant	Loveland
AG98	AG98	nonionic surfactant Alkylarylpolyoxyethylene	Rohm and Haas
ammonium nitrate		100% salt	
ammonium sulfate	AMS	spray grade fertilizer	
copper sulfate		100% salt	
Herbimax	COC	80% paraffin base petroleum oil 20% surfactant	Loveland
28% Nitrogen	UAN	28% urea ammonia nitrate solution	
Silwet L-77		organosilicone surfactant	Loveland
Sylgard 309		Organosilicone surfactant	DowCorning
X-77	NIS	Alkylarylpolyoxyethylene glycol free fatty acids, isopropanol	Loveland

ABBREVIATIONS USED IN THE REPORT

A = Acre
AI = Active Ingredient
ASPA = Asparagus
CEC = Cation Exchange Capacity
CV = Coefficient of Variability
DF = Dry Flowable
DS = Designator
EC = Emulsifiable Concentrate
F = Fahrenheit Temperature
FORM = Formulation
FM = Formulation
FT = Distance in Feet
G / GR = Gram
GAL = Gallon
GPA = Gallons per acre
GROW STG = Growth Stage at time of application
HTRC = Horticulture Teaching and Research Station
IN = Inch
KG = Kilogram
L = Liquid
LSD = Least Significant Difference
LB = Pounds
MPH = Mile(s) per hour
MSU = Michigan State University
N = No
N/A = Not Applicable / Not Available
No. = Number
OM = Organic Matter
OZ = Ounce
PO = Postemergence
POH = Post harvest
POT = Post Transplant
PPI = Preplant Incorporated
PRE = Preemergence
PREC. = Precipitation (inches)
PRT = Pretransplant
PSI = Pounds per square inch
QT = Quart
RCBD = Randomized Complete Block Design
RH = Relative Humidity
REPS = Replication
SNBE = Snapbean
SP = Soluble Powder
STBE = Strawberry
SURF = Surface
TRT = Treatment
WG = Wettable Dry Crystal
WP = Wettable Powder
WT = Weight
" = Inches
Y = Yes

TEMPERATURE AND PRECIPITATION DATA

MSU Horticulture Teaching and Research Center (HTRC)
East Lansing, Michigan
1999

APRIL				MAY				JUNE			
Date	High Temp F	Low Temp F	Total Prec. in.	Date	High Temp F	Low Temp F	Total Prec. in.	Date	High Temp F	Low Temp F	Total Prec. in.
1	60.2	50.9		**1**	71.4	34.3		**1**	81.4	64.2	0.10
2	72.2	53.8		**2**	74.9	38.3		**2**	69.1	51.9	0.50
3	76.6	56.1	0.74	**3**	77.6	40.7		**3**	67.9	46.9	
4	58.9	39.5	0.67	**4**	78.7	45.0		**4**	75.5	59.2	
5	53.8	35.6	0.01	**5**	75.1	54.6		**5**	87.7	56.1	
6	61.0	41.4	0.01	**6**	71.1	51.3	0.06	**6**	92.4	69.9	
7	66.5	35.1		**7**	68.8	50.7		**7**	88.8	68.1	
8	69.3	41.6	0.06	**8**	59.1	49.7	0.02	**8**	87.6	66.6	
9	48.5	35.2	0.92	**9**	65.3	43.9		**9**	91.5	60.9	
10	52.8	31.2		**10**	70.9	38.7		**10**	94.1	73.8	
11	42.2	33.0	0.31	**11**	74.2	40.0		**11**	92.8	67.8	
12	53.7	31.5		**12**	59.6	45.4	0.06	**12**	90.2	65.9	0.01
13	57.0	31.4		**13**	61.5	41.8		**13**	78.4	67.5	0.01
14	64.2	32.3		**14**	71.6	37.6		**14**	74.2	54.7	0.11
15	59.6	36.8		**15**	75.5	52.7		**15**	66.5	43.9	
16	50.7	37.5	0.50	**16**	81.3	56.4		**16**	69.2	52.9	
17	49.0	35.9	0.05	**17**	83.8	60.2	0.82	**17**	67.2	46.9	0.01
18	49.0	34.4	0.05	**18**	66.4	52.8	0.18	**18**	76.3	41.1	
19	50.5	32.1	0.08	**19**	68.3	49.6		**19**	75.9	49.6	
20	54.6	38.9	0.02	**20**	75.3	44.8		**20**	82.9	50.7	
21	57.1	43.7		**21**	76.7	51.4		**21**	84.9	52.1	
22	52.3	43.5	1.97	**22**	65.4	51.7	0.06	**22**	85.9	53.6	
23	45.4	31.3	1.08	**23**	66.1	44.7	0.13	**23**	89.3	62.6	0.02
24	51.9	27.2		**24**	54.6	42.0		**24**	83.5	64.4	0.26
25	61.5	29.4		**25**	55.3	40.8	0.02	**25**	88.2	60.3	
26	72.0	33.1		**26**	66.5	44.5		**26**	89.5	59.0	
27	61.1	40.7		**27**	74.5	38.3		**27**	84.7	67.7	0.35
28	64.2	39.9		**28**	81.6	47.6		**28**	87.7	67.0	0.25
29	64.2	38.8		**29**	84.7	49.3		**29**	71.3	56.5	0.02
30	67.7	36.8		**30**	84.8	54.6		**30**	78.6	56.9	
				31	75.1	61.2	0.30				

TEMPERATURE AND PRECIPITATION DATA

MSU Horticulture Teaching and Research Center (HTRC)
East Lansing, Michigan
1999

JULY				AUGUST				SEPTEMBER			
Date	High Temp F	Low Temp F	Total Prec. in.	Date	High Temp F	Low Temp F	Total Prec. in.	Date	High Temp F	Low Temp F	Total Prec. in.
1	76.0	66.9	1.79	**1**	81.4	66.5		**1**	86.9	50.3	
2	84.1	59.5		**2**	77.9	54.6		**2**	89.5	52.0	
3	88.6	64.9		**3**	81.2	53.2		**3**	90.2	53.7	
4	91.6	75.8		**4**	80.4	66.2	0.20	**4**	90.7	50.6	
5	91.6	74.4		**5**	74.1	57.9	0.01	**5**	90.5	52.6	
6	83.8	66.4		**6**	81.3	53.7		**6**	79.7	63.2	
7	82.1	57.0		**7**	80.5	56.3	0.73	**7**	79.9	50.6	
8	84.0	59.1		**8**	72.4	56.4	0.01	**8**	86.3	47.1	
9	79.9	65.1	0.59	**9**	72.8	47.7		**9**	72.9	54.6	
10	74.4	56.6	0.05	**10**	76.5	58.5	0.06	**10**	67.3	51.7	
11	78.9	48.2		**11**	83.1	56.3		**11**	77.2	49.4	
12	82.0	50.2		**12**	82.5	56.1	0.01	**12**	86.6	50.2	0.01
13	83.2	61.7		**13**	84.5	61.6	0.06	**13**	72.9	51.3	0.10
14	84.8	58.0		**14**	71.7	51.7		**14**	67.3	45.9	0.04
15	86.8	63.7		**15**	77.8	46.1		**15**	68.9	40.5	
16	90.0	65.6		**16**	85.6	55.6		**16**	67.1	45.8	
17	84.3	68.2	0.01	**17**	82.7	65.6		**17**	72.2	41.5	
18	84.7	69.5		**18**	70.6	62.3		**18**	77.1	40.8	
19	80.6	67.4	0.12	**19**	71.8	58.5		**19**	81.1	42.7	
20	84.0	63.1		**20**	77.8	53.7		**20**	67.1	49.1	0.10
21	83.9	67.3	0.22	**21**	80.2	48.2		**21**	60.9	38.5	0.02
22	85.2	69.2		**22**	83.4	51.2		**22**	68.7	33.5	
23	91.7	63.6	0.80	**23**	66.8	60.7	0.27	**23**	77.2	50.3	
24	88.8	68.4	0.25	**24**	73.0	63.6	0.08	**24**	66.4	46.9	0.10
25	86.5	66.7	0.01	**25**	75.4	63.8	0.30	**25**	76.5	37.4	
26	84.0	62.1	0.19	**26**	77.8	64.0		**26**	86.6	52.4	
27	86.5	65.5	0.01	**27**	83.1	60.3	0.01	**27**	85.8	61.4	0.02
28	89.8	57.1		**28**	87.7	66.3		**28**	83.1	61.7	0.13
29	93.0	63.5		**29**	70.6	50.7		**29**	65.8	48.6	1.12
30	96.8	69.8		**30**	71.0	47.7		**30**	65.0	41.9	
31	89.8	73.3	0.01	**31**	80.7	48.3					

TEMPERATURE AND PRECIPITATION DATA

MSU Horticulture Teaching and Research Center (HTRC)
East Lansing, Michigan
1999

OCTOBER

Date	High Temp F	Low Temp F	Total Prec. in.
1	60.2	41.4	
2	53.1	43.9	0.01
3	50.0	32.2	0.37
4	51.7	35.0	0.03
5	59.1	32.3	
6	52.5	36.5	
7	58.1	30.2	
8	61.5	42.7	0.07
9	65.4	51.6	
10	74.2	52.1	
11	65.3	37.7	
12	69.2	36.0	
13	63.6	41.9	0.17
14	57.3	31.1	
15	71.1	39.0	
16	73.1	52.5	0.09
17	52.8	39.7	
18	51.9	33.7	
19	55.8	39.9	
20	49.6	30.8	0.01
21	61.9	30.5	
22	57.4	38.3	0.06
23	44.8	36.7	
24	47.7	31.3	
25	59.5	33.2	
26	57.7	36.1	
27	56.3	26.1	
28	69.5	39.5	
29	78.9	41.7	
30	75.1	51.5	
31	67.9	41.2	

TEMPERATURE AND PRECIPITATION DATA

MSU Muck Research Station (Muck Farm)
Laingsburg, Michigan
1999

APRIL				MAY				JUNE			
Date	High Temp F	Low Temp F	Total Prec. in.	Date	High Temp F	Low Temp F	Total Prec. in.	Date	High Temp F	Low Temp F	Total Prec. in.
1				**1**	69	27		**1**	84	68	0.02
2				**2**	74	32		**2**	74	56	0.30
3				**3**	76	35		**3**	70	45	
4				**4**	77	48		**4**	88	39	
5				**5**	73	64	0.03	**5**	94	56	
6				**6**	69	50	0.03	**6**	92	66	
7				**7**	68	48		**7**	89	59	
8				**8**	53	42	0.08	**8**	90	58	
9				**9**	61	40		**9**	91	60	
10				**10**	68	30		**10**	95	65	
11				**11**	72	32		**11**	94	66	
12				**12**	66	42	0.30	**12**	91	65	0.04
13				**13**	61	40		**13**	78	67	0.02
14				**14**	75	29		**14**	74	58	0.40
15				**15**	77	50		**15**	69	46	
16				**16**	84	61	0.12	**16**	68	44	
17			0.33	**17**	90	65	0.18	**17**	60	40	
18				**18**	72	65	0.17	**18**	77	36	
19			0.10	**19**	71	47		**19**	78	46	
20	55	43		**20**	78	41		**20**	82	46	
21	56	45		**21**	81	54		**21**	85	48	
22	51	42	2.52	**22**	76	58	0.04	**22**	85	50	
23	44	25		**23**	68	40	0.40	**23**	92	65	0.03
24	51	22		**24**	52	44	0.05	**24**	86	64	1.54
25	62	25		**25**	58	43	0.01	**25**	89	57	
26	71	29		**26**	70	38		**26**	90	56	
27	58	38		**27**	79	33		**27**	83	69	0.48
28	61	38		**28**	87	43		**28**	89	65	2.10
29	62	36		**29**	91	46		**29**	70	58	
30	65	27		**30**	90	54		**30**	75	54	
				31	78	64					

TEMPERATURE AND PRECIPITATION DATA

MSU Muck Research Station (Muck Farm)
Laingsburg, Michigan
1999

JULY				AUGUST				September			
Date	High Temp F	Low Temp F	Total Prec. in.	Date	High Temp F	Low Temp F	Total Prec. in.	Date	High Temp F	Low Temp F	Total Prec. in.
1	76	62	2.10	**1**	79	61		**1**	81	41	
2	76	56		**2**	75	45		**2**	85	40	
3	89	64		**3**	79	44		**3**	85	42	
4	93	79		**4**	77	55	0.22	**4**	87	40	
5	93	79		**5**	71	50	0.32	**5**	87	43	
6	84	63		**6**	78	45		**6**	77	59	
7	84	54		**7**	79	48		**7**	78	42	
8	84	54		**8**	69	57	0.88	**8**	83	38	
9	82	66	0.45	**9**	71	40	0.09	**9**	70	45	0.02
10	77	55		**10**	73	55		**10**	65	46	
11	79	42		**11**	79	48		**11**	75	38	
12	81	45		**12**	74	48		**12**	85	40	
13	84	52		**13**	80	53	0.25	**13**	72	40	0.15
14	84	55		**14**	65	54		**14**	65	40	0.12
15	89	62		**15**	72	39		**15**	65	33	
16	91	64		**16**	79	50		**16**	64	31	
17	86	70	1.07	**17**	80	61		**17**	71	29	
18	84	70		**18**	68	58		**18**	75	31	
19	82	68	0.15	**19**	67	65		**19**	80	34	
20	84	63		**20**	74	41		**20**	65	48	0.21
21	84	69	0.22	**21**	78	40		**21**	60	40	
22	86	68		**22**	80	43		**22**	68	24	
23	91	62	0.48	**23**	62	59	0.23	**23**	77	50	
24	92	68	0.04	**24**	71	62	0.05	**24**	65	43	0.18
25	89	62		**25**	71	62	0.27	**25**	73	30	
26	82	58	0.10	**26**	72	62	0.10	**26**	86	53	
27	86	56		**27**	82	54		**27**	85	62	
28	88	48		**28**	87	61		**28**	81	62	0.25
29	90	55		**29**	68	41		**29**	62	47	1.10
30	94	62		**30**	69	38		**30**	63	31	
31	88	70		**31**	75	39					

Weed Control in Asparagus - Hart

Trial ID: WC 120-99-01 **Location: Asparagus Research Farm, Hart MI**

Personnel: Bernard H. Zandstra, Joseph G. Masabni, John Bakker, Norm Myers
Crop: Asparagus **Variety: mixed; several** **Field or Block: N/A**
Planting Method: Crowns **Planting Date: 1987** **Harvest: N/A**
Spacing: 12 inch **Row Spacing: 60 inch** **Perennial Age: 12 yrs**
Tillage Type: None **Study Design: RCBD** **Replications: 3**
Plot Size: 5.3 ft wide * 50 ft long

Soil Type: Spinks Loamy Fine Sand **OM: 1.8%** **pH: 5.2**
Sand: 90% **Silt: 9%** **Clay: 1%** **CEC: 7.0**

Herbicide Application Information

Timing	Date	Time	Air/Soil T	Soil Surf	Wind	Wet/Dry	RH	Sky	Dew
PRE	5-4	9 am	64 F/ 57 F	dry	SE 5-7	52F/64F	42%	clear	N

Crop and Weed Information at Application

Date	Crop or Weed	Height or Diameter	Number of Leaves	Density
5-4-99	Asparagus	1-6	-	good

Notes and Comments
1. Sprays applied with 4-nozzle boom FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack.
2. Crop and weed injury ratings on scale of 1-10: 1 = no injury, 10 = complete kill or none present.
3. Yield not recorded; plot consisted of several different cultivars.

Trt No.	Treatment Name	Form Amt	Fm Ds	Rate lb ai/A	Grow Stg	BYGR RATING 6-8-99	RUTH RATING 6-8-99	VOAS RATING 6-8-99	ASPA RATING 6-22-99	VOAS RATING 6-22-99	RUTH RATING 6-22-99
1	Karmex	80	DF	2	PRE	10.0	7.7	3.7	1.3	8.0	6.0
2	Sencor	75	DF	1	PRE	10.0	9.0	3.3	2.0	9.7	10.0
3	Solicam	80	DF	2	PRE	10.0	4.3	4.7	2.7	8.0	6.3
4	Sinbar	80	WP	1	PRE	10.0	10.0	9.0	1.7	9.7	10.0
5	Lorox	50	DF	2	PRE	7.0	2.3	4.7	1.3	4.3	1.7
6	Dual Magnum	7.6	EC	2	PRE	10.0	4.0	5.3	1.7	6.3	3.3
7	Authority	75	DF	0.25	PRE	10.0	10.0	10.0	2.7	10.0	10.0
8	Prowl	3.3	EC	3	PRE	10.0	4.0	7.0	1.0	7.7	3.0
9	Milestone	80	DF	1	PRE	10.0	10.0	6.3	2.0	10.0	10.0
10	Untreated					7.0	5.0	8.3	1.3	6.3	4.3
LSD (P=.05)						3.76	5.46	5.08	1.63	3.18	4.89
Standard Deviation						2.19	3.18	2.96	0.95	1.85	2.85
CV						23.31	47.95	47.50	53.70	23.16	44.07

Sensitivity of Snapbean Cultivars to Preemergence Herbicides

Trial ID: WC 120-99-01 **Location: Plant Science Greenhouse 20-B**

Personnel: Bernard H. Zandstra, Joseph G. Masabni
Crop: Snapbeans **Varieties: see Notes**
Planting Method: Seed **Planting Date: 5-4-99** **Harvest: 5-25-99**
Spacing: 1 row/variety **Row Spacing: 20 seeds/row**
Tillage Type: N/A **Study Design: RCBD** **Replications: 4**
Plot Size: 10" * 20" greenhouse flats

Soil Type: Marlette Fine Sandy Loam **OM: 1.7%** **pH: 6.2**
Sand: 65% **Silt: 22%** **Clay: 13%** **CEC: 3.4**

Herbicide Application Information

Timing	Date	Time	Air/Soil T	Soil Surf	Wind	Wet/Dry	RH	Sky	Dew
PPI	4-30	2:30pm	-	-	-	-	-	-	-
PRE	5-4	2 pm	-	-	-	-	-	-	-

Notes and Comments

1. Treatments applied using a bench sprayer, 20 psi, 20 gpa or 120 ml/30 sec.
2. Crop and weed injury ratings on scale of 1-10: 1 = no injury, 10 = complete kill or none present.
3.

	Variety	Lot No.	Source
1.	Fury	VFZ302-003	Asgrow
2.	Hercules	17677	Asgrow
3.	Zeus	VWZ334003	Asgrow
4.	Strike	GFA7983	Asgrow
5.	OSU 5402	5402-97	Pureline
6.	Envy	10509-138666	Harris Moran
7.	Hystyle	1072-141414	Harris Moran
8.	Minuette	209963-141462	Harris Moran
9.	True Blue	10466-141304	Harris Moran
10.	Summit	TG6924SM	Rogers
11.	Venture	TG6375	Rogers
12.	OSU 5402	QG2726	Rogers

4. Statistical analysis: No Herbicide * Variety interaction was observed for any measured variable.

Sensitivity of Snapbean Cultivars to Preemergence Herbicides

Trial ID: WC 120-99-01 **Location: Plant Science Greenhouse 20-B**

DAT = days after treatment

Trt No.	Treatment Name	Form Amt	Fm Ds	Rate	Rate Unit	Grow Stg	Count 8 DAT	Count 10 DAT	Count 13 DAT	Count 21 DAT
1	s-metolachlor	7.6	EC	0.95	LB A/A	PPI	2.6	4.2	10.7	16.2
2	s-metolachlor	7.6	EC	0.95	LB A/A	PRE	1.5	3.8	11.1	16.5
3	s-metolachlor	7.6	EC	1.9	LB A/A	PPI	1.7	6.9	14.9	17.0
4	s-metolachlor	7.6	EC	1.9	LB A/A	PRE	2.6	7.8	13.3	16.9
5	pendimethalin	3.3	EC	0.5	LB A/A	PPI	0.3	2.7	9.8	15.7
6	pendimethalin	3.3	EC	0.5	LB A/A	PRE	1.1	4.7	10.0	14.9
7	trifluralin	4	EC	0.5	LB A/A	PPI	0.8	3.3	11.3	15.8
8	trifluralin	4	EC	0.5	LB A/A	PRE	0.1	4.1	12.7	16.9
9	EPTC	7	L	3	LB A/A	PPI	1.5	4.9	11.2	16.3
10	Control						0.6	6.5	15.2	17.1
	LSD (5%)						1.2	2.3	2.3	1.0
	Std. Deviation						0.42	0.83	0.81	0.35
	CV						219	117	46.64	15.06

Trt No.	Treatment Name	Form Amt	Fm Ds	Rate	Rate Unit	Grow Stg	Root Fresh Weight (g) 21 DAT	Root Dry Weight (g) 21 DAT	Shoot Fresh Weight (g) 21 DAT	Shoot Dry Weight (g) 21 DAT	Shoot Length cm 21 DAT
1	s-metolachlor	7.6	EC	0.95	LB A/A	PPI	12.37	27.99	2.38	2.55	18.11
2	s-metolachlor	7.6	EC	0.95	LB A/A	PRE	13.62	28.74	2.40	2.64	19.09
3	s-metolachlor	7.6	EC	1.9	LB A/A	PPI	14.97	30.21	2.65	2.85	19.43
4	s-metolachlor	7.6	EC	1.9	LB A/A	PRE	15.46	29.98	2.82	2.67	18.38
5	pendimethalin	3.3	EC	0.5	LB A/A	PPI	13.32	27.07	2.06	2.76	16.85
6	pendimethalin	3.3	EC	0.5	LB A/A	PRE	11.81	27.13	1.81	2.54	17.11
7	trifluralin	4	EC	0.5	LB A/A	PPI	12.51	27.91	2.11	2.70	17.84
8	trifluralin	4	EC	0.5	LB A/A	PRE	14.53	30.25	2.84	2.64	18.92
9	EPTC	7	L	3	LB A/A	PPI	14.09	29.98	2.65	2.77	18.88
10	Control						14.94	32.86	2.94	2.95	23.50
	LSD (5%)						1.58	2.57	0.42	NS	3.25
	Std. Deviation						0.57	0.93	0.15	0.10	1.17
	CV						28.67	21.94	42.51	26.71	43.00

Sensitivity of Snapbean Cultivars to Preemergence Herbicides

Trial ID: WC 120-99-01 **Location: Plant Science Greenhouse 20-B**

No.	Cultivar Name	Count 8 DAT	Count 13 DAT	Count 10 DAT	Count 21 DAT
1	Fury	1.6	13.5	6.3	18.1
2	Hercules	0.7	11.6	3.6	17.2
3	Zeus	0.9	12.6	4.6	18.5
4	Strike	0.6	11.9	4.0	16.2
5	OSU5402 (Pureline)	1.9	11.5	5.7	14.8
6	Envy	0.6	9.1	3.5	13.0
7	Hystyle	0.8	11.5	4.1	16.5
8	Minuette	3.5	13.9	7.4	17.4
9	True Blue	1.3	12.7	5.5	17.1
10	Summit	0.4	11.4	3.5	14.9
11	Venture	3.0	13.8	7.7	18.0
12	OSU5402 (Rogers)	0.7	10.7	3.2	14.1
	LSD (5%)	1.27	2.46	2.54	1.08
	Std. Deviation	0.47	0.87	0.91	0.39
	CV	219	46.65	117	15.06

No.	Cultivar Name	Root Fresh Weight (g) 21 DAT	Root Dry Weight (g) 21 DAT	Shoot Fresh Weight (g) 21 DAT	Shoot Dry Weight (g) 21 DAT	Shoot Length cm 21 DAT
1	Fury	16.78	3.36	39.81	3.69	18.26
2	Hercules	15.33	2.87	33.09	3.00	20.36
3	Zeus	15.28	2.73	34.69	3.19	21.31
4	Strike	12.43	2.21	24.48	2.18	18.45
5	OSU5402 (Pureline)	11.80	2.03	20.47	1.77	19.02
6	Envy	11.61	1.85	22.22	2.22	17.13
7	Hystyle	15.90	2.90	27.66	2.54	17.75
8	Minuette	12.25	2.43	27.40	2.68	18.29
9	True Blue	15.18	2.61	37.74	3.55	19.91
10	Summit	11.18	1.88	24.58	2.27	18.61
11	Venture	15.35	2.78	36.77	3.58	20.44
12	OSU5402 (Rogers)	12.06	1.93	21.67	1.82	16.21
	LSD (5%)	1.74	0.46	2.82	0.32	NS
	Std. Deviation	0.63	0.17	1.01	0.11	1.28
	CV	28.67	42.51	21.94	26.71	43.00

Preemergence Herbicides on Snapbean Cultivars - HTRC

Trial ID: WC 120-99-02 **Location: East Lansing, MI**

Personnel: Bernard H. Zandstra, Joseph G. Masabni
Crop: Snapbeans **Variety: see Notes** **Field or Block: 85**
Planting Method: Seed **Planting Date: 5-10-99** **Harvest: 5-26-99**
Spacing: 3-4" in row **Row Spacing: 14",1 row/cultivar**
Tillage Type: Conventional **Study Design: Split Plot** **Replications: 4**
Plot Size: 10 ft wide * 35 ft long

Soil Type: Marlette Fine Sandy Loam **OM: 1.8%** **pH: 6.4**
Sand: 65% **Silt: 26%** **Clay: 9%** **CEC: 8.2**

Herbicide Application Information

Timing	Date	Time	Air/Soil T	Soil Surf	Wind	Wet/Dry	RH	Sky	Dew
PPI	5-10	10:15am	63 F/ 56 F	dry	SE 4-6	57F/63F	70%	clear	N
PRE	5-11	9:25am	60 F/ 56 F	dry	SE 2-4	53F/60F	64%	10% cloud	N

Notes and Comments

1. Sprays applied with 4-nozzle boom FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack.
2. Crop and weed injury ratings on scale of 1-10: 1 = no injury, 10 = complete kill or none present.
3.

	Variety	Lot No.	Source
1.	Fury	VFZ302-003	Asgrow
2.	Hercules	17677	Asgrow
3.	Zeus	VWZ334003	Asgrow
4.	Strike	GFA7983	Asgrow
5.	OSU 5402	5402-97	Pureline
6.	Envy	10509-138666	Harris Moran
7.	Hystyle	1072-141414	Harris Moran
8.	Minuette	209963-141462	Harris Moran
9.	True Blue	10466-141304	Harris Moran
10.	Summit	TG6924SM	Rogers
11.	Venture	TG6375	Rogers
12.	OSU 5402	QG2726	Rogers

4. Twelve cultivars planted across treatments.
5. Study Design: main plots = herbicide treatments; sub-plots = snapbean varieties.
6. Statistical analysis: No Herbicide * Variety interaction was observed for any measured variable.

Preemergence Herbicides on Snapbean Cultivars - HTRC

Trial ID: WC 120-99-02 **Location: East Lansing, MI**

Cultivars	PLANT No./10FT 7-19-99	PLANT WEIGHT KG/10FT 7-19-99	BEAN WEIGHT KG/10FT 7-19-99
Fury	11.93	0.57	0.75
Hercules	14.18	0.46	0.57
Zeus	16.50	0.49	0.62
Strike	15.73	0.53	0.58
OSU5402 (Pureline)	12.83	0.42	0.53
Envy	11.50	0.56	0.68
Hystyle	10.05	0.35	0.50
Minuette	20.35	0.54	0.54
True Blue	9.03	0.46	0.53
Summit	13.18	0.65	0.65
Venture	16.88	0.34	0.57
OSU5402 (Rogers)	16.85	0.51	0.68
LSD (5%)	0.78	0.06	0.10
Std. Deviation	0.78	0.02	0.03
CV	35.06	29.32	36.54

Treatments	Rate lbai/A	Grow Stg	PLANT No./10 FT 7-19-99	PLANT WEIGHT KG/10FT 7-19-99	BEAN WEIGHT KG/10FT 7-19-99
s-metolachlor	0.95	PPI	14.35	0.46	0.59
s-metolachlor	0.95	PRE	13.50	0.49	0.58
s-metolachlor	1.9	PPI	14.23	0.57	0.74
s-metolachlor	1.9	PRE	13.88	0.56	0.69
pendimethalin	0.5	PPI	13.89	0.50	0.65
pendimethalin	0.5	PRE	15.15	0.49	0.60
trifluralin	0.5	PPI	14.35	0.50	0.64
trifluralin	0.5	PRE	14.29	0.48	0.56
EPTC	3	PPI	13.81	0.47	0.57
Control			13.35	0.38	0.39
LSD (5%)			NS	0.06	0.09
Std. Deviation			0.71	0.02	0.03
CV			35.06	29.32	36.54

Weed Control in Snapbean - HTRC

Trial ID: WC 120-99-03 **Location: East Lansing, MI**

Personnel: Bernard H. Zandstra, Joseph G. Masabni
Crop: Snapbean **Variety: Labrador (Asgrow)** **Field or Block: 86**
Planting Method: Seed **Planting Date: 5-21-99** **Harvest: 7-26-99**
Spacing: 3.1 inch **Row Spacing: 28", 2 rows/plot**
Tillage Type: Conventional **Study Design: RCBD** **Replications: 3**
Plot Size: 7 ft wide * 35 ft long; spray 5.33 ft

Soil Type: Marlette Fine Sandy Loam **OM: 1.5%** **pH: 6.1**
Sand: 69% **Silt: 23%** **Clay: 9%** **CEC: 7.4**

Herbicide Application Information

Timing	Date	Time	Air/Soil T	Soil Surf	Wind	Wet/Dry	RH	Sky	Dew
PPI	5-20	10:45am	70 F/ 60 F	moist	SE 5-7	60F/70F	56%	10% cloud	N
PRE	5-21	2:35pm	80 F/ 72 F	dry	SW 5-7	65F/80F	46%	90% cloud	N
PO1	6-16	1:45pm	68 F/ 73 F	dry	NE 2-4	58F/68F	52%	Cloudy	N

Crop and Weed Information at Application

Date	Crop or Weed	Height or Diameter	Number of Leaves	Density
6-16	Snapbeans	3-4"	1-2	good
	GRFT	1-3"	2-4	moderate
	COLQ	1-4"	4-12	many
	COPU	1-4"	10-20	moderate
	CORW	1-3"	2-5	few
	FIPC	1-3"	6-10	moderate
	RRPW	1-4"	4-10	many
	WIRA	4-10"	2-6	many

Notes and Comments

1. Sprays applied with 4-nozzle boom FF8002, 20 gpa, 30 psi, 3.2 mph, CO_2 backpack.
2. Crop and weed injury ratings on scale of 1-10: 1 = no injury, 10 = complete kill or none present.
3. 5-20-99: East and west guards sprayed with Treflan 1 lb.
4. 7-26-99: Harvested 10 ft of 2 rows per treatment.

Weed Control in Snapbean - HTRC

Trial ID: WC 120-99-03 **Location: East Lansing, MI**

Trt No.	Treatment Name	Form Amt	Fm Ds	Rate lb ai/A	Grow Stg	SNBE RATING 6-16-99	GRFT RATING 6-16-99	COLQ RATING 6-16-99	COPU RATING 6-16-99	CORW RATING 6-16-99	FIPC RATING 6-16-99	RRPW RATING 6-16-99	WIRA RATING 6-16-99
1	trifluralin	4	EC	1	PPI	1.7	8.0	7.3	8.7	4.7	7.3	6.3	1.7
2	pendimethalin	3.3	EC	1	PPI	1.7	4.0	5.3	8.3	5.0	6.3	6.0	4.3
3	metolachlor	8	EC	2	PRE	2.3	9.3	4.0	9.7	5.3	7.7	7.7	4.0
4	s-metolachlor	7.6	EC	1.33	PRE	3.3	10.0	5.0	10.0	10.0	10.0	10.0	5.0
5	dimethenamid	6	EC	1.17	PRE	3.3	10.0	6.3	10.0	10.0	8.7	9.0	4.3
6	s-dimethenamid	6	EC	0.65	PRE	3.0	10.0	5.7	10.0	9.0	9.7	9.7	5.0
7	clomazone	3	ME	0.5	PRE	1.3	10.0	10.0	10.0	10.0	10.0	9.7	8.7
8	clomazone	3	ME	0.5	PRE	2.0	10.0	10.0	10.0	10.0	10.0	10.0	9.7
	sulfentrazone	75	DF	0.1	PRE								
9	flufenacet	60	DF	0.68	PRE	3.3	10.0	7.7	10.0	10.0	10.0	9.7	9.0
10	EPTC	7	EC	3	PPI	1.0	7.7	5.7	7.3	8.0	5.0	5.3	4.7
11	trifluralin	4	EC	1	PPI	2.0	7.7	7.3	8.3	6.7	6.0	7.0	3.3
	imazamox	1	AS	0.016	PO1								
	NIS	L		0.25% v/v	PO1								
12	trifluralin	4	EC	1	PPI	3.0	7.3	7.0	8.7	7.3	5.3	7.0	5.3
	fomesafen	2	EC	0.25	PO1								
13	trifluralin	4	EC	1	PPI	1.7	7.3	7.0	9.0	4.3	6.0	5.0	3.0
	carfentrazone	40	DF	0.008	PO1								
	NIS	L		0.25% v/v	PO1								
14	trifluralin	4	EC	1	PPI	1.3	7.0	6.0	8.0	6.0	4.3	5.0	3.3
	bentazon	4	L	1	PO1								
	sethoxydim	1.53	EC	0.19	PO1								
	COC	L		1% v/v	PO1								
15	flumioxazin	50	WP	0.047	PRE	8.7	10.0	9.7	10.0	10.0	10.0	10.0	10.0
LSD (P=.05)						0.74	1.63	2.57	0.89	2.67	3.35	2.21	3.79
Standard Deviation						0.45	0.98	1.54	0.53	1.60	2.01	1.32	2.27
CV						16.84	11.43	22.17	5.76	20.57	25.86	16.87	41.80

Trt No.	Treatment Name	Form Amt	Fm Ds	Rate lb ai/A	Grow Stg	SNBE RATING 6-23-99	COLQ RATING 6-23-99	RRPW RATING 6-23-99	WIRA RATING 6-23-99	SNBE PLANT No/10FT 7-26-99	SNBE PLANT WT KG/10FT 7-26-99	SNBE YIELD KG/10FT 7-26-99
1	trifluralin	4	EC	1	PPI	1.7	6.0	8.0	1.7	58.0	3.91	4.23
2	pendimethalin	3.3	EC	1	PPI	1.0	2.3	3.7	4.3	55.0	3.55	3.94
3	metolachlor	8	EC	2	PRE	2.3	3.0	8.0	2.3	68.3	3.53	3.22
4	s-metolachlor	7.6	EC	1.33	PRE	2.3	3.3	8.3	4.0	65.3	3.92	3.99
5	dimethenamid	6	EC	1.17	PRE	3.0	6.0	7.7	3.0	62.7	4.28	4.36
6	s-dimethenamid	6	EC	0.65	PRE	3.0	4.7	8.3	5.3	58.7	3.96	4.14
7	clomazone	3	ME	0.5	PRE	1.0	10.0	8.0	9.0	71.0	4.82	6.21
8	clomazone	3	ME	0.5	PRE	1.3	10.0	8.7	9.7	66.3	4.69	5.89
	sulfentrazone	75	DF	0.1	PRE							
9	flufenacet	60	DF	0.68	PRE	3.3	5.7	8.7	8.0	57.3	4.34	4.28
10	EPTC	7	EC	3	PPI	1.0	2.3	2.7	4.7	63.3	3.89	4.39
11	trifluralin	4	EC	1	PPI	1.7	7.0	7.3	8.7	52.0	4.43	5.33
	imazamox	1	AS	0.016	PO1							
	NIS	L		0.25% v/v	PO1							
12	trifluralin	4	EC	1	PPI	2.0	7.7	9.7	9.7	48.3	3.87	4.18
	fomesafen	2	EC	0.25	PO1							
13	trifluralin	4	EC	1	PPI	6.7	8.3	8.7	6.7	49.7	3.49	0.69
	carfentrazone	40	DF	0.008	PO1							
	NIS	L		0.25% v/v	PO1							
14	trifluralin	4	EC	1	PPI	2.0	8.7	5.0	9.7	55.0	4.25	4.75
	bentazon	4	L	1	PO1							
	sethoxydim	1.53	EC	0.19	PO1							
	COC	L		1% v/v	PO1							
15	flumioxazin	50	WP	0.047	PRE	8.0	10.0	9.7	10.0	12.3	2.02	0.46
LSD (P=.05)						0.66	2.72	2.15	3.02	11.05	0.93	1.18
Standard Deviation						0.39	1.63	1.29	1.80	6.61	0.55	0.71
CV						14.67	25.69	17.21	28.00	11.75	14.17	17.70

Weed Control in Red Beet, Sugar Beet, Chard, and Spinach - HTRC

Trial ID: WC 109-99-01 **Location: East Lansing, MI**

Personnel: Bernard H. Zandstra, Joseph G. Masabni
Crop: Red Beet, Sugar Beet, Chard, Spinach **Varieties: see Notes**
Field or Block: 72 **Planting Method: Heath** **Planting Date: 5-11-99**
Harvest: see Notes **Row Spacing: 14"(see Notes)** **Spacing: 3.1"**
Tillage Type: Conventional **Study Design: RCBD** **Replications: 3**
Plot Size: 10 ft wide * 35 ft long

Soil Type: Capac Sandy Loam **OM: 1.9%** **pH: 6.3**
Sand: 65% **Silt: 28%** **Clay: 7%** **CEC: 8.5**

Herbicide Application Information

Timing	Date	Time	Air/Soil T	Soil Surf	Wind	Wet/Dry	RH	Sky	Dew
PRE	5-14	10 am	55 F/ 53 F	dry	SE 1-3	50F/55F	70%	clear	N
PO1	6-14	4:20 pm	78 F/ 79 F	dry	NW 4-6	65F/78F	50%	10% cloud	N

Crop and Weed Information at Application

Date	Crop or Weed	Height or Diameter	Number of Leaves	Density
6-14	Sugar Beet	6-7"	8-10	good
	Red Beet	5-7"	6-8	good
	Chard	4-6"	7-8	moderate
	Spinach	3-4"	6-8	fair
	GRFT	1-8"	2-8	moderate
	COLQ	1-4"	6-8	many
	CORW	2-4"	4-6	moderate
	RRPW	2-6"	6-10	many

Notes and Comments

1. Sprays applied with 10-ft boom, FF8002 nozzles.
2. Crop and weed injury ratings on scale of 1-10: 1 = no injury, 10 = complete kill or none present.
3. Planting: each plot has 1 row each of red beet, chard, spinach; 2 rows of sugar beet.
4. Planting pattern (from S to N): sugar beet, chard, red beet, spinach, sugar beet.
5. Varieties: Red beet - Red Cloud; Sugar beet - E17; Chard - Fordhook Giant; Spinach - Space.
6. Harvest dates: spinach - 7-8-99; red beet - 7-13-99; swiss chard - 7-13-99; sugar beet - 10-5-99.

Weed Control in Red Beet, Sugar Beet, Chard, and Spinach - HTRC

Trial ID: WC 109-99-01 **Location: East Lansing, MI**

Trt No.	Treatment Name	Form Amt	Fm Ds	Rate lb ai/A	Grow Stg	RED BEET RATING 6-15-99	SUGAR BEET RATING 6-15-99	CHARD RATING 6-15-99	SPINACH RATING 6-15-99	BYGR RATING 6-15-99	COLQ RATING 6-15-99	COPU RATING 6-15-99	RRPW RATING 6-15-99
1	pyrazon	68	DF	4	PRE	2.7	2.7	2.3	3.3	9.0	6.3	8.3	7.3
2	s-dimethenamid	6	EC	0.65	PRE	3.0	1.7	2.7	3.3	9.7	3.3	8.3	8.7
3	ethofumesate	4	L	2	PRE	3.0	1.7	2.3	5.3	6.3	4.7	6.7	9.0
4	s-metolachlor	7.6	EC	1.33	PRE	5.3	2.7	4.7	4.7	9.7	2.3	8.0	8.0
5	flufenacet	60	DF	0.6	PRE	10.0	8.7	9.3	7.7	9.7	6.0	7.3	7.7
6	flumioxazin	50	WP	0.025	PRE	10.0	9.0	10.0	9.7	8.7	6.0	7.7	7.0
7	pyrazon	68	DF	4	PRE	2.0	1.7	2.0	3.7	7.3	6.3	7.0	8.0
	clopyralid	3	EC	0.19	PO1								
	sethoxydim	1.53	EC	0.19	PO1								
	COC	L		1% v/v	PO1								
8	pyrazon	68	DF	4	PRE	2.3	2.3	2.7	5.7	9.3	7.7	8.3	8.0
	ethofumesate	4	L	1	PO1								
	sethoxydim	1.53	EC	0.19	PO1								
	COC	L		1% v/v	PO1								
9	pyrazon	68	DF	4	PRE	5.0	2.7	5.7	5.3	8.7	7.0	8.0	7.0
	triflusulfuron	50	WG	0.031	PO1								
	ethofumesate	4	L	1	PO1								
	sethoxydim	1.53	EC	0.19	PO1								
	COC	L		1% v/v	PO1								
10	Untreated Control				PRE	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	sethoxydim	1.53	EC	0.19	PO1								
	COC	L		1% v/v	PO1								
LSD (P=.05)						2.01	1.88	2.29	2.85	2.13	2.76	2.62	1.40
Standard Deviation						1.17	1.09	1.34	1.66	1.24	1.61	1.53	0.81
CV						26.44	32.17	31.35	33.40	15.68	31.80	21.65	11.36

Trt No.	Treatment Name	Form Amt	Fm Ds	Rate lb ai/A	Grow Stg	RED BEET RATING 6-28-99	SUGAR BEET RATING 6-28-99	CHARD RATING 6-28-99	SPINACH RATING 6-28-99	GRFT RATING 6-28-99	COLQ RATING 6-28-99	CORW RATING 6-28-99	RRPW RATING 6-28-99
1	pyrazon	68	DF	4	PRE	1.7	1.7	3.7	2.7	7.3	5.0	3.3	4.7
2	s-dimethenamid	6	EC	0.65	PRE	3.3	2.0	2.3	2.7	7.3	2.3	1.3	7.0
3	ethofumesate	4	L	2	PRE	3.0	1.0	2.0	3.0	3.0	1.7	2.3	7.7
4	s-metolachlor	7.6	EC	1.33	PRE	2.3	1.0	2.7	3.7	8.0	2.0	1.0	7.3
5	flufenacet	60	DF	0.6	PRE	9.7	5.0	9.0	5.0	8.3	2.7	2.3	5.7
6	flumioxazin	50	WP	0.025	PRE	10.0	9.0	10.0	9.7	5.7	3.3	1.3	4.7
7	pyrazon	68	DF	4	PRE	1.3	1.3	1.7	3.3	10.0	7.7	9.3	5.0
	clopyralid	3	EC	0.19	PO1								
	sethoxydim	1.53	EC	0.19	PO1								
	COC	L		1% v/v	PO1								
8	pyrazon	68	DF	4	PRE	1.7	1.0	2.7	2.7	9.3	8.3	6.3	7.0
	ethofumesate	4	L	1	PO1								
	sethoxydim	1.53	EC	0.19	PO1								
	COC	L		1% v/v	PO1								
9	pyrazon	68	DF	4	PRE	3.3	1.7	3.0	9.7	10.0	7.7	9.7	7.7
	triflusulfuron	50	WG	0.031	PO1								
	ethofumesate	4	L	1	PO1								
	sethoxydim	1.53	EC	0.19	PO1								
	COC	L		1% v/v	PO1								
10	Untreated Control				PRE	4.0	2.7	2.7	3.7	6.7	7.7	7.0	7.7
	sethoxydim	1.53	EC	0.19	PO1								
	COC	L		1% v/v	PO1								
LSD (P=.05)						1.39	2.01	2.18	2.36	3.01	1.26	1.67	2.38
Standard Deviation						0.81	1.17	1.27	1.38	1.76	0.73	0.98	1.39
CV						20.07	44.39	32.07	29.94	23.21	15.16	22.17	21.55

Weed Control in Red Beet, Sugar Beet, Chard, and Spinach - HTRC

Trial ID: WC 109-99-01 **Location: East Lansing, MI**

Trt No.	Treatment Name	Form Amt	Fm Ds	Rate lb ai/A	Grow Stg	SPINACH YIELD KG/PLOT 7-8-99	SPINACH YIELD No/PLOT 7-8-99	CHARD YIELD KG/PLOT 7-13-99	RED BEET LEAF WT KG/PLOT 7-13-99	RED BEET ROOT WT KG/PLOT 7-13-99	SUGAR BEET YIELD No/PLOT 10-05-99	SUGAR BEET YIELD KG/PLOT 10-05-99
1	pyrazon	68	DF	4	PRE	2.41	28.0	5.44	2.94	4.84	78.0	84.76
2	s-dimethenamid	6	EC	0.65	PRE	1.84	18.3	4.85	1.09	1.90	64.3	72.99
3	ethofumesate	4	L	2	PRE	1.04	12.3	4.91	1.35	1.99	69.0	78.69
4	s-metolachlor	7.6	EC	1.33	PRE	0.87	11.0	2.35	1.01	1.60	51.7	75.25
5	flufenacet	60	DF	0.6	PRE	1.49	16.3	0.55	0.10	0.15	29.0	41.81
6	flumioxazin	50	WP	0.025	PRE	0.18	1.0	0.61	0.02	0.02	2.3	4.65
7	pyrazon	68	DF	4	PRE	2.51	33.7	8.42	3.39	5.24	84.7	113.69
	clopyralid	3	EC	0.19	PO1							
	sethoxydim	1.53	EC	0.19	PO1							
	COC	L		1% v/v	PO1							
8	pyrazon	68	DF	4	PRE	1.72	22.3	7.45	3.63	5.59	94.3	125.11
	ethofumesate	4	L	1	PO1							
	sethoxydim	1.53	EC	0.19	PO1							
	COC	L		1% v/v	PO1							
9	pyrazon	68	DF	4	PRE	0.00	0.0	6.73	2.53	3.99	79.3	122.79
	triflusulfuron	50	WG	0.031	PO1							
	ethofumesate	4	L	1	PO1							
	sethoxydim	1.53	EC	0.19	PO1							
	COC	L		1% v/v	PO1							
10	Untreated Control				PRE	0.87	13.7	3.87	1.63	1.96	88.3	59.54
	sethoxydim	1.53	EC	0.19	PO1							
	COC	L		1% v/v	PO1							
LSD (P=.05)						1.14	12.53	2.64	1.05	1.60	29.12	23.04
Standard Deviation						0.66	7.31	1.54	0.61	0.94	16.98	13.43
CV						51.17	46.64	34.06	34.61	34.28	26.48	17.23

Weed Control in Cabbage and Cauliflower - HTRC

Trial ID: WC 114-99-01 **Location: East Lansing, MI**

Personnel: Bernard H. Zandstra, Joseph G. Masabni
Crop: Cabbage, Cauliflower **Varieties: Market Prize, Amazing**
Planting Method: Transplant **Planting Date: 5-21-99** **Field or Block: 108**
Spacing: 2 ft in row **Row Spacing: 36 inches** **Harvest: see Notes**
Tillage Type: Conventional **Study Design: RCBD** **Replications: 3**
Plot Size: 7 ft wide * 30 ft long

Soil Type: Capac Sandy Loam **OM: 2.9%** **pH: 6.5**
Sand: 52% **Silt: 39%** **Clay: 9%** **CEC: 9.4**

Herbicide Application Information

Timing	Date	Time	Air/Soil T	Soil Surf	Wind	Wet/Dry	RH	Sky	Dew
PPI	5-20	1:15pm	75 F/ 63 F	moist	S 3-5	64F/75F	56%	10% cloud	N
PRT	5-21	9:00am	65 F/ 57 F	dry	SW 3-5	60F/65F	80%	hazy	N
POT	5-21	10:40am	64 F/ 60 F	dry	SW 3-5	75F/64F	56%	10% cloud	N
PO1	6-14	3:30pm	74 F/ 75 F	moist	NW 6-8	64F/74F	60%	50% cloud	N

Crop and Weed Information at Application

Date	Crop or Weed	Height or Diameter	Number of Leaves	Density
6-14	Cabbage	5-6"	8-10	good
	Cauliflower	6-7"	6-7	good
	GRFT	1-3"	2-3	few
	COLQ	1-4"	2-10	many
	COPU	1-6"	many	few
	CORW	1-4"	2-4	few
	FIPC	1-3"	2-6	moderate
	LATH	1-4"	2-6	moderate
	RRPW	1-4"	2-7	many
	WIRA	1-6"	2-10	many

Notes and Comments
1. Sprays applied with 4-nozzle boom FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack.
2. Crop and weed injury ratings on scale of 1-10: 1 = no injury, 10 = complete kill or none present.
3. Seeded in greenhouse in 200 cell flats on 4-23-99.
4. 5-20-99: East and west guards sprayed with Treflan 1.
5. Harvest dates: Cabbage - 7-19, 7-27, 8-2-99; Cauliflower - 8-5, 8-8, 8-16-99.

Weed Control in Cabbage and Cauliflower - HTRC

Trial ID: WC 114-99-01 **Location: East Lansing, MI**

Trt No.	Treatment Name	Form Amt	Fm Ds	Rate lb ai/A	Grow Stg	CABBAGE RATING 6-14-99	CAULIF RATING 6-14-99	GRFT RATING 6-14-99	COLQ RATING 6-14-99	COPU RATING 6-14-99	CORW RATING 6-14-99	FIPC RATING 6-14-99	LATH RATING 6-14-99
1	trifluralin	4	EC	1	PPI	1.0	1.0	8.0	6.0	8.3	7.3	4.0	6.7
2	trifluralin	4	EC	1	PPI	1.3	2.3	9.7	10.0	10.0	10.0	10.0	9.7
	oxyfluorfen	2	L	0.5	PRT								
3	oxyfluorfen	2	L	0.5	PRT	2.0	2.0	10.0	10.0	10.0	10.0	10.0	10.0
	clomazone	3	ME	0.25	PRT								
4	metolachlor	8	EC	2	POT	2.3	2.3	10.0	7.7	9.3	9.3	9.0	9.3
5	s-metolachlor	7.6	EC	1.33	POT	2.0	1.7	10.0	8.7	10.0	10.0	9.0	10.0
6	s-metolachlor II	7.6	EC	1.33	POT	1.3	1.3	10.0	8.0	10.0	9.7	8.7	10.0
7	s-dimethenamid	6	EC	0.75	POT	1.3	2.3	10.0	8.3	10.0	10.0	10.0	10.0
8	flufenacet	60	DF	0.68	POT	2.0	2.3	10.0	9.3	10.0	10.0	10.0	10.0
9	trifluralin	4	EC	1	PPI	1.7	2.0	6.7	3.0	8.3	7.7	1.0	4.7
	carfentrazone	40	DF	0.008	PO1								
	NIS	L		0.25% v/v	PO1								
10	trifluralin	4	EC	1	PPI	1.0	1.0	8.0	5.3	8.3	7.7	7.0	6.3
	pyridate	3.75	EC	0.9	PO1								
11	trifluralin	4	EC	1	PPI	1.0	1.0	6.3	5.0	8.0	9.0	4.0	7.3
	clopyralid	3	EC	0.188	PO1								
12	flumioxazin	50	WP	0.047	PRT	5.7	3.3	10.0	10.0	10.0	10.0	10.0	10.0
LSD (P=.05)						1.12	1.34	1.61	2.48	1.08	3.62	4.04	2.23
Standard Deviation						0.66	0.79	0.95	1.46	0.64	2.14	2.39	1.31
CV						34.99	41.90	10.51	19.23	6.81	23.19	30.90	15.16

Trt No.	Treatment Name	Form Amt	Fm Ds	Rate lb ai/A	Grow Stg	RRPW RATING 6-14-99	WIRA RATING 6-14-99	CABBAGE RATING 6-21-99	CAULIF RATING 6-21-99	COLQ RATING 6-21-99	LATH RATING 6-21-99	RRPW RATING 6-21-99	WIRA RATING 6-21-99
1	trifluralin	4	EC	1	PPI	7.3	1.0	1.3	2.0	4.3	6.7	6.7	1.0
2	trifluralin	4	EC	1	PPI	10.0	9.0	1.7	2.0	9.7	9.7	10.0	8.3
	oxyfluorfen	2	L	0.5	PRT								
3	oxyfluorfen	2	L	0.5	PRT	10.0	8.3	1.3	2.0	9.7	10.0	10.0	9.0
	clomazone	3	ME	0.25	PRT								
4	metolachlor	8	EC	2	POT	10.0	3.0	1.7	1.7	8.0	9.7	10.0	3.0
5	s-metolachlor	7.6	EC	1.33	POT	10.0	3.3	2.0	1.3	8.3	10.0	10.0	4.7
6	s-metolachlor II	7.6	EC	1.33	POT	10.0	2.3	1.0	1.0	7.0	10.0	9.3	4.7
7	s-dimethenamid	6	EC	0.75	POT	8.7	5.7	1.3	1.7	8.7	10.0	10.0	7.3
8	flufenacet	60	DF	0.68	POT	10.0	8.7	1.7	2.7	9.3	10.0	10.0	8.7
9	trifluralin	4	EC	1	PPI	5.3	1.0	5.7	4.3	8.0	8.0	10.0	6.3
	carfentrazone	40	DF	0.008	PO1								
	NIS	L		0.25% v/v	PO1								
10	trifluralin	4	EC	1	PPI	6.3	1.0	2.7	2.0	8.7	9.3	10.0	6.0
	pyridate	3.75	EC	0.9	PO1								
11	trifluralin	4	EC	1	PPI	6.0	1.7	1.0	1.3	2.7	5.7	3.0	1.7
	clopyralid	3	EC	0.188	PO1								
12	flumioxazin	50	WP	0.047	PRT	10.0	8.7	4.0	1.7	10.0	10.0	10.0	9.0
LSD (P=.05)						2.30	2.65	1.34	1.47	1.43	2.34	1.81	3.45
Standard Deviation						1.36	1.56	0.79	0.87	0.84	1.38	1.07	2.04
CV						15.69	34.96	37.49	44.06	10.72	15.24	11.77	35.05

Weed Control in Cabbage and Cauliflower - HTRC

Trial ID: WC 114-99-01 **Location: East Lansing, MI**

Trt No.	Treatment Name	Form Amt	Fm Ds	Rate lb ai/A	Grow Stg	CABBAGE YIELD No/PLOT 7-19-99	CABBAGE YIELD KG/PLOT 7-19-99	CABBAGE YIELD No/PLOT 7-27-99	CABBAGE YIELD KG/PLOT 7-27-99	CABBAGE YIELD No/PLOT 08-02-99	CABBAGE YIELD KG/PLOT 08-02-99	CABBAGE TOTAL YIELD No/PLOT	CABBAGE TOTAL YIELD KG/PLOT
1	trifluralin	4	EC	1	PPI	4.7	5.39	2.0	2.40	5.3	5.07	12.0	12.85
2	trifluralin	4	EC	1	PPI	5.0	6.32	4.7	5.74	2.3	2.51	12.0	14.57
	oxyfluorfen	2	L	0.5	PRT								
3	oxyfluorfen	2	L	0.5	PRT	6.3	7.54	4.3	5.03	2.0	2.02	12.7	14.59
	clomazone	3	ME	0.25	PRT								
4	metolachlor	8	EC	2	POT	2.3	2.56	3.0	3.79	5.0	4.50	10.3	10.85
5	s-metolachlor	7.6	EC	1.33	POT	3.0	4.44	2.7	3.08	5.3	5.70	11.0	13.22
6	s-metolachlor II	7.6	EC	1.33	POT	5.3	6.59	3.0	3.28	6.0	5.84	14.3	15.71
7	s-dimethenamid	6	EC	0.75	POT	6.3	8.77	3.7	4.75	5.0	4.95	15.0	18.47
8	flufenacet	60	DF	0.68	POT	5.3	7.94	6.3	8.28	4.0	3.99	15.7	20.21
9	trifluralin	4	EC	1	PPI	0.3	0.27	2.3	2.82	10.7	10.90	13.3	13.99
	carfentrazone	40	DF	0.008	PO1								
	NIS	L		0.25% v/v	PO1								
10	trifluralin	4	EC	1	PPI	7.3	8.23	5.3	6.31	4.0	4.47	16.7	19.02
	pyridate	3.75	EC	0.9	PO1								
11	trifluralin	4	EC	1	PPI	6.3	7.02	3.3	4.30	4.0	3.64	13.7	14.96
	clopyralid	3	EC	0.188	PO1								
12	flumioxazin	50	WP	0.047	PRT	3.0	3.52	2.7	3.09	3.0	3.22	8.7	9.83
LSD (P=.05)						4.84	5.61	3.55	4.61	4.79	4.63	5.25	6.44
Standard Deviation						2.86	3.31	2.10	2.72	2.83	2.73	3.10	3.81
CV						61.97	58.05	58.13	61.78	59.86	57.75	23.93	25.61

Trt No.	Treatment Name	Form Amt	Fm Ds	Rate lb ai/A	Grow Stg	CAULIF YIELD No/PLOT 8-5-99	CAULIF YIELD KG/PLOT 8-5-99	CAULIF YIELD No./PLOT 8-8-99	CAULIF YIELD KG/PLOT 8-8-99	CAULIF YIELD No./PLOT 8-16-99	CAULIF YIELD KG/PLOT 8-16-99	CAULIF TOTAL YIELD No/PLOT	CAULIF TOTAL YIELD KG/PLOT
1	trifluralin	4	EC	1	PPI	4.3	1.93	0.7	0.30	2.3	1.33	7.3	3.56
2	trifluralin	4	EC	1	PPI	3.0	2.32	2.0	1.13	3.7	2.59	8.7	6.05
	oxyfluorfen	2	L	0.5	PRT								
3	oxyfluorfen	2	L	0.5	PRT	1.3	0.89	1.7	0.83	5.0	3.40	8.0	5.12
	clomazone	3	ME	0.25	PRT								
4	metolachlor	8	EC	2	POT	2.3	1.09	1.3	0.61	4.0	2.01	7.7	3.70
5	s-metolachlor	7.6	EC	1.33	POT	2.3	0.91	1.7	0.75	4.3	2.61	8.3	4.28
6	s-metolachlor II	7.6	EC	1.33	POT	4.7	2.24	1.0	0.56	5.7	3.95	11.3	6.75
7	s-dimethenamid	6	EC	0.75	POT	4.0	2.68	1.0	0.69	5.3	3.58	10.3	6.95
8	flufenacet	60	DF	0.68	POT	3.3	2.11	0.7	0.39	4.0	2.77	8.0	5.27
9	trifluralin	4	EC	1	PPI	1.3	0.67	2.3	1.01	6.7	4.73	10.3	6.40
	carfentrazone	40	DF	0.008	PO1								
	NIS	L		0.25% v/v	PO1								
10	trifluralin	4	EC	1	PPI	3.7	1.89	2.0	0.98	5.0	3.92	10.7	6.79
	pyridate	3.75	EC	0.9	PO1								
11	trifluralin	4	EC	1	PPI	6.7	3.91	1.3	0.65	5.0	2.82	13.0	7.39
	clopyralid	3	EC	0.188	PO1								
12	flumioxazin	50	WP	0.047	PRT	4.0	1.99	1.7	0.75	4.7	3.29	10.3	6.03
LSD (P=.05)						3.94	2.11	2.24	1.21	4.14	3.05	6.87	4.36
Standard Deviation						2.33	1.24	1.32	0.71	2.45	1.80	4.06	2.57
CV						68.17	65.92	91.72	98.76	52.73	58.50	42.69	45.27

Weed Control in Carrot - Grant

Trial ID: WC 107-99-01 **Location: Grant, MI**

Personnel: Bernard H. Zandstra, Joseph G. Masabni
Crop: Carrot **Variety: A+C 711** **Field or Block: N/A**
Planting Method: Seed **Planting Date: 5-28-99** **Harvest: 9-15-99**
Spacing: 20 seeds/foot **Row Spacing: 34",2 rows/plot**
Tillage Type: Conventional **Study Design: RCBD** **Replications: 3**
Plot Size: 64 inches wide * 35 ft long

Soil Type: Carlisle Muck **OM: 36%** **pH: 7.3**
Sand: 46% **Silt: 7%** **Clay: 11%** **CEC: N/A**

Herbicide Application Information

Timing	Date	Time	Air/Soil T	Soil Surf	Wind	Wet/Dry	RH	Sky	Dew
PRE	6-2	12 pm	63 F/ 68 F	moist	SW 5-7	60F/63F	85%	100%cloud	N
PO1	6-29	9:20 am	65 F/ 67 F	moist	SW 4-6	57F/65F	80%	80%cloud	N

Crop and Weed Information at Application

Date	Crop or Weed	Height or Diameter	Number of Leaves	Density
6-29	Carrot	3-4"	2-3	good
	COLQ	1-3"	2-6	moderate
	COPU	1-6"	4-10	many
	LATH	2-4"	6-10	many
	RRPW	1-6"	6-12	many

Notes and Comments

1. Sprays applied with 4-nozzle boom FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack.
2. Crop and weed injury ratings on scale of 1-10: 1 = no injury, 10 = complete kill or none present.
3. 6-2-99: Beds 101,102,201,202,301,302 very weedy. All plots were handweeded after 7-15-99.
4. 9-15-99: Harvested 10 ft of 2 rows per plot.

Weed Control in Carrot - Grant

Trial ID: WC 107-99-01 **Location: Grant, MI**

Trt No.	Treatment Name	Form Amt	Fm Ds	Rate lb ai/A	Grow Stg	CARROT RATING 6-29-99	BARLEY RATING 6-29-99	COLQ RATING 6-29-99	COPU RATING 6-29-99	LATH RATING 6-29-99	PRSP RATING 6-29-99	RRPW RATING 6-29-99
1	Lorox	50	DF	1	PRE	1.3	5.3	8.7	6.0	3.7	1.7	5.3
	Lorox	50	DF	1	PO1							
	Poast	1.53	EC	0.19	PO1							
	NIS	L		0.25% v/v	PO1							
2	Prowl	3.3	EC	2	PRE	1.0	3.7	9.3	7.7	7.7	6.3	4.3
	Lorox	50	DF	1	PO1							
	Poast	1.53	EC	0.19	PO1							
	NIS	L		0.25% v/v	PO1							
3	FOE 5043	60	DF	0.75	PRE	1.7	4.3	6.3	4.7	3.3	7.7	7.3
	Lorox	50	DF	1	PO1							
	Poast	1.53	EC	0.19	PO1							
	NIS	L		0.25% v/v	PO1							
4	Dual Magnum	7.6	EC	1.33	PRE	1.0	6.3	7.7	6.3	5.3	7.7	6.0
	Lorox	50	DF	1	PO1							
	Poast	1.53	EC	0.19	PO1							
	NIS	L		0.25% v/v	PO1							
5	Frontier X2	6	EC	0.65	PRE	3.0	3.0	4.3	5.7	3.7	8.0	7.0
	Lorox	50	DF	1	PO1							
	Poast	1.53	EC	0.19	PO1							
	NIS	L		0.25% v/v	PO1							
6	Valor	50	WP	0.063	PRE	2.0	3.3	8.3	8.0	5.3	2.3	5.3
7	Lorox	50	DF	1	PRE	2.0	3.3	8.0	3.7	1.7	2.0	4.7
	Valor	50	WP	0.025	PO1							
8	Lorox	50	DF	1	PRE	2.3	6.3	7.0	6.0	5.3	3.0	6.3
	Nortron	4	L	1	PRE							
	Lorox	50	DF	1	PO1							
	Nortron	4	L	0.5	PO1							
	Poast	1.53	EC	0.19	PO1							
	NIS	L		0.25% v/v	PO1							
LSD (P=.05)						1.23	5.11	4.29	5.35	4.32	2.77	5.57
Standard Deviation						0.70	2.92	2.45	3.05	2.47	1.58	3.18
CV						39.23	65.42	32.83	50.90	54.78	32.71	54.92

Weed Control in Carrot - Grant

Trial ID: WC 107-99-01 **Location: Grant, MI**

Trt No.	Treatment Name	Form Amt	Fm Ds	Rate lb ai/A	Grow Stg	CARROT RATING 7-15-99	LATH RATING 7-15-99	PRSP RATING 7-15-99	RRPW RATING 7-15-99	CARROT YIELD KG/10FT 9-15-99
1	Lorox	50	DF	1	PRE	1.7	5.7	7.3	7.3	18.73
	Lorox	50	DF	1	PO1					
	Poast	1.53	EC	0.19	PO1					
	NIS	L		0.25% v/v	PO1					
2	Prowl	3.3	EC	2	PRE	1.3	9.0	10.0	6.7	20.63
	Lorox	50	DF	1	PO1					
	Poast	1.53	EC	0.19	PO1					
	NIS	L		0.25% v/v	PO1					
3	FOE 5043	60	DF	0.75	PRE	1.7	8.0	10.0	8.7	20.47
	Lorox	50	DF	1	PO1					
	Poast	1.53	EC	0.19	PO1					
	NIS	L		0.25% v/v	PO1					
4	Dual Magnum	7.6	EC	1.33	PRE	1.7	7.7	9.3	7.3	19.61
	Lorox	50	DF	1	PO1					
	Poast	1.53	EC	0.19	PO1					
	NIS	L		0.25% v/v	PO1					
5	Frontier X2	6	EC	0.65	PRE	3.0	7.7	8.0	8.3	19.32
	Lorox	50	DF	1	PO1					
	Poast	1.53	EC	0.19	PO1					
	NIS	L		0.25% v/v	PO1					
6	Valor	50	WP	0.063	PRE	1.3	4.0	2.7	4.3	22.49
7	Lorox	50	DF	1	PRE	2.0	3.3	1.7	6.7	17.46
	Valor	50	WP	0.025	PO1					
8	Lorox	50	DF	1	PRE	2.3	8.3	8.3	7.3	14.59
	Nortron	4	L	1	PRE					
	Lorox	50	DF	1	PO1					
	Nortron	4	L	0.5	PO1					
	Poast	1.53	EC	0.19	PO1					
	NIS	L		0.25% v/v	PO1					
LSD (P=.05)						1.30	3.37	2.51	3.00	5.79
Standard Deviation						0.74	1.92	1.43	1.71	3.31
CV						39.68	28.66	20.00	24.16	17.25

Weed Control in Carrot - HTRC

Trial ID: WC 107-99-02 **Location: East Lansing, MI**

Personnel: Bernard H. Zandstra, Joseph G. Masabni
Crop: Carrot **Variety: Premium (Asgrow)** **Field or Block: 24**
Planting Method: Seed **Planting Date: 7-01-99** **Harvest: None**
Spacing: 12 seeds/foot **Row Spacing: 28",2 rows/plot**
Tillage Type: Conventional **Study Design: RCBD** **Replications: 3**
Plot Size: 64 inches wide * 35 ft long

Soil Type: Spinks Loamy Sand **OM: 2.1%** **pH: 6.5**
Sand: 86% **Silt: 6%** **Clay: 8%** **CEC: 6.7**

Herbicide Application Information

Timing	Date	Time	Air/Soil T	Soil Surf	Wind	Wet/Dry	RH	Sky	Dew
PRE	7-2	1:20pm	81 F/ 74 F	moist	SW 1-3	71F/81F	62%	100%	N

Notes and Comments
1. Sprays applied with 4-nozzle boom FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack.
2. Crop and weed injury ratings on scale of 1-10: 1 = no injury, 10 = complete kill or none present.
3. This experiment was discontinued because of poor stand, probably as a result of Sinbar residue from previous strawberry crop. No postemergence treatments were applied.

Trt No.	Treatment Name	Form Amt	Fm Ds	Rate lb ai/A	Grow Stg	CARROT RATING 8-20-99	WIGR RATING 8-20-99	COLQ RATING 8-20-99	EBNS RATING 8-20-99	LATH RATING 8-20-99	RRPW RATING 8-20-99	TUPW RATING 8-20-99	WIBW RATING 8-20-99
1	Lorox	50	DF	0.5	PRE	4.3	5.7	9.0	7.7	7.0	8.0	9.7	7.7
2	Prowl	3.3	EC	1	PRE	5.7	10.0	10.0	7.0	10.0	7.0	10.0	10.0
3	FOE 5043	60	DF	0.53	PRE	6.7	10.0	7.0	8.7	7.0	7.3	8.7	4.0
4	Dual Magnum	7.6	EC	0.67	PRE	6.3	10.0	8.0	10.0	6.7	8.0	10.0	9.7
5	Frontier X2	6	EC	0.5	PRE	9.0	10.0	9.3	10.0	10.0	9.0	10.0	7.3
6	Treflan	4	EC	0.75	PPI	4.0	5.3	4.3	3.3	4.7	4.7	5.0	7.3
7	Treflan	4	EC	0.75	PPI	2.7	2.3	4.7	1.0	4.7	3.3	3.0	7.0
8	Valor	50	WP	0.025	PRE	9.0	8.3	9.0	10.0	10.0	9.0	10.0	7.7
LSD (P=.05)						5.46	2.40	3.17	5.30	5.98	2.01	3.63	6.72
Standard Deviation						3.12	1.37	1.81	3.03	3.41	1.15	2.07	3.84
CV						52.36	17.79	23.62	42.02	45.53	16.29	25.02	50.61

Weed Control in Sweet Corn - HTRC

Trial ID: WC 106-99-01 **Location: East Lansing, MI**

Personnel: Bernard H. Zandstra, Joseph G. Masabni, William R. Chase
Crop: Sweet Corn **Varieties: see Notes** **Field or Block: 60,61**
Planting Method: Seed **Planting Date: 5-17-99** **Harvest: see Notes**
Spacing: 11.6 inches **Row Spacing: 42 inches**
Tillage Type: Conventional **Study Design: RCBD** **Replications: 3**
Plot Size: 10 ft wide * 50 ft long

Soil Type: Marlette Fine Sandy Loam **OM: 1.6%** **pH: 6.0**
Sand: 58% **Silt: 27%** **Clay: 15%** **CEC: 9.0**

Herbicide Application Information

Timing	Date	Time	Air/Soil T	Soil Surf	Wind	Wet/Dry	RH	Sky	Dew
PRE	5-20	8:45am	63 F/ 56 F	moist	S 3-5	55F/63F	60%	clear	N
PO1	6-16	3 pm	62 F/ 70	DRY	NW 2-4	56F/62F	68%	100% CLOU	N

Crop and Weed Information at Application

Date	Crop or Weed	Height or Diameter	Number of Leaves	Density
6-16	GSS 0951	10-12"	6-7	good
	GSS 0975	8-12"	5-6	fair
	COLQ	3-5"	4-10	many
	COPU	1-8"	many	many
	CORW	3-6"	6-8	moderate
	RRPW	1-6"	4-10	many
	WIBW	2-3"	5-7	moderate

Notes and Comments

1. Sprays applied with 10 ft boom, 6-nozzles, 8002.
2. Crop and weed injury ratings on scale of 1-10: 1 = no injury, 10 = complete kill or none present.
3. Cultivars: GSS 0951 (sh2, Bt, LL, 77D), GSS 0975 (sh2, Bt, LL, 83D).
4. 5-20-99: North and south guards sprayed with Dual Magnum 1.33 lb.
5. Harvest dates: GSS 0951 - 8-4-99; GSS 0975 - 8-9-99. GSS 0975 was harvested 3 days early to avoid racoon damage. This resulted in slightly reduced yield weights.

Weed Control in Sweet Corn - HTRC

Trial ID: WC 106-99-01 **Location: East Lansing, MI**

Trt No.	Treatment Name	Form Amt	Fm Ds	Rate lbai/A	Grow Stg	GSS 0951 RATING 6-16-99	GSS 0975 RATING 6-16-99	COLQ RATING 6-16-99	COPU RATING 6-16-99	CORW RATING 6-16-99	LATH RATING 6-16-99	RRPW RATING 6-16-99	WIBW RATING 6-16-99
1	metolachlor	8	EC	2	PRE	1.3	2.3	3.7	9.3	6.0	7.3	7.3	6.3
2	s-metolachlor	7.6	EC	1.33	PRE	1.3	2.7	3.3	9.3	4.0	8.3	9.3	7.3
3	s-metolachlor II	7.6	EC	1.33	PRE	2.0	4.0	4.3	10.0	2.0	8.3	9.7	6.7
4	s-metolachlor	7.6	EC	1.67	PRE	1.3	3.3	3.3	9.7	3.0	7.0	8.3	5.3
5	s-metolachlor II	7.6	EC	2.6	PRE	2.3	4.0	5.3	9.7	3.3	9.0	10.0	6.7
6	dimethenamid	6	EC	1.17	PRE	2.0	4.7	5.3	9.3	4.3	7.7	10.0	6.7
7	dimethenamid	6	EC	2.34	PRE	1.7	3.0	5.0	10.0	6.7	9.3	10.0	6.3
8	s-dimethenamid	6	EC	0.64	PRE	1.7	3.3	4.0	10.0	2.3	8.7	10.0	4.7
9	s-dimethenamid	6	EC	1.29	PRE	2.0	3.3	6.3	10.0	7.7	8.7	10.0	7.0
10	s-dimethenamid	6	EC	0.64	PRE	1.7	3.0	5.3	9.3	6.0	7.7	10.0	7.0
	atrazine	4	L	1	PRE								
11	s-metolachlor II	7.6	EC	1.3	PRE	2.0	3.0	3.3	9.7	3.0	7.7	10.0	6.7
	atrazine	4	L	1	PRE								
12	flufenacet	60	DF	0.53	PRE	1.3	2.7	5.0	10.0	6.3	7.3	10.0	4.3
13	flufenacet	60	DF	0.68	PRE	1.7	3.0	5.7	9.3	9.0	8.7	9.7	6.0
14	Axiom	68	DF	0.6	PRE	2.3	3.3	9.3	10.0	7.3	9.7	9.3	6.7
15	Axiom	68	DF	0.77	PRE	2.7	4.0	9.7	10.0	10.0	10.0	10.0	9.0
16	isoxaflutole	75	WG	0.12	PRE	2.7	4.7	10.0	10.0	10.0	10.0	10.0	9.0
17	s-metolachlor	7.6	EC	1.33	PRE	3.0	4.0	5.0	10.0	3.0	9.3	9.3	7.7
	carfentrazone	40	DF	0.008	PO1								
	NIS	L		0.25% v/v	PO1								
18	s-metolachlor	7.6	EC	1.33	PRE	2.3	4.0	4.7	10.0	5.3	9.0	10.0	8.3
	carfentrazone	40	DF	0.008	PO1								
	NIS	L		0.25% v/v	PO1								
	28% UAN	L		1 GAL/A	PO1								
19	s-metolachlor	7.6	EC	1.33	PRE	4.0	4.0	3.3	10.0	2.0	9.0	10.0	9.0
	carfentrazone	40	DF	0.008	PO1								
	glufosinate	1.67	EC	0.26	PO1								
	AMS	100	DF	3	PO1								
20	metolachlor	8	EC	2	PRE	2.0	3.7	4.3	10.0	3.0	8.0	10.0	6.7
	bentazon	4	L	1	PO1								
	clopyralid	3	EC	0.19	PO1								
	NIS	L		0.25% v/v	PO1								
21	metolachlor	8	EC	2	PRE	2.3	2.7	3.3	10.0	2.7	7.7	9.0	6.3
	glufosinate	1.67	EC	0.26	PO1								
LSD (P=.05)						1.47	1.49	2.69	0.91	3.63	1.68	1.32	4.35
Standard Deviation						0.89	0.90	1.63	0.55	2.20	1.02	0.80	2.63
CV						42.74	26.03	31.17	5.61	43.15	12.01	8.30	38.49

Weed Control in Sweet Corn - HTRC

Trial ID: WC 106-99-01 **Location: East Lansing, MI**

Trt No.	Treatment Name	Form Amt	Fm Ds	Rate lb ai/A	Grow Stg	GSS 0951 RATING 6-28-99	GSS 0975 RATING 6-28-99	COLQ RATING 6-28-99	COPU RATING 6-28-99	CORW RATING 6-28-99	LATH RATING 6-28-99	RRPW RATING 6-28-99
1	metolachlor	8	EC	2	PRE	2.0	2.3	4.0	7.7	4.0	6.0	5.3
2	s-metolachlor	7.6	EC	1.33	PRE	2.0	2.0	4.3	8.3	2.0	7.7	8.0
3	s-metolachlor II	7.6	EC	1.33	PRE	1.0	2.3	4.0	10.0	3.7	8.7	9.3
4	s-metolachlor	7.6	EC	1.67	PRE	2.0	2.7	4.3	7.7	3.7	4.3	4.7
5	s-metolachlor II	7.6	EC	2.6	PRE	1.7	2.7	6.0	9.7	3.3	9.0	9.0
6	dimethenamid	6	EC	1.17	PRE	1.3	2.0	5.0	10.0	3.0	8.0	9.7
7	dimethenamid	6	EC	2.34	PRE	1.3	2.7	7.3	10.0	6.7	8.3	10.0
8	s-dimethenamid	6	EC	0.64	PRE	1.3	2.7	5.0	10.0	2.7	7.0	10.0
9	s-dimethenamid	6	EC	1.29	PRE	1.7	2.3	7.0	10.0	8.3	7.7	9.7
10	s-dimethenamid	6	EC	0.64	PRE	1.3	2.0	5.7	10.0	6.0	7.3	9.7
	atrazine	4	L	1	PRE							
11	s-metolachlor II	7.6	EC	1.3	PRE	1.3	2.0	5.7	10.0	5.7	9.0	8.3
	atrazine	4	L	1	PRE							
12	flufenacet	60	DF	0.53	PRE	1.3	2.3	6.3	7.3	6.7	8.0	6.0
13	flufenacet	60	DF	0.68	PRE	1.3	2.7	7.0	7.3	8.3	7.3	7.3
14	Axiom	68	DF	0.6	PRE	1.0	2.0	9.3	10.0	8.7	9.7	9.7
15	Axiom	68	DF	0.77	PRE	1.7	3.0	9.3	10.0	10.0	10.0	9.3
16	isoxaflutole	75	WG	0.12	PRE	2.0	2.3	10.0	10.0	10.0	9.7	9.7
17	s-metolachlor	7.6	EC	1.33	PRE	2.7	3.3	8.0	9.7	4.7	9.7	9.3
	carfentrazone	40	DF	0.008	PO1							
	NIS	L		0.25% v/v	PO1							
18	s-metolachlor	7.6	EC	1.33	PRE	2.3	3.3	8.7	10.0	6.3	9.3	10.0
	carfentrazone	40	DF	0.008	PO1							
	NIS	L		0.25% v/v	PO1							
	28% UAN	L		1 GAL/A	PO1							
19	s-metolachlor	7.6	EC	1.33	PRE	1.7	2.7	9.3	10.0	10.0	9.7	10.0
	carfentrazone	40	DF	0.008	PO1							
	glufosinate	1.67	EC	0.26	PO1							
	AMS	100	DF	3	PO1							
20	metolachlor	8	EC	2	PRE	1.3	2.0	9.3	10.0	10.0	10.0	9.3
	bentazon	4	L	1	PO1							
	clopyralid	3	EC	0.19	PO1							
	NIS	L		0.25% v/v	PO1							
21	metolachlor	8	EC	2	PRE	1.0	2.3	8.3	10.0	10.0	9.7	9.7
	glufosinate	1.67	EC	0.26	PO1							
LSD (P=.05)						1.11	1.25	2.39	2.74	3.46	2.24	2.37
Standard Deviation						0.67	0.76	1.45	1.66	2.10	1.36	1.44
CV						42.22	30.77	21.12	17.62	32.93	16.23	16.41

Weed Control in Sweet Corn - HTRC

Trial ID: WC 106-99-01 **Location: East Lansing, MI**

Trt No.	Treatment Name	Form Amt	Fm Ds	Rate lb ai/A	Grow Stg	COLQ RATING 8-4-99	CORW RATING 8-4-99	WIBW RATING 8-4-99	RRPW RATING 8-4-99	GSS 0951 YIELD EAR/PLOT 8-4-99	GSS 0951 YIELD KG/PLOT 8-4-99	GSS 0975 YIELD EAR/PLOT 8-9-99	GSS 0975 YIELD KG/PLOT 8-9-99
1	metolachlor	8	EC	2	PRE	4.7	3.7	6.0	8.3	36.00	9.07	23.00	6.29
2	s-metolachlor	7.6	EC	1.33	PRE	4.0	3.7	6.0	9.0	38.00	9.59	27.67	7.41
3	s-metolachlor II	7.6	EC	1.33	PRE	4.3	4.3	7.3	9.0	36.67	10.29	24.00	6.48
4	s-metolachlor	7.6	EC	1.67	PRE	4.3	4.7	6.3	9.7	38.00	9.86	22.33	5.71
5	s-metolachlor II	7.6	EC	2.6	PRE	4.0	3.3	4.0	10.0	36.00	10.25	21.67	6.36
6	dimethenamid	6	EC	1.17	PRE	2.7	4.3	5.3	8.7	37.00	10.43	23.33	6.29
7	dimethenamid	6	EC	2.34	PRE	4.7	5.3	5.0	9.7	45.00	12.75	26.33	7.44
8	s-dimethenamid	6	EC	0.64	PRE	3.3	4.0	6.0	8.7	39.67	11.49	20.33	5.61
9	s-dimethenamid	6	EC	1.29	PRE	5.3	7.0	7.0	9.7	37.33	10.55	24.33	6.88
10	s-dimethenamid	6	EC	0.64	PRE	5.3	8.3	5.0	10.0	37.67	10.54	28.00	7.74
	atrazine	4	L	1	PRE								
11	s-metolachlor II	7.6	EC	1.3	PRE	4.7	4.7	5.3	9.7	44.67	12.21	23.00	6.46
	atrazine	4	L	1	PRE								
12	flufenacet	60	DF	0.53	PRE	4.7	5.0	1.3	8.3	38.67	10.90	21.33	5.95
13	flufenacet	60	DF	0.68	PRE	6.0	7.0	2.3	9.0	44.67	13.32	31.67	8.71
14	Axiom	68	DF	0.6	PRE	7.7	6.3	1.3	9.0	47.00	12.99	30.00	8.77
15	Axiom	68	DF	0.77	PRE	8.3	8.7	2.0	9.3	44.67	12.91	30.67	8.89
16	isoxaflutole	75	WG	0.12	PRE	10.0	10.0	2.3	9.7	42.33	11.89	27.67	7.83
17	s-metolachlor	7.6	EC	1.33	PRE	5.0	5.3	8.0	9.0	36.67	11.26	25.33	6.60
	carfentrazone	40	DF	0.008	PO1								
	NIS	L		0.25% v/v	PO1								
18	s-metolachlor	7.6	EC	1.33	PRE	7.0	4.7	9.7	9.0	40.00	10.91	24.67	6.62
	carfentrazone	40	DF	0.008	PO1								
	NIS	L		0.25% v/v	PO1								
	28% UAN	L		1 GAL/A	PO1								
19	s-metolachlor	7.6	EC	1.33	PRE	7.7	9.7	10.0	9.3	43.33	11.94	29.67	7.89
	carfentrazone	40	DF	0.008	PO1								
	glufosinate	1.67	EC	0.26	PO1								
	AMS	100	DF	3	PO1								
20	metolachlor	8	EC	2	PRE	8.7	10.0	10.0	9.0	45.33	12.96	34.67	9.82
	bentazon	4	L	1	PO1								
	clopyralid	3	EC	0.19	PO1								
	NIS	L		0.25% v/v	PO1								
21	metolachlor	8	EC	2	PRE	7.0	8.7	9.0	9.0	46.33	13.38	34.00	9.82
	glufosinate	1.67	EC	0.26	PO1								
LSD (P=.05)						1.82	2.51	4.02	1.27	12.12	3.32	11.70	3.35
Standard Deviation						1.10	1.52	2.44	0.77	7.35	2.01	7.09	2.03
CV						19.44	24.86	42.90	8.39	18.04	17.66	26.89	27.75

Weed Control in Cucumber, Pumpkin, and Squash - HTRC

Trial ID: WC 108-99-01 **Location: East Lansing, MI**

Personnel: Bernard H. Zandstra, Joseph G. Masabni
Crop: Cucumber, Pumpkin, Squash **Varieties: see Notes** **Field or Block: 110-111**
Planting Method: Seed **Planting Date: 6-8-99**
Spacing: see Notes **Row Spacing: see Notes** **Harvest: see Notes**
Tillage Type: Conventional **Study Design: RCBD** **Replications: 3**
Plot Size: 40 ft wide * 40 ft long + spray alley

Soil Type: Capac Sandy Loam **OM: 1.6%** **pH: 6.1**
Sand: 76% **Silt: 21%** **Clay: 3%** **CEC: 7.5**

Herbicide Application Information

Timing	Date	Time	Air/Soil T	Soil Surf	Wind	Wet/Dry	RH	Sky	Dew
PRE	6/8	9:35 am	70 F/ 81 F	DRY	W 6-8	70F/79F	64%	clear	N
PO1	6/25	1:25 pm	83 F/ 86 F	dry	W 2-4	68F/83F	46%	clear	N

Crop and Weed Information at Application

Date	Crop or Weed	Height or Diameter	Number of Leaves	Density
6-25-99	Cucumber	2"	2	good
	Pumpkin	2-3	3-4	good
	Squash	2-3"	2	good
	GRFT	1-2"	3-4	moderate
	COCQ	1-3"	7-10	many
	RRPW	2-3"	5-12	many
	WIRA	1-2"	2-3	many

Notes and Comments

1. FMC DP20 sprayer used to apply herbicides. All treatments except #8 used 30 ft boom, 8003 nozzles, 35 psi. Treatment 8 applied with backpack, 10 ft boom.
2. Crop and weed injury ratings on scale of 1-10: 1 = no injury, 10 = complete kill or none present.
3. Spacing: Cucumber 3 rows * 14 inches * 3 inches in row; Pumpkin and squash 28 inches beyond cucumbers on each side of cucumber * 6 inches in row.
4. Cultivars: Cucumbers - Vlaspik M; Pumpkin - JACKPOT; Squash - Burgess Buttercup.
5. PO1 applied with backpack, 10 ft boom, 8002 nozzles.
6. Harvest dates: Cucumber - 8-2-99; Squash - 9-23-99; Pumpkin - 9-23-99.

Weed Control in Cucumber, Pumpkin, and Squash - HTRC

Trial ID: WC 108-99-01 **Location: East Lansing, MI**

Trt No.	Treatment Name	Form Amt	Fm Ds	Rate lb ai/A	Grow Stg	PUMPKIN RATING 6-25-99	CUCUMBER RATING 6-25-99	SQUASH RATING 6-25-99	GRFT RATING 6-25-99	COLQ RATING 6-25-99	RRPW RATING 6-25-99	WIRA RATING 6-25-99
1	Curbit	3	EC	0.75	PRE	1.3	1.7	2.0	6.3	7.3	6.7	5.7
2	Curbit	3	EC	1.13	PRE	1.7	1.3	1.7	7.3	7.0	6.3	7.0
3	Curbit	3	EC	0.75	PRE	1.3	2.0	2.0	8.3	8.7	7.3	7.3
	Command	3	ME	0.25	PRE							
4	Curbit	3	EC	0.75	PRE	1.3	2.3	2.3	7.7	8.3	7.7	7.7
	Command	3	ME	0.25	PRE							
	Authority	75	DF	0.1	PRE							
5	Curbit	3	EC	0.75	PRE	1.3	2.3	2.0	5.7	8.0	7.7	8.0
	Permit	75	WG	0.032	PRE							
6	Dual Magnum	7.6	EC	0.67	PRE	1.3	2.7	2.3	7.0	4.7	6.7	6.0
7	Frontier X2	6	EC	0.65	PRE	1.3	3.7	3.0	6.3	4.3	7.0	5.0
8	FOE 5043	60	DF	0.68	PRE	1.0	10.0	7.0	7.7	5.3	7.0	8.0
9	Raptor	1	AS	0.032	PRE	1.3	1.0	1.0	5.0	6.3	5.7	7.0
10	Curbit	3	EC	0.75	PRE	1.7	2.0	1.7	6.7	7.0	7.0	7.7
	Aim	40	DF	0.008	PO1							
	NIS	L		0.25% v/v	PO1							
11	Curbit	3	EC	0.75	PRE	1.7	2.0	1.7	6.0	6.7	6.7	5.3
	Permit	75	WG	0.032	PO1							
12	Curbit	3	EC	0.75	PRE	1.3	1.7	1.7	6.3	6.0	6.7	4.7
	Alanap	2	L	3	PO1							
13	Curbit	3	EC	0.75	PRE	1.7	2.0	2.0	6.3	6.0	7.0	6.7
	Raptor	1	AS	0.024	PO1							
14	Weeded Control					1.7	1.3	1.3	2.0	1.7	1.7	3.7
LSD (P=.05)						1.05	0.86	2.43	2.22	2.50	1.34	2.62
Standard Deviation						0.62	0.51	1.45	1.32	1.49	0.80	1.56
CV						43.62	19.83	63.91	20.88	23.87	12.32	24.39

Trt No.	Treatment Name	Form Amt	Fm Ds	Rate lb ai/A	Grow Stg	PUMPKIN RATING 7-4-99	CUCUMBER RATING 7-4-99	SQUASH RATING 7-4-99	GRFT RATING 7-4-99	COLQ RATING 7-4-99	RRPW RATING 7-4-99	WIRA RATING 7-4-99
1	Curbit	3	EC	0.75	PRE	1.0	1.0	1.3	4.0	6.0	7.0	5.0
2	Curbit	3	EC	1.13	PRE	1.7	1.3	1.3	6.7	6.7	6.3	4.7
3	Curbit	3	EC	0.75	PRE	1.3	1.7	1.7	7.3	8.7	7.3	5.0
	Command	3	ME	0.25	PRE							
4	Curbit	3	EC	0.75	PRE	1.3	3.3	1.7	6.0	9.0	7.7	6.3
	Command	3	ME	0.25	PRE							
	Authority	75	DF	0.1	PRE							
5	Curbit	3	EC	0.75	PRE	1.7	1.3	2.0	3.3	5.7	8.3	8.3
	Permit	75	WG	0.032	PRE							
6	Dual Magnum	7.6	EC	0.67	PRE	1.0	2.3	1.3	4.3	5.3	6.0	4.7
7	Frontier X2	6	EC	0.65	PRE	1.3	3.3	1.3	4.7	3.7	6.7	4.3
8	FOE 5043	60	DF	0.68	PRE	1.0	9.7	1.0	5.7	4.7	6.7	7.3
9	Raptor	1	AS	0.032	PRE	1.0	1.3	1.3	3.3	5.3	6.0	6.3
10	Curbit	3	EC	0.75	PRE	6.0	6.3	5.0	3.3	9.0	10.0	7.7
	Aim	40	DF	0.008	PO1							
	NIS	L		0.25% v/v	PO1							
11	Curbit	3	EC	0.75	PRE	3.0	2.7	2.0	4.7	6.7	8.3	9.3
	Permit	75	WG	0.032	PO1							
12	Curbit	3	EC	0.75	PRE	3.0	2.0	3.0	6.3	7.7	8.7	6.7
	Alanap	2	L	3	PO1							
13	Curbit	3	EC	0.75	PRE	1.7	3.7	2.3	5.3	4.7	8.3	8.3
	Raptor	1	AS	0.024	PO1							
14	Weeded Control					1.0	1.3	1.7	8.3	8.7	7.7	9.0
LSD (P=.05)						0.87	1.12	1.17	3.10	2.20	1.38	2.90
Standard Deviation						0.52	0.67	0.70	1.85	1.31	0.82	1.73
CV						27.94	22.69	36.26	35.28	20.03	10.99	26.03

Weed Control in Cucumber, Pumpkin, and Squash - HTRC

Trial ID: WC 108-99-01 **Location: East Lansing, MI**

Trt No.	Treatment Name	Form Amt	Fm Ds	Rate lb ai/A	Grow Stg	CUCUMBER PLANT WT KG/PLOT 8-2-99	CUCUMBER FRUIT WT KG/PLOT 8-2-99	SQUASH YIELD No/PLOT 9-23-99	SQUASH YIELD KG/PLOT 9-23-99	PUMPKIN YIELD No/PLOT 9-23-99	PUMPKIN YIELD KG/PLOT 9-23-99
1	Curbit	3	EC	0.75	PRE	15.98	11.61	59.7	61.03	39.7	195.73
2	Curbit	3	EC	1.13	PRE	19.05	13.55	57.0	55.33	32.0	172.09
3	Curbit	3	EC	0.75	PRE	17.13	13.75	68.0	62.30	40.3	186.85
	Command	3	ME	0.25	PRE						
4	Curbit	3	EC	0.75	PRE	11.11	8.39	58.3	68.23	37.3	178.08
	Command	3	ME	0.25	PRE						
	Authority	75	DF	0.1	PRE						
5	Curbit	3	EC	0.75	PRE	14.51	14.05	43.3	43.13	32.7	127.87
	Permit	75	WG	0.032	PRE						
6	Dual Magnum	7.6	EC	0.67	PRE	7.28	4.71	53.3	64.35	38.3	188.77
7	Frontier X2	6	EC	0.65	PRE	5.28	2.98	61.7	58.64	37.3	174.95
8	FOE 5043	60	DF	0.68	PRE	0.23	0.11	72.0	76.97	38.3	175.62
9	Raptor	1	AS	0.032	PRE	14.65	10.83	59.7	58.86	38.7	175.81
10	Curbit	3	EC	0.75	PRE	8.07	6.29	51.3	47.75	29.7	128.49
	Aim	40	DF	0.008	PO1						
	NIS	L		0.25% v/v	PO1						
11	Curbit	3	EC	0.75	PRE	23.45	21.00	63.0	62.87	38.7	161.89
	Permit	75	WG	0.032	PO1						
12	Curbit	3	EC	0.75	PRE	19.17	18.47	64.0	53.07	40.7	177.91
	Alanap	2	L	3	PO1						
13	Curbit	3	EC	0.75	PRE	6.21	3.30	63.0	70.15	37.0	182.87
	Raptor	1	AS	0.024	PO1						
14	Weeded Control					12.36	10.86	45.3	46.94	35.0	153.26
LSD (P=.05)						5.70	5.94	24.28	25.12	12.56	54.66
Standard Deviation						3.39	3.54	14.46	14.97	7.48	32.56
CV						27.22	35.39	24.70	25.26	20.32	19.15

Weed Control in Lettuce - Imlay City

Trial ID: WC 116-99-01 **Location: Van Dyk Farm, Imlay City, MI**

Personnel: Bernard H. Zandstra, Joseph G. Masabni, Doug Van Dyk
Crop: Lettuce **Variety: South Bay** **Field or Block: N/A**
Planting Method: Seed **Planting Date: 6-17-99** **Harvest: 8-20-99**
Spacing: 11 inches **Row Spacing: 17", 2 rows/plot**
Tillage Type: Conventional **Study Design: RCBD** **Replications: 3**
Plot Size: 36" wide * 35 ft long

Soil Type: Carlisle Muck **OM: 83%** **pH: 5.9**
Sand: 1% **Silt: 8%** **Clay: 8%** **CEC: N/A**

Herbicide Application Information

Timing	Date	Time	Air/Soil T	Soil Surf	Wind	Wet/Dry	RH	Sky	Dew
PRE	6-18	9:45 am	64 F/ 58 F	damp	NW 1-2	58F/64F	70%	clear	N
PO1	7-8	3:15 pm	81 F/ 73 F	dry	NW 3-5	65F/81F	43%	50%cloud	N

Crop and Weed Information at Application

Date	Crop or Weed	Height or Diameter	Number of Leaves	Density
7-8-99	Lettuce	2-3"	3-4	good
	COPU	0.5-1"	2	many
	PRPW	0.5-1"	1-2	moderate
	RRPW	0.5-1"	2-3	moderate

Notes and Comments
1. Sprays applied with 2 nozzle boom, 11002 nozzles.
2. Crop and weed injury ratings on scale of 1-10: 1 = no injury, 10 = complete kill or none present.

Trt No.	Treatment Name	Form Amt	Fm Ds	Rate	Rate Unit	Grow Stg	LETTUCE RATING 7-8-99	BARLEY RATING 7-8-99	LETTUCE RATING 7-26-99	COLQ RATING 7-26-99	COPU RATING 7-26-99	PRPW RATING 7-26-99
1	Kerb	50	WP	6	LB A/A	PRE	1.3	8.7	1.0	8.0	8.0	2.7
2	Raptor	1	AS	0.016	LB A/A	PRE	1.3	1.7	1.7	5.3	4.3	2.0
3	Raptor	1	AS	0.032	LB A/A	PRE	2.3	3.7	4.0	8.3	4.7	6.3
4	Prowl	3.3	EC	2	LB A/A	PRE	9.7	4.3	9.0	10.0	5.0	5.3
5	Authority	75	DF	0.2	LB A/A	PRE	3.3	3.0	5.0	10.0	8.0	7.3
6	Raptor	1	AS	0.016	LB A/A	PO1	1.0	1.0	1.7	8.3	6.0	6.7
7	Raptor	1	AS	0.032	LB A/A	PO1	1.3	2.3	2.0	5.3	4.7	7.3
8	Valor	50	WP	0.063	LB A/A	PO1	1.0	1.0	7.3	10.0	7.7	8.7
LSD (P=.05)							0.93	2.14	1.36	3.14	2.91	1.56
Standard Deviation							0.53	1.22	0.78	1.79	1.66	0.89
CV							19.83	38.17	19.59	21.97	27.48	15.36

Trt No.	Treatment Name	Form Amt	Fm Ds	Rate	Rate Unit	Grow Stg	RRPW RATING 7-26-99	LETTUCE YIELD GOOD HEADS No/10FT 8-20-99	LETTUCE YIELD GOOD HEADS KG/10FT 8-20-99	LETTUCE YIELD POOR HEADS No/10FT 8-20-99	LETTUCE YIELD POOR HEADS KG/10FT 8-20-99
1	Kerb	50	WP	6	LB A/A	PRE	7.0	4.7	5.23	5.3	5.53
2	Raptor	1	AS	0.016	LB A/A	PRE	5.7	6.0	6.55	4.0	4.53
3	Raptor	1	AS	0.032	LB A/A	PRE	7.3	7.3	7.54	3.3	3.74
4	Prowl	3.3	EC	2	LB A/A	PRE	5.7	0.0	0.00	0.3	0.12
5	Authority	75	DF	0.2	LB A/A	PRE	8.0	4.0	4.17	5.0	4.73
6	Raptor	1	AS	0.016	LB A/A	PO1	8.0	4.1	4.87	5.7	6.24
7	Raptor	1	AS	0.032	LB A/A	PO1	7.3	4.7	4.87	5.3	5.74
8	Valor	50	WP	0.063	LB A/A	PO1	9.0	1.3	1.08	5.7	3.48
LSD (P=.05)							2.58	3.88	3.88	2.84	3.02
Standard Deviation							1.47	2.20	2.20	1.61	1.71

CV	20.33	54.71	51.27	37.08	40.14

Preemergence Weed Control in Spearmint

Trial ID: WC 121-99-01 **Location: Irrer Farm, St Johns Study**

Personnel: Bernard H. Zandstra, Joseph G. Masabni, Tom Irrer
Crop: Spearmint **Variety: Native N87-1** **Field or Block: N/A**
Planting Method: Stolons **Planting Date: Fall 94** **Harvest: N/A**
Spacing: Meadow Planting **Row Spacing: N/A** **Perennial Age: 5 years**
Tillage Type: None **Study Design: RCBD** **Replications: 3**
Plot Size: 25 ft wide * 120 ft long

Soil Type: Gilford Sandy Loam **OM: 2.3%** **pH: 5.5**
Sand: 80% **Silt: 13%** **Clay: 7%** **CEC: 14.2**

Herbicide Application Information

Timing	Date	Time	Air/Soil T	Soil Surf	Wind	Wet/Dry	RH	Sky	Dew
PRE	3-31	9:30am	54 F/ 43 F	dry	SW 1-3	50F/54F	76%	clear	N

Crop and Weed Information at Application

Date	Crop or Weed	Height or Diameter	Number of Leaves	Density
3-31-99	Spearmint	1-4"	few	moderate
	FIPA	2-3"	many	many
	DAND	2-3"	many	few
	COCW	2"	many	many

Notes and Comments

1. Sprays applied with tractor-mounted sprayer 8002 nozzles, 2.27 mph, 15 ft boom, 22 psi, 22 gpa.
2. Crop and weed injury ratings on scale of 1-10: 1 = no injury, 10 = complete kill or none present.
3. 3-31-99: spray ran out on reps 305, 102, and 308 about 15 ft short.
4. Plots were 25 ft wide and an 18 ft band was applied to the center of each plot.

Preemergence Weed Control in Spearmint

Trial ID: WC 121-99-01 **Location: Irrer Farm, St Johns Study**

Trt No.	Treatment Name	Form Amt	Fm Ds	Rate lb ai/A	Grow Stg	SPEARMINT RATING 6-3-99	COCW RATING 6-3-99	FIPA RATING 6-3-99	MATA RATING 6-3-99	PRLE RATING 6-3-99	CWBS RATING 6-3-99
1	Goal XL	2	L	0.25	PRE	2.3	6.0	5.7	1.7	1.7	6.7
	Gramoxone	2.5	L	0.31	PRE						
2	Goal XL	2	L	0.5	PRE	2.3	8.0	9.0	2.3	2.3	10.0
	Gramoxone	2.5	L	0.31	PRE						
3	Goal XL	2	L	0.25	PRE	3.3	10.0	8.3	8.3	8.7	10.0
	Gramoxone	2.5	L	0.31	PRE						
	Sinbar	80	WP	0.32	PRE						
4	Goal XL	2	L	0.25	PRE	2.3	10.0	7.0	9.7	9.3	9.0
	Gramoxone	2.5	L	0.31	PRE						
	Sinbar	80	WP	0.32	PRE						
	Stinger	3	EC	0.19	PRE						
5	Goal XL	2	L	0.25	PRE	3.0	10.0	8.0	10.0	10.0	10.0
	Gramoxone	2.5	L	0.31	PRE						
	Sinbar	80	WP	0.32	PRE						
	Stinger	3	EC	0.19	PRE						
	Command	3	ME	0.25	PRE						
6	Stinger	3	EC	0.19	PRE	1.7	10.0	2.3	10.0	10.0	10.0
	Command	3	ME	0.25	PRE						
7	Milestone	80	DF	0.125	PRE	4.0	4.0	1.0	1.0	1.0	7.7
8	Milestone	80	DF	0.25	PRE	5.0	4.0	1.0	1.0	1.0	10.0
9	Command	3	ME	0.25	PRE	1.0	10.0	1.0	3.7	3.0	10.0
	Authority	75	DF	0.25	PRE						
10	Command	3	ME	0.25	PRE	2.0	9.0	1.7	3.0	1.7	10.0
	Authority	75	DF	0.38	PRE						
11	Prowl	3.3	EC	1	PRE	3.0	6.0	4.7	1.0	1.0	10.0
12	Sinbar	80	WP	1	PRE	1.3	10.0	3.7	10.0	9.3	10.0
LSD (P=.05)						1.80	4.61	3.56	2.55	2.28	2.68
Standard Deviation						1.06	2.72	2.10	1.51	1.35	1.58
CV						40.78	33.66	47.27	29.32	27.37	16.76

Preemergence Weed Control in Onion - MSU Muck Farm

Trial ID: WC 112-99-01 **Location: Laingsburg, MI**

Personnel: Bernard H. Zandstra, Joseph G. Masabni
Crop: Onion **Variety: Hustler** **Field or Block: C-20**
Planting Method: Seed **Planting Date: 5-10-99** **Harvest: 9-03-99**
Spacing: 16 seeds / ft **Row Spacing: 16", 3 rows/plot**
Tillage Type: Conventional **Study Design: RCBD** **Replications: 3**
Plot Size: 5.3 ft wide * 16.7 ft long

Soil Type: Houghton Muck **OM: 80%** **pH: 6.3**
Sand: N/A **Silt: N/A** **Clay: N/A** **CEC: N/A**

Herbicide Application Information

Timing	Date	Time	Air/Soil T	Soil Surf	Wind	Wet/Dry	RH	Sky	Dew
PRE	5-11	2 pm	78 F/ 56 F	dry	SE 3-6	61F/78F	40%	40% cloud	N
PO1	6-7-9	10 am	84 F/ 70 F	dry	SW 3-5	76F/84F	70%	Hazy	N
PO2	7-12-	9:30 am	71 F/ 67 F	dry	CALM	71F/64F	70%	10% cloud	N

Crop and Weed Information at Application

Date	Crop or Weed	Height or Diameter	Number of Leaves	Density
6-7	Onion	3-5"	2	good
	LACG	1-2"	2	moderate
	COLQ	1-3"	2-6	many
	COPU	1-3"	many	many
	LATH	1-3"	2-5	many
	RRPW	1-4"	2-6	many
	YENS	4-6"	many	many
7-12	Onion	14-16"	8-10	good
	YENS	20-22"	many	many
	COLQ	6-8"	many	few
	LATH	6-8"	many	few
	MAYC	4-6"	many	moderate
	NLLQ	6-8"	many	few
	RRPW	8-10"	many	few

Notes and Comments

1. Sprays applied with 4-nozzle boom FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack.
2. Crop and weed injury ratings on scale of 1-10: 1 = no injury, 10 = complete kill or none present.
3. 6-17-99 The entire experiment was sprayed with 4 oz. Goal and 2 pint Poast and 1 qt COC to kill emerged weeds.
4. Extreme YENS pressure caused yield reduction in all plots.
5. Entire plot sprayed with 1 lb ai Nortron + NIS on 7-06-99 and 7-27-99 to suppress YENS.

Preemergence Weed Control in Onion - MSU Muck Farm

Trial ID: WC 112-99-01 **Location: Laingsburg, MI**

Trt No.	Treatment Name	Form Amt	Fm Ds	Rate lb ai/A	Grow Stg	ONION RATING 6-7-99	LACG RATING 6-7-99	YENS RATING 6-7-99	COLQ RATING 6-7-99	COPU RATING 6-7-99	LATH RATING 6-7-99	RRPW RATING 6-7-99
1	Frontier	6	EC	1.17	PRE	2.3	7.3	5.3	7.0	6.3	7.7	4.7
	Frontier	6	EC	1.17	PO1,2							
2	Frontier	6	EC	1.17	PRE	2.0	6.7	3.7	7.3	8.0	8.7	6.7
	Frontier	6	EC	2.34	PO1,2							
3	Frontier X2	6	EC	0.64	PRE	2.3	8.0	7.3	8.0	7.7	7.7	7.0
	Frontier X2	6	EC	0.64	PO1,2							
4	Frontier X2	6	EC	0.64	PRE	1.7	7.3	4.3	9.0	7.7	7.7	7.0
	Frontier X2	6	EC	1.29	PO1,2							
5	Frontier X2	6	EC	0.64	PRE	1.7	7.0	4.3	7.7	8.0	7.3	7.3
	Frontier X2	6	EC	0.64	PO1,2							
	Goal XL	2	L	0.063	PO1,2							
	Poast	1.53	EC	0.19	PO1,2							
	COC	L		1% v/v	PO1,2							
6	Frontier X2	6	EC	0.64	PRE	2.0	7.7	3.7	8.7	6.7	7.7	6.3
	Frontier X2	6	EC	0.64	PO1,2							
	Goal XL	2	L	0.063	PO1,2							
	Prowl	3.3	EC	2	PO1,2							
	Poast	1.53	EC	0.19	PO1,2							
	COC	L		1% v/v	PO1,2							
7	Dual Magnum	7.6	EC	1.33	PRE	2.3	6.7	2.7	9.0	5.7	7.0	5.3
	Dual Magnum	7.6	EC	1.33	PO1,2							
8	Dual II Magnum	7.6	EC	1.33	PRE	2.0	4.7	3.3	6.7	5.7	7.0	5.3
	Dual II Magnum	7.6	EC	1.33	PO1,2							
9	Dual	8	EC	2	PRE	2.3	5.7	3.0	9.0	5.0	6.7	4.3
	Dual	8	EC	2	PO1,2							
10	Prowl	3.3	EC	2	PRE	1.0	7.3	2.3	9.7	7.0	6.3	5.3
	Dual Magnum	7.6	EC	1.33	PO1,2							
11	Prowl	3.3	EC	2	PRE	1.7	4.7	1.0	9.0	6.7	7.7	5.3
	Dual II Magnum	7.6	EC	1.33	PO1,2							
12	Prowl	3.3	EC	2	PRE	1.7	5.7	3.3	9.3	7.0	8.0	5.7
	Dual	8	EC	2	PO1,2							
13	Prowl	3.3	EC	2	PRE	3.0	6.3	5.0	10.0	7.0	8.7	5.7
	Dual	8	EC	2	PRE							
	Prowl	3.3	EC	2	PO1,2							
	Dual	7.6	EC	2	PO1,2							
14	Prowl	3.3	EC	2	PRE	2.0	4.0	1.7	9.0	6.7	8.0	4.3
	Prowl	3.3	EC	2	PO1,2							
	Dual Magnum	7.6	EC	1.33	PO1,2							
15	Prowl	3.3	EC	2	PRE	2.3	6.0	3.3	9.0	6.7	6.7	4.7
	Prowl	3.3	EC	2	PO1,2							
	Nortron	4	L	1	PRE							
	Nortron	4	L	1	PO1,2							
16	FOE 5043	60	DF	0.6	PRE	2.0	6.3	2.3	9.3	6.3	6.3	4.3
	FOE 5043	60	DF	0.6	PO1,2							
17	FOE 5043	60	DF	0.75	PRE	1.7	6.3	1.3	9.3	6.3	7.3	5.3
	FOE 5043	60	DF	0.75	PO1,2							
18	Weeded Control					1.0	1.7	1.0	2.3	1.0	1.0	1.0
LSD (P=.05)						1.00	2.69	2.26	3.73	1.39	2.95	3.00
Standard Deviation						0.60	1.61	1.36	2.23	0.84	1.77	1.80
CV						30.97	26.55	41.38	26.93	13.04	25.05	33.87

Preemergence Weed Control in Onion - MSU Muck Farm

Trial ID: WC 112-99-01 **Location: Laingsburg, MI**

Trt No.	Treatment Name	Form Amt	Fm Ds	Rate lb ai/A	Grow Stg	ONION RATING 7-6-99	YENS RATING 7-6-99	COLQ RATING 7-6-99	RRPW RATING 7-6-99	ONION RATING 7-12-99	LACG RATING 7-12-99	YENS RATING 7-12-99
1	Frontier	6	EC	1.17	PRE	2.3	5.7	7.0	4.7	2.3	9.3	6.3
	Frontier	6	EC	1.17	PO1,2							
2	Frontier	6	EC	1.17	PRE	2.0	6.0	7.3	6.3	2.3	10.0	6.0
	Frontier	6	EC	2.34	PO1,2							
3	Frontier X2	6	EC	0.64	PRE	1.0	6.7	8.7	5.0	1.0	10.0	5.7
	Frontier X2	6	EC	0.64	PO1,2							
4	Frontier X2	6	EC	0.64	PRE	1.3	5.0	7.0	5.7	1.3	10.0	5.7
	Frontier X2	6	EC	1.29	PO1,2							
5	Frontier X2	6	EC	0.64	PRE	1.7	4.7	8.7	9.3	1.0	10.0	5.0
	Frontier X2	6	EC	0.64	PO1,2							
	Goal XL	2	L	0.063	PO1,2							
	Poast	1.53	EC	0.19	PO1,2							
	COC	L		1% v/v	PO1,2							
6	Frontier X2	6	EC	0.64	PRE	1.3	5.7	9.0	9.3	1.7	10.0	6.3
	Frontier X2	6	EC	0.64	PO1,2							
	Goal XL	2	L	0.063	PO1,2							
	Prowl	3.3	EC	2	PO1,2							
	Poast	1.53	EC	0.19	PO1,2							
	COC	L		1% v/v	PO1,2							
7	Dual Magnum	7.6	EC	1.33	PRE	3.0	3.0	8.3	6.0	4.0	10.0	4.0
	Dual Magnum	7.6	EC	1.33	PO1,2							
8	Dual II Magnum	7.6	EC	1.33	PRE	3.3	3.0	8.0	4.7	4.0	10.0	3.7
	Dual II Magnum	7.6	EC	1.33	PO1,2							
9	Dual	8	EC	2	PRE	3.3	3.0	8.7	5.3	4.3	9.0	3.3
	Dual	8	EC	2	PO1,2							
10	Prowl	3.3	EC	2	PRE	3.3	2.7	8.7	6.3	3.7	10.0	3.0
	Dual Magnum	7.6	EC	1.33	PO1,2							
11	Prowl	3.3	EC	2	PRE	5.3	1.0	9.0	7.7	7.0	10.0	1.0
	Dual II Magnum	7.6	EC	1.33	PO1,2							
12	Prowl	3.3	EC	2	PRE	3.0	2.0	9.7	7.7	4.0	9.0	2.3
	Dual	8	EC	2	PO1,2							
13	Prowl	3.3	EC	2	PRE	3.3	5.3	10.0	7.3	3.0	10.0	5.7
	Dual	8	EC	2	PRE							
	Prowl	3.3	EC	2	PO1,2							
	Dual	7.6	EC	2	PO1,2							
14	Prowl	3.3	EC	2	PRE	3.7	2.7	10.0	8.7	3.3	9.3	3.3
	Prowl	3.3	EC	2	PO1,2							
	Dual Magnum	7.6	EC	1.33	PO1,2							
15	Prowl	3.3	EC	2	PRE	1.7	5.0	10.0	9.0	1.3	10.0	4.3
	Prowl	3.3	EC	2	PO1,2							
	Nortron	4	L	1	PRE							
	Nortron	4	L	1	PO1,2							
16	FOE 5043	60	DF	0.6	PRE	3.3	3.0	9.3	4.7	4.7	9.3	2.3
	FOE 5043	60	DF	0.6	PO1,2							
17	FOE 5043	60	DF	0.75	PRE	2.7	2.3	9.7	6.7	4.0	10.0	3.0
	FOE 5043	60	DF	0.75	PO1,2							
18	Weeded Control					6.0	1.0	9.0	2.7	7.0	8.3	1.0
LSD (P=.05)						1.51	1.62	2.97	3.47	1.65	1.45	1.67
Standard Deviation						0.91	0.97	1.78	2.08	0.99	0.87	1.00
CV						31.53	25.79	20.29	32.06	29.65	8.98	25.08

Preemergence Weed Control in Onion - MSU Muck Farm

Trial ID: WC 112-99-01 **Location: Laingsburg, MI**

Trt No.	Treatment Name	Form Amt	Fm Ds	Rate lb ai/A	Grow Stg	COLQ RATING 7-12-99	LATH RATING 7-12-99	MAYC RATING 7-12-99	NLLQ RATING 7-12-99	RRPW RATING 7-12-99	ONION YIELD KG/PLOT 9-3-99
1	Frontier	6	EC	1.17	PRE	7.0	5.7	3.7	7.3	6.0	8.94
	Frontier	6	EC	1.17	PO1,2						
2	Frontier	6	EC	1.17	PRE	7.0	5.3	4.7	6.3	6.0	12.19
	Frontier	6	EC	2.34	PO1,2						
3	Frontier X2	6	EC	0.64	PRE	6.3	6.0	5.0	8.7	7.0	18.22
	Frontier X2	6	EC	0.64	PO1,2						
4	Frontier X2	6	EC	0.64	PRE	6.3	6.0	6.3	7.0	7.0	17.06
	Frontier X2	6	EC	1.29	PO1,2						
5	Frontier X2	6	EC	0.64	PRE	8.7	9.0	10.0	10.0	10.0	15.68
	Frontier X2	6	EC	0.64	PO1,2						
	Goal XL	2	L	0.063	PO1,2						
	Poast	1.53	EC	0.19	PO1,2						
	COC	L		1% v/v	PO1,2						
6	Frontier X2	6	EC	0.64	PRE	9.3	9.7	10.0	9.7	10.0	19.20
	Frontier X2	6	EC	0.64	PO1,2						
	Goal XL	2	L	0.063	PO1,2						
	Prowl	3.3	EC	2	PO1,2						
	Poast	1.53	EC	0.19	PO1,2						
	COC	L		1% v/v	PO1,2						
7	Dual Magnum	7.6	EC	1.33	PRE	7.7	7.0	7.7	5.7	7.0	4.15
	Dual Magnum	7.6	EC	1.33	PO1,2						
8	Dual II Magnum	7.6	EC	1.33	PRE	7.0	5.7	6.0	4.3	5.0	4.17
	Dual II Magnum	7.6	EC	1.33	PO1,2						
9	Dual	8	EC	2	PRE	9.7	6.3	5.7	6.0	4.7	2.86
	Dual	8	EC	2	PO1,2						
10	Prowl	3.3	EC	2	PRE	9.0	8.3	4.3	8.0	5.7	4.59
	Dual Magnum	7.6	EC	1.33	PO1,2						
11	Prowl	3.3	EC	2	PRE	10.0	9.0	7.0	8.3	7.7	0.51
	Dual II Magnum	7.6	EC	1.33	PO1,2						
12	Prowl	3.3	EC	2	PRE	10.0	8.3	3.7	8.0	8.0	5.81
	Dual	8	EC	2	PO1,2						
13	Prowl	3.3	EC	2	PRE	10.0	8.7	9.3	10.0	8.3	10.44
	Dual	8	EC	2	PRE						
	Prowl	3.3	EC	2	PO1,2						
	Dual	7.6	EC	2	PO1,2						
14	Prowl	3.3	EC	2	PRE	10.0	7.7	6.0	9.0	9.3	5.68
	Prowl	3.3	EC	2	PO1,2						
	Dual Magnum	7.6	EC	1.33	PO1,2						
15	Prowl	3.3	EC	2	PRE	10.0	8.7	6.7	10.0	9.3	13.99
	Prowl	3.3	EC	2	PO1,2						
	Nortron	4	L	1	PRE						
	Nortron	4	L	1	PO1,2						
16	FOE 5043	60	DF	0.6	PRE	9.0	8.7	7.7	7.3	7.7	4.45
	FOE 5043	60	DF	0.6	PO1,2						
17	FOE 5043	60	DF	0.75	PRE	9.3	7.7	6.7	7.3	8.3	3.71
	FOE 5043	60	DF	0.75	PO1,2						
18	Weeded Control					6.7	5.7	6.0	4.7	3.3	0.17
LSD (P=.05)						4.24	2.92	4.44	3.25	2.96	5.68
Standard Deviation						2.54	1.75	2.66	1.95	1.77	3.41
CV						29.92	23.63	41.23	25.48	24.50	40.41

Postemergence Weed Control in Onion - Muck Farm

Trial ID: WC 112-99-02 **Location: Laingsburg, MI**

Personnel: Bernard H. Zandstra, Joseph G. Masabni
Crop: Onion **Variety: Hustler** **Field or Block: C-19 W**
Planting Method: Seed **Planting Date: 5-10-99** **Harvest: 9-03-99**
Spacing: 16 seeds / ft **Row Spacing: 16 inch, 3 rows**
Tillage Type: Conventional **Study Design: RCBD** **Replications: 3**
Plot Size: 5.3 ft wide * 16.7 ft long

Soil Type: Houghton Muck **OM: 80%** **pH: 6.3**
Sand: N/A **Silt: N/A** **Clay: N/A** **CEC: N/A**

Herbicide Application Information

Timing	Date	Time	Air/Soil T	Soil Surf	Wind	Wet/Dry	RH	Sky	Dew
PO1	6-9	10:00am	77 F/ 70 F	drt	SE 3-7	68F/77F	64%	90% cloud	N
PO2	7-6	10:00am	79 F/ 78 F	moist	W 2-4	76F/79F	88%	90% cloud	N

Crop and Weed Information at Application

Date	Crop or Weed	Height or Diameter	Number of Leaves	Density
6-9	Onion	3-4"	2	good
	LACG	1-3"	2-5	moderate
	COPU	1-3"	many	many
	LATH	2-4"	4-6	many
	MAYC	2-4"	3-6	moderate
	RRPW	1-3"	4-8	many
	YENS	3-5"	many	moderate
7-6	Onion	12-14"	4-5	good
	LACG	8-10"	many	moderate
	COPU	8-10"	many	moderate
	LATH	8-10"	many	moderate
	MAYC	4-6"	many	few
	RRPW	6-8"	many	few

Notes and Comments
1. Sprays applied with 4-nozzle boom FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack.
2. Crop and weed injury ratings on scale of 1-10: 1 = no injury, 10 = complete kill or none present.
3. TADS13169 is bromoxynil 20WP.

Postemergence Weed Control in Onion - Muck Farm

Trial ID: WC 112-99-02 **Location: Laingsburg, MI**

Trt No.	Treatment Name	Form Amt	Fm Ds	Rate lb ai/A	Grow Stg	ONION RATING 6-17-99	LACG RATING 6-17-99	YENS RATING 6-17-99	COPU RATING 6-17-99	LATH RATING 6-17-99	RRPW RATING 6-17-99	TUPW RATING 6-17-99
1	Goal XL	2	L	0.063	PO1,2	2.0	10.0	5.0	10.0	9.0	10.0	10.0
	Poast	1.53	EC	0.19	PO1,2							
	NIS	L		0.5% v/v	PO1,2							
2	Goal XL	2	L	0.125	PO1,2	2.3	10.0	6.0	10.0	10.0	10.0	10.0
	Poast	1.53	EC	0.19	PO1,2							
	NIS	L		0.5% v/v	PO1,2							
3	Goal XL	2	L	0.063	PO1,2	3.0	10.0	4.7	10.0	8.0	10.0	10.0
	Poast	1.53	EC	0.19	PO1,2							
	Silwet L77	L		0.5% v/v	PO1,2							
4	Goal XL	2	L	0.125	PO1,2	2.3	10.0	5.7	10.0	9.3	10.0	9.7
	Poast	1.53	EC	0.19	PO1,2							
	Silwet L77	L		0.5% v/v	PO1,2							
5	Goal XL	2	L	0.063	PO1,2	2.0	10.0	5.0	10.0	9.0	10.0	10.0
	Poast	1.53	EC	0.19	PO1,2							
	Sylgard 309	L		0.5% v/v	PO1,2							
6	Goal XL	2	L	0.125	PO1,2	2.7	10.0	5.3	10.0	10.0	10.0	10.0
	Poast	1.53	EC	0.19	PO1,2							
	Sylgard 309	L		0.5% v/v	PO1,2							
7	Goal XL	2	L	0.063	PO1,2	1.7	10.0	5.0	10.0	10.0	10.0	10.0
	Poast	1.53	EC	0.19	PO1,2							
	Frontier X2	6	EC	0.64	PO1,2							
	COC	L		1% v/v	PO1,2							
8	Goal XL	2	L	0.063	PO1,2	2.0	10.0	5.0	10.0	8.7	10.0	10.0
	Poast	1.53	EC	0.19	PO1,2							
	Frontier X2	6	EC	0.64	PO1,2							
	NIS	L		0.5% v/v	PO1,2							
9	Goal XL	2	L	0.063	PO1,2	1.3	10.0	7.0	10.0	10.0	10.0	10.0
	Poast	1.53	EC	0.19	PO1,2							
	Frontier X2	6	EC	0.64	PO1,2							
	Silwet L77	L		0.5% v/v	PO1,2							
10	Goal XL	2	L	0.063	PO1,2	2.0	10.0	3.7	10.0	9.0	10.0	10.0
	Poast	1.53	EC	0.19	PO1,2							
	Frontier X2	6	EC	0.64	PO1,2							
	Sylgard 309	L		0.5% v/v	PO1,2							
11	Poast	1.53	EC	0.19	PO1,2	8.3	10.0	8.3	3.0	10.0	10.0	10.0
	Tough	3.75	EC	0.9	PO1,2							
12	Poast	1.53	EC	0.19	PO1,2	9.0	10.0	7.3	7.3	10.0	10.0	10.0
	Tough	3.75	EC	0.9	PO1,2							
	COC	L		1% v/v	PO1,2							
13	Goal XL	2	L	0.063	PO1,2	1.3	10.0	8.3	10.0	10.0	10.0	10.0
	Poast	1.53	EC	0.19	PO1,2							
	Nortron	4	L	1	PO1,2							
	COC	L		1% v/v	PO1,2							
14	Poast	1.53	EC	0.19	PO1,2	5.0	9.7	1.7	8.0	3.0	8.7	10.0
	Aim	40	DF	0.008	PO1,2							
	NIS	L		0.5% v/v	PO1,2							
15	Poast	1.53	EC	0.19	PO1,2	9.3	10.0	3.7	10.0	9.0	10.0	10.0
	Aim	40	DF	0.016	PO1,2							
	NIS	L		0.5% v/v	PO1,2							
16	Valor	50	WP	0.078	PO1,2	1.3	3.7	5.0	9.3	10.0	10.0	10.0
17	Buctril	2	EC	0.25	PO1,2	2.7	10.0	3.7	4.0	10.0	9.0	10.0
18	TADS 13169	20	WP	0.25	PO1,2	2.7	9.7	1.7	1.3	10.0	10.0	10.0
19	TADS 13169	20	WP	0.25	PO1,2	3.0	9.7	1.7	1.7	10.0	9.3	9.7
	COC	L		1% v/v	PO1,2							
20	Weeded Control					1.0	1.0	1.0	1.0	1.0	1.0	1.0
LSD (P=.05)						1.36	1.20	2.69	1.34	1.02	0.97	0.31
Standard Deviation						0.82	0.73	1.63	0.81	0.62	0.59	0.18
CV						25.37	7.95	34.45	10.43	7.05	6.28	1.94

Postemergence Weed Control in Onion - Muck Farm

Trial ID: WC 112-99-02 **Location: Laingsburg, MI**

Trt No.	Treatment Name	Form Amt	Fm Ds	Rate lb ai/A	Grow Stg	ONION RATING 7-16-99	LACG RATING 7-16-99	YENS RATING 7-16-99	COPU RATING 7-16-99	LATH RATING 7-16-99	MAYC RATING 7-16-99	RRPW RATING 7-16-99	ONION YIELD KG/PLOT 9-3-99
1	Goal XL	2	L	0.063	PO1,2	1.3	9.7	7.7	8.7	6.0	8.7	9.7	29.78
	Poast	1.53	EC	0.19	PO1,2								
	NIS		L	0.5% v/v	PO1,2								
2	Goal XL	2	L	0.125	PO1,2	2.7	10.0	8.7	10.0	7.7	8.7	9.7	30.75
	Poast	1.53	EC	0.19	PO1,2								
	NIS		L	0.5% v/v	PO1,2								
3	Goal XL	2	L	0.063	PO1,2	2.3	10.0	8.0	9.3	5.3	7.0	9.7	23.58
	Poast	1.53	EC	0.19	PO1,2								
	Silwet L77		L	0.5% v/v	PO1,2								
4	Goal XL	2	L	0.125	PO1,2	2.0	10.0	7.0	10.0	8.0	9.0	10.0	30.55
	Poast	1.53	EC	0.19	PO1,2								
	Silwet L77		L	0.5% v/v	PO1,2								
5	Goal XL	2	L	0.063	PO1,2	2.0	9.7	7.0	9.7	6.0	8.3	9.7	21.48
	Poast	1.53	EC	0.19	PO1,2								
	Sylgard 309		L	0.5% v/v	PO1,2								
6	Goal XL	2	L	0.125	PO1,2	2.7	10.0	7.7	10.0	8.3	9.3	10.0	31.88
	Poast	1.53	EC	0.19	PO1,2								
	Sylgard 309		L	0.5% v/v	PO1,2								
7	Goal XL	2	L	0.063	PO1,2	1.7	10.0	8.7	9.7	7.7	7.7	9.7	31.37
	Poast	1.53	EC	0.19	PO1,2								
	Frontier X2	6	EC	0.64	PO1,2								
	COC		L	1% v/v	PO1,2								
8	Goal XL	2	L	0.063	PO1,2	2.0	10.0	8.3	9.3	5.3	6.7	9.7	27.72
	Poast	1.53	EC	0.19	PO1,2								
	Frontier X2	6	EC	0.64	PO1,2								
	NIS		L	0.5% v/v	PO1,2								
9	Goal XL	2	L	0.063	PO1,2	1.3	10.0	8.7	9.7	8.0	9.0	10.0	35.21
	Poast	1.53	EC	0.19	PO1,2								
	Frontier X2	6	EC	0.64	PO1,2								
	Silwet L77		L	0.5% v/v	PO1,2								
10	Goal XL	2	L	0.063	PO1,2	2.0	9.3	8.0	10.0	6.0	8.3	9.7	32.69
	Poast	1.53	EC	0.19	PO1,2								
	Frontier X2	6	EC	0.64	PO1,2								
	Sylgard 309		L	0.5% v/v	PO1,2								
11	Poast	1.53	EC	0.19	PO1,2	7.7	7.7	8.3	1.7	8.0	8.7	8.7	3.90
	Tough	3.75	EC	0.9	PO1,2								
12	Poast	1.53	EC	0.19	PO1,2	8.0	10.0	9.0	1.3	7.7	10.0	9.0	2.26
	Tough	3.75	EC	0.9	PO1,2								
	COC		L	1% v/v	PO1,2								
13	Goal XL	2	L	0.063	PO1,2	1.7	10.0	8.7	10.0	8.0	7.3	10.0	33.57
	Poast	1.53	EC	0.19	PO1,2								
	Nortron	4	L	1	PO1,2								
	COC		L	1% v/v	PO1,2								
14	Poast	1.53	EC	0.19	PO1,2	4.3	9.3	6.0	5.3	3.3	2.0	9.0	13.67
	Aim	40	DF	0.008	PO1,2								
	NIS		L	0.5% v/v	PO1,2								
15	Poast	1.53	EC	0.19	PO1,2	7.0	10.0	7.3	8.3	5.7	7.3	10.0	1.24
	Aim	40	DF	0.016	PO1,2								
	NIS		L	0.5% v/v	PO1,2								
16	Valor	50	WP	0.078	PO1,2	3.0	1.0	7.7	9.3	8.3	9.7	10.0	24.12
17	Buctril	2	EC	0.25	PO1,2	3.3	5.3	6.7	1.7	9.7	10.0	9.0	20.30
18	TADS 13169	20	WP	0.25	PO1,2	3.7	4.7	7.0	1.0	9.7	9.7	9.3	18.51
19	TADS 13169	20	WP	0.25	PO1,2	2.7	6.0	5.7	1.7	9.3	9.7	8.0	14.58
	COC		L	1% v/v	PO1,2								
20	Weeded Control					1.7	9.0	9.3	6.7	9.7	10.0	9.0	30.53
LSD (P=.05)						1.80	3.22	1.72	1.11	2.62	2.56	1.12	9.15
Standard Deviation						1.09	1.95	1.04	0.67	1.59	1.55	0.68	5.55
CV						34.57	22.73	13.44	9.41	21.53	18.57	7.17	24.23

Carryover studies with halosulfuron on onion, carrot, and celery

Project Code: WC 112-99-03 **Location: MSU Muck Farm, Laingsburg, MI**

Personnel: Bernard H. Zandstra, Joseph G. Masabni
Crop: Carrot, Celery, Onion Varieties: see Notes **Field or Block: B-20**
Planting Method: Seeded **Planting Date: 5-10-99** **Harvest: 9-8, 9-9-99**
Spacing: see note 7 **Row Spacing: see Notes**
Tillage Type: Conventional **Study Design: RCBD** **Replications: 3**
Plot Size: 5.3 ft wide * 50 ft long

Soil Type: Houghton Muck **OM: 80%** **pH: 6.2**
Sand: N/A **Silt: N/A** **Clay: N/A** **CEC: N/A**

Herbicide Application Information

Timing	Date	Time	Air/Soil T	Soil Surf	Wind	Wet/Dry RH	Sky	Dew
Sept. 1998	9-14	11:20am	74 F /69 F	dry	SE 1-3	71F/74F	88% 100%	N

Notes and Comments
1. Sprays applied with 4-nozzle boom FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack.
2. Crop and weed injury ratings on scale of 1-10: 1 = no injury, 10 = complete kill or none present.
3. Crops planted across treatments in spring 1999. Maintenance herbicides applied as needed.
4. Herbicide treatments applied on 9-14-98.
5. Cultivars: Onion - Hustler; Celery - XP 266; Carrot - Premium.
6. Celery transplanted on 6-3-99.
7. Spacing: carrot: 2 beds (64")x 3 rows (16") x 12 plants/ft; celery: 2 beds (64")x 2 rows (30") x 6" in row; onion : 2 beds (64")x 3 rows (16") x 12 plants/ft

Trt No	Treatment Name	Form Amt	Fm Ds	Rate lb ai/A	Grow Stg	ONION RATING 7-12-99	CELERY RATING 7-12-99	CARROT RATING 7-12-99	COCW RATING 7-12-99	COPU RATING 7-12-99	LATH RATING 7-12-99	RRPW RATING 7-12-99	YENS RATING 7-12-99
1	Permit	75	WG	0.032		1.7	1.7	2.3	1.7	6.7	2.0	10.0	7.3
2	Permit	75	WG	0.063		1.0	2.3	2.3	2.3	3.7	1.0	7.3	5.3
3	Permit	75	WG	0.125		2.0	3.0	1.7	2.3	6.0	1.7	7.3	9.0
4	Permit	75	WG	0.25		2.3	5.3	2.3	4.0	7.0	3.7	10.0	10.0
5	Lorox	50	DF	4		1.3	2.0	1.7	6.0	8.3	1.3	7.3	9.7
6	Sencor	75	DF	1		1.3	2.7	2.7	3.7	7.0	3.7	7.3	6.7
7	Aatrex	90	DF	2		2.0	2.0	2.0	8.0	8.3	6.0	7.0	4.7
8	Pursuit	2	EC	0.063		1.7	2.3	2.3	5.3	7.3	4.0	9.3	5.7
9	Dual	8	EC	4		1.7	1.3	1.7	7.3	7.7	5.0	9.3	8.7
10	Control					1.3	2.0	2.3	5.7	6.3	1.3	6.7	10.0
LSD (P=.05)						0.87	1.44	1.21	3.48	3.33	3.48	3.98	3.11
Standard Deviation						0.51	0.84	0.70	2.03	1.94	2.03	2.32	1.81
CV						30.95	34.10	33.02	43.82	28.40	68.38	28.43	23.53

Trt No	Treatment Name	Form Amt	Fm Ds	Rate lb ai/A	Grow Stg	ONION YIELD KG/PLOT 9-8-99	CELERY YIELD KG/24PLT 9-8-99	CARROT YIELD KG/PLOT 9-8-99
1	Permit	75	WG	0.032		21.12	24.48	23.90
2	Permit	75	WG	0.063		21.92	19.97	23.26
3	Permit	75	WG	0.125		20.19	18.35	23.51
4	Permit	75	WG	0.25		19.77	15.81	20.55
5	Lorox	50	DF	4		20.55	18.12	23.56
6	Sencor	75	DF	1		21.69	21.04	22.15
7	Aatrex	90	DF	2		21.50	20.38	23.43
8	Pursuit	2	EC	0.063		23.72	20.96	23.65
9	Dual	8	EC	4		22.95	21.46	24.84
10	Control					21.81	20.47	23.82
LSD (P=.05)						2.35	4.11	2.20
Standard Deviation						1.37	2.39	1.28
CV						6.39	11.92	5.51

Weed Control in Pepper and Tomato - HTRC

Trial ID: WC 101-99-01 **Location: East Lansing, MI**

Personnel: Bernard H. Zandstra, Joseph G. Masabni
Crop: Pepper, Tomato **Varieties: Enterprize, Mountain Spring**
Planting Method: Transplant **Planting Date: 6-1-99** **Harvest: see Notes**
Spacing: 2 ft in row **Row Spacing: 36 inches** **Field or Block: 138**
Tillage Type: Conventional **Study Design: RCBD** **Replications: 3**
Plot Size: 7 ft wide * 30 ft long

Soil Type: Marlette Fine Sandy Loam **OM: 2.3%** **pH: 6.5**
Sand: 60% **Silt: 21%** **Clay: 19%** **CEC: 7.7**

Herbicide Application Information

Timing	Date	Time	Air/Soil T	Soil Surf	Wind	Wet/Dry	RH	Sky	Dew
PPI	6-1	2 pm	78 F/ 72 F	moist	SW 1-3	74F/78F	84%	100%	N
PRT	6-1	2:20pm	78 F/ 72 F	moist	SW 1-3	74F/78F	84%	100%	N
POT	6-1	5:30pm	82 F/ 75 F	moist	SW 5-8	74F/82F	70%	50% cloud	N
PO1	6-28	9 am	75 F/ 75 F	moist	calm	72F/75F	87%	80% cloud	Y

Crop and Weed Information at Application

Date	Crop or Weed	Height or Diameter	Number of Leaves	Density
6-28	Pepper	4-6"	8-10	poor
	Tomato	10-12"	many	good
	COLQ	3-4"	many	few
	RRPW	3-4"	8-10	few

Notes and Comments

1. Sprays applied with 4-nozzle boom FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack.
2. Crop and weed injury ratings on scale of 1-10: 1 = no injury, 10 = complete kill or none present.
3. Harvest: Pepper - 8-24, 9-7, 9-20-99; Tomato - 8-30, 9-7, 9-13, 9-20, 9-27, 10-4, 10-11-99.

Weed Control in Pepper and Tomato - HTRC

Trial ID: WC 101-99-01 **Location: East Lansing, MI**

Trt No.	Treatment Name	Form Amt	Fm Ds	Rate lb ai/A	Grow Stg	PEPPER RATING 6-28-99	TOMATO RATING 6-28-99	COLQ RATING 6-28-99	COPU RATING 6-28-99	RRPW RATING 6-28-99	WIRA RATING 6-28-99	PEPPER RATING 7-5-99	TOMATO RATING 7-5-99
1	Treflan	4	EC	1	PPI	1.0	1.3	1.0	1.0	1.0	1.0	1.7	1.7
2	Treflan	4	EC	1	PPI	6.7	2.3	7.3	7.7	9.3	8.3	6.0	2.0
	Sencor	75	DF	0.5	PPI								
3	Dual	8	EC	2	POT	4.0	3.0	7.0	9.7	10.0	10.0	5.0	2.7
4	Dual Magnum	7.6	EC	1.33	POT	2.7	1.7	6.3	10.0	10.0	10.0	3.3	1.3
5	Dual II Magnum	7.6	EC	1.33	POT	2.7	2.7	9.0	10.0	9.7	9.7	4.0	3.0
6	Frontier X2	6	EC	0.98	POT	2.7	2.3	9.7	10.0	10.0	10.0	4.3	2.7
7	Valor	50	WP	0.047	PRT	3.0	2.3	9.0	10.0	9.7	10.0	3.7	1.7
8	Shadeout	25	DF	0.031	POT	3.7	1.7	6.0	10.0	9.3	10.0	5.3	1.7
	Shadeout	25	DF	0.024	PO1								
9	Dual Magnum	7.6	EC	1.33	POT	3.3	1.7	6.3	10.0	10.0	10.0	5.0	2.0
	Shadeout	25	DF	0.031	PO1								
10	Dual Magnum	7.6	EC	1.33	POT	1.7	2.7	1.7	10.0	10.0	10.0	3.0	2.3
	Permit	75	WG	0.047	PO1								
	NIS	L		0.25% v/v	PO1								
11	Dual Magnum	7.6	EC	1.33	POT	1.3	2.3	3.7	10.0	10.0	10.0	3.3	3.0
	Tough	3.75	EC	0.9	PO1								
	NIS	L		0.25% v/v	PO1								
12	FOE 5043	60	DF	0.68	POT	6.3	3.3	7.3	10.0	9.7	10.0	6.7	4.3
13	Axiom	68	DF	0.77	POT	10.0	9.0	10.0	10.0	10.0	10.0	10.0	8.7
14	Treflan	4	EC	1	PPI	1.7	4.0	5.7	10.0	7.0	10.0	3.0	4.0
	Command	4	EC	0.5	PPI								
15	Treflan	4	EC	1	PPI	1.0	3.7	10.0	10.0	10.0	10.0	1.3	3.3
	Command	3	ME	0.5	PRT								
LSD (P=.05)						3.00	1.45	5.17	1.74	1.93	1.28	2.61	1.61
Standard Deviation						1.79	0.87	3.09	1.04	1.16	0.77	1.56	0.96
CV						52.08	29.57	46.42	11.32	12.78	8.26	35.62	32.49

Trt No.	Treatment Name	Form Amt	Fm Ds	Rate lb ai/A	Grow Stg	GRFT RATING 7-5-99	COLQ RATING 7-5-99	COPU RATING 7-5-99	LATH RATING 7-5-99	RRPW RATING 7-5-99	SHPU RATING 7-5-99	PEPPER No. LIVE PLANTS 8-24-99	TOMATO No. LIVE PLANTS 8-24-99
1	Treflan	4	EC	1	PPI	6.3	3.7	6.0	7.0	7.3	5.7	16.3	15.7
2	Treflan	4	EC	1	PPI	9.3	8.3	9.0	9.0	10.0	10.0	5.3	15.0
	Sencor	75	DF	0.5	PPI								
3	Dual	8	EC	2	POT	10.0	8.0	10.0	9.3	10.0	10.0	14.0	16.7
4	Dual Magnum	7.6	EC	1.33	POT	10.0	6.3	10.0	10.0	10.0	10.0	16.3	17.0
5	Dual II Magnum	7.6	EC	1.33	POT	10.0	8.0	10.0	10.0	10.0	10.0	16.0	14.7
6	Frontier X2	6	EC	0.98	POT	10.0	10.0	10.0	10.0	10.0	10.0	16.7	15.7
7	Valor	50	WP	0.047	PRT	10.0	8.7	10.0	10.0	9.7	10.0	15.3	13.3
8	Shadeout	25	DF	0.031	POT	10.0	9.0	10.0	10.0	10.0	10.0	9.7	16.7
	Shadeout	25	DF	0.024	PO1								
9	Dual Magnum	7.6	EC	1.33	POT	10.0	8.0	10.0	10.0	10.0	10.0	14.0	15.3
	Shadeout	25	DF	0.031	PO1								
10	Dual Magnum	7.6	EC	1.33	POT	10.0	6.7	10.0	10.0	10.0	10.0	16.3	14.7
	Permit	75	WG	0.047	PO1								
	NIS	L		0.25% v/v	PO1								
11	Dual Magnum	7.6	EC	1.33	POT	10.0	9.7	10.0	10.0	10.0	10.0	17.3	15.0
	Tough	3.75	EC	0.9	PO1								
	NIS	L		0.25% v/v	PO1								
12	FOE 5043	60	DF	0.68	POT	10.0	8.3	10.0	10.0	10.0	10.0	7.0	13.7
13	Axiom	68	DF	0.77	POT	10.0	10.0	10.0	10.0	10.0	10.0	0.3	5.3
14	Treflan	4	EC	1	PPI	10.0	7.0	9.7	8.7	7.3	9.7	15.7	15.7
	Command	4	EC	0.5	PPI								
15	Treflan	4	EC	1	PPI	10.0	10.0	10.0	10.0	10.0	10.0	16.7	16.7
	Command	3	ME	0.5	PRT								
LSD (P=.05)						1.15	2.51	1.89	1.52	1.33	1.39	5.98	2.39
Standard Deviation						0.69	1.50	1.13	0.91	0.80	0.83	3.58	1.43
CV						7.06	18.54	11.73	9.48	8.29	8.60	27.25	9.69

Weed Control in Pepper and Tomato - HTRC

Trial ID: WC 101-99-01 **Location: East Lansing, MI**

Trt No.	Treatment Name	Fm Amt	Fm Ds	Rate lb ai/A	Grow Stg	PEPPER YIELD No./PLOT 8-24-99	PEPPER YIELD KG/PLOT 8-24-99	PEPPER YIELD No./PLOT 9-7-99	PEPPER YIELD KG/PLOT 9-7-99	PEPPER YIELD No./PLOT 9-20-99	PEPPER YIELD KG/PLOT 9-20-99	PEPPER TOTAL YIELD No/PLT	PEPPER TOTAL YIELD KG/PLT
1	Treflan	4	EC	1	PPI	19.3	3.2	24.7	3.99	26.33	4.05	70.33	11.27
2	Treflan	4	EC	1	PPI	15.3	2.8	11.7	1.96	5.00	0.88	32.00	5.67
	Sencor	75	DF	0.5	PPI								
3	Dual	8	EC	2	POT	13.0	2.2	18.7	3.09	22.33	3.56	54.00	8.80
4	Dual Magnum	7.6	EC	1.33	POT	23.3	3.8	32.3	5.42	25.00	4.03	80.67	13.20
5	Dual II Magnum	7.6	EC	1.33	POT	21.0	3.7	31.0	5.37	26.67	4.22	78.67	13.27
6	Frontier X2	6	EC	0.98	POT	19.0	3.2	32.3	5.51	26.67	3.91	78.00	12.66
7	Valor	50	WP	0.047	PRT	21.3	3.6	33.0	5.73	33.33	5.09	87.67	14.45
8	Shadeout	25	DF	0.031	POT	13.0	2.0	15.0	2.52	16.67	2.41	44.67	6.95
	Shadeout	25	DF	0.024	PO1								
9	Dual Magnum	7.6	EC	1.33	POT	21.7	3.6	23.0	4.09	21.00	3.16	65.67	10.88
	Shadeout	25	DF	0.031	PO1								
10	Dual Magnum	7.6	EC	1.33	POT	16.7	2.7	26.3	4.51	33.00	5.60	76.00	12.82
	Permit	75	WG	0.047	PO1								
	NIS	L		0.25% v/v	PO1								
11	Dual Magnum	7.6	EC	1.33	POT	9.0	1.5	37.7	6.51	32.67	5.18	79.33	13.19
	Tough	3.75	EC	0.9	PO1								
	NIS	L		0.25% v/v	PO1								
12	FOE 5043	60	DF	0.68	POT	11.0	1.7	8.7	1.39	12.33	1.88	32.00	5.00
13	Axiom	68	DF	0.77	POT	0.3	0.1	1.0	0.14	1.00	0.16	2.33	0.35
14	Treflan	4	EC	1	PPI	38.0	6.3	34.7	5.90	27.33	4.60	100.00	16.81
	Command	4	EC	0.5	PPI								
15	Treflan	4	EC	1	PPI	54.0	9.4	46.0	8.54	39.67	6.78	139.67	24.67
	Command	3	ME	0.5	PRT								
LSD (P=.05)						14.65	2.72	10.18	1.87	18.73	3.00	34.93	6.19
Standard Deviation						8.76	1.63	6.09	1.12	11.20	1.80	20.89	3.70
CV						44.39	48.94	24.28	25.89	48.15	48.52	30.69	32.68

Trt No.	Treatment Name	Form Amt	Fm Ds	Rate lb ai/A	Grow Stg	TOMATO YIELD KG/PLOT 8-30-99	TOMATO YIELD KG/PLOT 9-7-99	TOMATO YIELD KG/PLOT 9-13-99	TOMATO YIELD KG/PLOT 9-20-99	TOMATO YIELD KG/PLOT 9-27-99	TOMATO YIELD KG/PLOT 10-4-99	TOMATO YIELD KG/PLOT 10-11-99	TOMATO TOTAL YIELD KG/PLOT
1	Treflan	4	EC	1	PPI	7.02	5.50	11.46	13.47	12.65	14.27	4.27	68.63
2	Treflan	4	EC	1	PPI	6.16	8.05	21.54	22.52	19.17	16.19	4.27	97.89
	Sencor	75	DF	0.5	PPI								
3	Dual	8	EC	2	POT	1.87	7.42	18.23	16.08	12.31	17.07	6.43	79.40
4	Dual Magnum	7.6	EC	1.33	POT	4.49	11.03	23.51	17.32	11.78	14.42	3.50	86.05
5	Dual II Magnum	7.6	EC	1.33	POT	3.01	6.13	14.92	11.92	13.04	15.88	6.57	71.47
6	Frontier X2	6	EC	0.98	POT	7.77	7.48	13.09	11.23	10.20	15.77	4.11	69.66
7	Valor	50	WP	0.047	PRT	15.51	11.50	17.67	19.07	11.89	11.86	4.07	91.58
8	Shadeout	25	DF	0.031	POT	16.22	17.56	19.04	20.40	18.00	13.17	4.39	108.78
	Shadeout	25	DF	0.024	PO1								
9	Dual Magnum	7.6	EC	1.33	POT	7.04	13.97	27.27	16.84	13.97	18.66	5.89	103.65
	Shadeout	25	DF	0.031	PO1								
10	Dual Magnum	7.6	EC	1.33	POT	8.49	11.94	16.04	16.94	17.41	16.99	6.10	93.91
	Permit	75	WG	0.047	PO1								
	NIS	L		0.25% v/v	PO1								
11	Dual Magnum	7.6	EC	1.33	POT	0.76	2.25	18.12	17.03	15.59	18.57	8.88	81.21
	Tough	3.75	EC	0.9	PO1								
	NIS	L		0.25% v/v	PO1								
12	FOE 5043	60	DF	0.68	POT	2.02	4.37	10.97	11.19	14.91	13.59	6.14	63.20
13	Axiom	68	DF	0.77	POT	0.16	0.43	1.56	1.77	2.53	10.03	1.71	18.18
14	Treflan	4	EC	1	PPI	4.56	5.05	24.66	19.67	21.15	18.03	4.81	97.93
	Command	4	EC	0.5	PPI								
15	Treflan	4	EC	1	PPI	6.02	6.27	18.32	16.48	13.85	15.87	5.04	81.86
	Command	3	ME	0.5	PRT								
LSD (P=.05)						8.56	7.72	9.95	6.84	6.59	8.06	3.60	27.22
Standard Deviation						5.12	4.62	5.95	4.09	3.94	4.82	2.15	16.28
CV						84.32	58.20	34.82	26.47	28.38	31.39	42.39	20.12

Weed Control in Dormant Strawberry - HTRC

Trial ID: WC 124-99-01 **Location: East Lansing, MI**

Personnel: Bernard H. Zandstra, Joseph G. Masabni
Crop: Strawberry **Variety: Jewell (Nourse)** **Field or Block: 24**
Planting Method: Transplant **Planting Date: 4-21-98** **Harvest: see Notes**
Spacing: 2 ft **Row Spacing: 6 ft** **Perennial Age: 1st year**
Tillage Type: Conventional **Study Design: RCBD** **Replications: 3**
Plot Size: 6 ft wide * 20 ft long

Soil Type: Spinks Loamy Sand **OM: 2.1%** **pH: 6.5**
Sand: 86% **Silt: 6%** **Clay: 8%** **CEC: 6.7**

Herbicide Application Information

Timing	Date	Time	Air/Soil T	Soil Surf	Wind	Wet/Dry RH	Sky	Dew
drmt98	11-18	3:30pm	52 F/ 45 F	dry	SE 6-8	48F/52F 74%	clear	N

Notes and Comments
1. Sprays applied with 4-nozzle boom FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack.
2. Crop and weed injury ratings on scale of 1-10: 1 = no injury, 10 = complete kill or none present.
3. 4-7-99: Sinbar 0.3 applied to whole experiment.
4. Harvest dates: 6-7, 6-8, 6-10, 6-14-99.

Trt No.	Treatment Name	Form Amt	Fm Ds	Rate lb ai/A	Grow Stg	STBE RATING 5-20-99	ANBG RATING 5-20-99	COCW RATING 5-20-99	COGR RATING 5-20-99	GFPW RATING 5-20-99	MWCH RATING 5-20-99	STBE RATING 6-7-99	COCW RATING 6-7-99
1	napropramide	50	DF	4	DMT	2.7	9.7	10.0	10.0	3.7	10.0	2.3	9.3
2	terbacil	80	WP	0.3	DMT	3.0	9.7	10.0	9.3	4.3	9.0	3.0	9.7
3	metolachlor	8	EC	1	DMT	3.0	6.7	2.3	4.7	2.3	10.0	2.7	3.7
4	sulfentrazone	75	DF	0.25	DMT	3.3	5.3	4.3	10.0	6.0	8.7	3.3	5.3
5	norflurazon	80	DF	2	DMT	3.7	9.7	8.7	10.0	6.0	3.7	3.7	7.3
6	acifluorfen	2	EC	0.5	DMT	3.0	1.7	1.3	10.0	8.3	10.0	3.3	2.3
7	oxyfluorfen	1.6	EC	0.5	DMT	4.0	9.7	7.7	10.0	4.3	10.0	4.0	6.7
8	Untreated				DMT	2.3	0.8	1.0	6.7	3.0	7.0	3.0	2.3
LSD (P=.05)						1.27	4.23	2.92	4.13	4.25	4.00	1.30	3.18
Standard Deviation						0.73	2.40	1.67	2.36	2.43	2.28	0.74	1.82
CV						23.29	36.13	29.45	26.71	51.05	26.73	23.50	31.16

Trt No.	Treatment Name	Form Amt	Fm Ds	Rate lb ai/A	Grow Stg	GFPW RATING 6-7-99	MWCH RATING 6-7-99	WHCA RATING 6-7-99	STBE YIELD KG/PLOT 6-7-99	STBE YIELD KG/PLOT 6-8-99	STBE YIELD KG/PLOT 6-10-99	STBE YIELD KG/PLOT 6-14-99	STBE TOTAL YIELD KG/PLOT
1	napropramide	50	DF	4	DMT	3.3	8.3	10.0	1.41	0.56	1.83	2.69	6.49
2	terbacil	80	WP	0.3	DMT	4.3	6.3	10.0	1.23	0.41	1.38	2.42	5.43
3	metolachlor	8	EC	1	DMT	1.3	5.0	7.3	0.97	0.89	1.86	2.42	6.14
4	sulfentrazone	75	DF	0.25	DMT	3.3	6.3	10.0	1.25	0.51	1.57	2.15	5.48
5	norflurazon	80	DF	2	DMT	6.0	6.3	10.0	1.65	0.57	1.29	1.66	5.17
6	acifluorfen	2	EC	0.5	DMT	5.3	9.0	10.0	1.39	0.85	1.58	2.25	6.07
7	oxyfluorfen	1.6	EC	0.5	DMT	5.0	10.0	10.0	1.51	0.59	1.51	2.31	5.92
8	Untreated				DMT	1.7	5.0	10.0	1.34	0.64	1.92	3.09	6.99
LSD (P=.05)						3.79	4.27	2.86	0.79	0.34	0.73	1.45	2.44
Standard Deviation						2.17	2.44	1.63	0.45	0.20	0.42	0.83	1.40
CV						57.12	34.60	16.89	33.76	31.27	25.72	34.79	23.40

Weed Control in First Year Strawberry - HTRC - 1998 - 1999

Trial ID: WC 124-98+99-02 **Location:** East Lansing, MI

Personnel: Bernard H. Zandstra, Joseph G. Masabni
Crop: Strawberry **Variety:** Jewell (Nourse) **Field or Block:** 24
Planting Method: Transplant **Planting Date:** 4-21-98 **Harvest:** see Notes
Spacing: 2 ft **Row Spacing:** 6 ft
Tillage Type: Conventional **Study Design:** RCBD **Replications:** 3
Plot Size: 6 ft wide * 20 ft long

Soil Type: Spinks Loamy Sand **OM:** 2.1% **pH:** 6.5
Sand: 86% **Silt:** 6% **Clay:** 8% **CEC:** 6.7

Herbicide Application Information

Timing	Date	Time	Air/Soil T	Soil Surf	Wind	Wet/Dry	RH	Sky	Dew
POT98	4-22	10 am	61 F/ 49 F	dry	NE 1-3	48F/61F	34%	clear	N
PO198	6-9	10 am	64 F/ 60 F	dry	NE 4-6	58F/64F	70%	100%	N

Crop and Weed Information at Application

Date	Crop or Weed	Height or Diameter	Number of Leaves	Density
6-9-98	Strawberry	5-6"	10-15	good
	QUGR	6-10"	many	few
	COLQ	3-5"	4-10	moderate
	MWCH	2-3"	4-6	moderate
	WIBW	1-3"	2-4	few
	RRPW	1-3"	4-6	moderate

Notes and Comments
1. Sprays applied with 4-nozzle boom FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack.
2. Crop and weed injury ratings on scale of 1-10: 1 = no injury, 10 = complete kill or none present.
3. 4-22-98: south guard sprayed with Visor, and north guard with Dimension.
4. Harvest dates: 6-7, 6-8, 6-10, 6-14-99.
5. Plot was handweeded in 1999.

Weed Control in First Year Strawberry - HTRC - 1998 - 1999

Trial ID: WC 124-98+99-02 Location: East Lansing, MI

Trt No.	Treatment Name	Form Amt	Fm Ds	Rate lb ai/A	Grow Stg	STBE Rating 5-5-99	STBE Rating 6-7-99	COCW RATING 6-7-99	GFPW RATING 6-7-99	MWCH RATING 6-7-99	WHCA RATING 6-7-99
1	napropramide	50	DF	4	POT	3.7	3.3	9.7	5.0	3.7	10.0
2	s-metolachlor	7.6	EC	1.3	POT	4.0	3.7	8.7	5.7	5.3	7.7
3	sulfentrazone	75	DF	0.25	POT	3.7	3.0	5.3	4.7	4.0	10.0
4	clomazone	3	ME	0.25	POT	3.3	3.7	7.3	6.7	3.7	10.0
5	dimethenamid	6	EC	1.5	POT	5.3	5.0	6.7	4.0	4.7	10.0
6	pendimethalin	3.3	EC	1.0	POT	2.7	2.7	7.3	7.7	7.3	7.7
7	Untreated				POT	4.7	4.7	6.0	6.3	4.3	10.0
	clopyralid	3	EC	0.188	PO1						
	sethoxydim	1.53	EC	0.19	PO1						
	COC	L		1% v/v	PO1						
8	Untreated Control					4.3	3.3	7.0	5.3	6.3	10.0
LSD (P=.05)						3.11	3.03	4.86	3.65	3.25	3.66
Standard Deviation						1.77	1.73	2.77	2.08	1.86	2.09
CV						44.83	47.19	38.27	36.74	37.79	22.21

Trt No.	Treatment Name	Form Amt	Fm Ds	Rate lb ai/A	Grow Stg	STBE YIELD KG/PLOT 6-7-99	STBE YIELD KG/PLOT 6-8-99	STBE YIELD KG/PLOT 6-10-99	STBE YIELD KG/PLOT 6-14-99	STBE TOTAL YIELD KG/PLOT
1	napropramide	50	DF	4	POT	0.71	0.72	0.85	1.22	3.49
2	s-metolachlor	7.6	EC	1.3	POT	1.07	0.87	0.55	0.97	3.46
3	sulfentrazone	75	DF	0.25	POT	0.87	0.52	0.39	1.02	2.80
4	clomazone	3	ME	0.25	POT	1.17	0.37	0.75	0.69	2.99
5	dimethenamid	6	EC	1.5	POT	0.69	0.36	0.21	0.50	1.76
6	pendimethalin	3.3	EC	1.0	POT	1.39	1.08	0.89	1.86	5.21
7	Untreated				POT	0.85	0.52	0.41	1.02	2.80
	clopyralid	3	EC	0.188	PO1					
	sethoxydim	1.53	EC	0.19	PO1					
	COC	L		1% v/v	PO1					
8	Untreated Control					0.89	0.34	0.80	1.13	3.17
LSD (P=.05)						0.58	0.47	0.65	0.78	1.68
Standard Deviation						0.33	0.27	0.37	0.44	0.96
CV						34.62	45.05	61.47	42.19	29.81

Weed Control in Established Strawberry - HTRC

Trial ID: WC 124-99-03 **Location: East Lansing, MI**

Personnel: Bernard H. Zandstra, Joseph G. Masabni
Crop: Strawberry **Variety: Jewell (Nourse)** **Field or Block: 24**
Planting Method: Transplant **Planting Date: 4-21-98** **Harvest: see Notes**
Spacing: Matted Row **Row Spacing: 6 ft** **Perennial Age: 1 year**
Tillage Type: Conventional **Study Design: RCBD** **Replications: 3**
Plot Size: 6 ft wide * 20 ft long

Soil Type: Spinks Loamy Sand **OM: 2.1%** **pH: 6.5**
Sand: 86% **Silt: 6%** **Clay: 8%** **CEC: 6.7**

Herbicide Application Information

Timing	Date	Time	Air/Soil T	Soil Surf	Wind	Wet/Dry	RH	Sky	Dew
PRE99	4-7	11 am	54 F/ 46 F	damp	SW 5-7	50F/54F	75%	clear	N
PO1	5/21	3:15 pm	80 F/ 74 F	dry	SW 5-7	65F/80F	44%	80% cloud	N

Crop and Weed Information at Application

Date	Crop or Weed	Height or Diameter	Number of Leaves	Density
4-7-99	Strawberry	6-10"	many	good
5-21-99	Strawberry	8-10"	many	good
	ANBG	5-6"	many	moderate
	COCW	8-12"	many	moderate
	COGR	4-6"	10-12	few
	MWCH	3-6"	10-12	moderate
	WHCA	6-10"	8-10	moderate

Notes and Comments
1. Sprays applied with 4-nozzle boom FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack.
2. Crop and weed injury ratings on scale of 1-10: 1 = no injury, 10 = complete kill or none present.
3. Straw removed on 4-5-99.
4. Harvest dates: 6-7, 6-8, 6-10, 6-14-99.

Weed Control in Established Strawberry - HTRC

Trial ID: WC 124-99-03 **Location: East Lansing, MI**

Trt No.	Treatment Name	Form Amt	Fm Ds	Rate lb ai/A	Grow Stg	STBE RATING 5-20-99	ANBG RATING 5-20-99	COCW RATING 5-20-99	COGR RATING 5-20-99	MWCH RATING 5-20-99	WHCA RATING 5-20-99	STBE RATING 6-7-99
1	terbacil	80	WP	0.3	PRE	3.3	10.0	10.0	10.0	10.0	9.0	2.3
2	s-metolachlor	7.6	EC	1.3	PRE	2.7	1.0	4.7	3.7	6.7	7.3	3.3
3	dimethenamid	6	EC	0.8	PRE	2.7	3.0	5.7	7.3	10.0	10.0	3.0
4	acifluorfen	2	EC	0.4	PRE	2.7	1.7	3.0	10.0	8.3	7.7	3.0
5	oxyfluorfen	2	EC	0.4	PRE	2.7	3.7	1.7	9.0	10.0	10.0	3.7
6	sulfentrazone	75	DF	0.25	PRE	2.7	4.3	5.7	10.0	9.7	10.0	2.0
7	sulfentrazone	75	DF	0.375	PRE	3.0	4.3	5.3	10.0	10.0	7.7	2.3
8	sulfentrazone	75	DF	0.5	PRE	5.0	7.3	6.7	10.0	10.0	10.0	4.0
9	azafenidin	80	DF	0.5	PRE	6.0	10.0	4.7	10.0	9.7	7.0	5.3
10	napropramide	50	DF	4	PRE	3.0	2.3	9.0	6.3	7.7	8.0	3.0
	clopyralid	3	EC	0.19	PO1							
	sethoxydim	1.53	EC	0.38	PO1							
	COC		L	1% v/v	PO1							
LSD (P=.05)						2.02	2.75	5.66	2.35	3.32	5.18	1.89
Standard Deviation						1.18	1.60	3.30	1.37	1.94	3.02	1.10
CV						34.96	33.66	58.61	15.86	21.05	34.84	34.50

Trt No.	Treatment Name	Form Amt	Fm Ds	Rate lb ai/A	Grow Stg	COCW RATING 6-7-99	GFPW RATING 6-7-99	MWCH RATING 6-7-99	WHCA RATING 6-7-99	STBE YIELD KG/PLOT 6-7-99	STBE YIELD KG/PLOT 6-8-99	STBE YIELD KG/PLOT 6-10-99	STBE YIELD KG/PLOT 6-14-99	STBE TOTAL YIELD KG/PLOT
1	terbacil	80	WP	0.3	PRE	10.0	9.0	9.3	10.0	1.77	0.63	2.05	2.41	6.87
2	s-metolachlor	7.6	EC	1.3	PRE	4.3	1.7	5.3	3.7	1.44	0.76	1.63	2.41	6.24
3	dimethenamid	6	EC	0.8	PRE	6.3	3.7	7.7	9.3	1.46	0.65	1.27	1.77	5.15
4	acifluorfen	2	EC	0.4	PRE	3.7	8.0	8.7	6.3	1.08	0.48	1.77	2.55	5.87
5	oxyfluorfen	2	EC	0.4	PRE	3.0	3.7	4.7	8.3	1.40	0.57	1.90	2.54	6.41
6	sulfentrazone	75	DF	0.25	PRE	5.7	7.0	8.7	9.3	1.32	0.79	1.89	3.26	7.26
7	sulfentrazone	75	DF	0.375	PRE	8.7	8.7	7.7	8.0	1.32	0.85	2.17	2.67	7.01
8	sulfentrazone	75	DF	0.5	PRE	9.0	9.7	9.0	10.0	0.89	0.30	0.99	1.39	3.57
9	azafenidin	80	DF	0.5	PRE	5.0	9.3	9.3	6.3	0.45	0.32	0.77	1.25	2.79
10	napropramide	50	DF	4	PRE	7.7	2.0	8.3	9.3	0.80	0.61	2.11	3.50	7.03
	clopyralid	3	EC	0.19	PO1									
	sethoxydim	1.53	EC	0.38	PO1									
	COC		L	1% v/v	PO1									
LSD (P=.05)						4.82	1.66	2.82	4.15	1.00	0.44	1.11	1.62	3.17
Standard Deviation						2.81	0.97	1.65	2.42	0.58	0.26	0.65	0.94	1.85
CV						44.34	15.48	20.92	30.00	48.70	43.39	38.95	39.65	31.71

Weed Control in Apple - HTRC

Trial ID: WC 125-99-01 **Location: East Lansing, MI**

Personnel: Bernard H. Zandstra, Joseph G. Masabni
Crop: Apple **Varieties: Several** **Field or Block: 141-142**
Planting Method: N/A **Planting Date: 1987** **Harvest: N/A**
Spacing: 20 ft in row **Row Spacing: 25 ft** **Perennial Age: 12 years**
Tillage Type: None **Study Design: RCBD** **Replications: 3**
Plot Size: 2 trees/plot, spray 64" band on each side of row

Soil Type: Marlette Fine Sandy Loam OM: 1% pH: 6.8
Sand: 59% Silt: 22% Clay: 19% CEC: 9.6

Herbicide Application Information

Timing	Date	Time	Air/Soil T	Soil Surf	Wind	Wet/Dry	RH	Sky	Dew
PO1	5-6	10:30am	69 F/ 59 F	dry	SE 6-8	64F/69F	76%	100%cloud	N
PO2	7-13	2 pm	87 F/ 75 F	dry	SW 1-3	73F/87F	52%	50% cloud	N

Crop and Weed Information at Application

Date	Crop or Weed	Height or Diameter	Number of Leaves	Density
5-6-99	Apple	late bloom	-	good
	DAND	4-6"	many	moderate
	GFPW	3-4"	4-6	moderate
	MATA	2-3"	8-10	moderate
	QUGR	6-8"	many	moderate
7-13-99	Apple	fruit 2-3"		good
	QUGR	6-12"	many	moderate
	DAND	3-10"	4-10	moderate
	GFPW	6-12"	many	moderate
	MATA	6-24"	many	moderate
	ROFB	12-24"	many	moderate
	WHCA	12-24"	many	moderate

Notes and Comments

1. Sprays applied with 4-nozzle boom FF8002, 20 gpa, 30 psi, 3.2 mph, CO_2 backpack.
2. Crop and weed injury ratings on scale of 1-10: 1 = no injury, 10 = complete kill or none present.
3. Trees are 25 ft apart E-W, and 20 ft apart N-S. Plots consisted of 2 mature trees, running N-S. Plot located in NE corner of field.

Weed Control in Apple - HTRC

Trial ID: WC 125-99-01 **Location: East Lansing, MI**

Trt No.	Treatment Name	Form Amt	Fm Ds	Rate lb ai/A	Grow Stg	APPLE RATING 7-2-99	ANBG RATING 7-2-99	QUGR RATING 7-2-99	DAND RATING 7-2-99	MATA RATING 7-2-99	GFPW RATING 7-2-99	ROFB RATING 7-2-99	APPLE RATING 8-17-99	QUGR RATING 8-17-99
1	azafenidin	80	DF	0.375	PO1	1.0	8.3	5.7	3.7	6.0	4.0	6.3	1.0	7.3
	glyphosate	4	L	1	PO1									
	glyphosate	4	L	1	PO2									
	NIS		L	0.5% v/v	PO2									
2	azafenidin	80	DF	0.5	PO1	1.0	9.7	7.7	6.0	6.7	5.3	10.0	1.0	9.3
	glyphosate	4	L	1	PO1									
	glyphosate	4	L	1	PO2									
	NIS		L	0.5% v/v	PO2									
3	azafenidin	80	DF	0.75	PO1	1.0	9.3	5.7	6.3	7.7	7.3	7.3	1.3	9.3
	glyphosate	4	L	1	PO1									
	glyphosate	4	L	1	PO2									
	NIS		L	0.5% v/v	PO2									
4	azafenidin	80	DF	0.375	PO1	1.0	8.3	5.0	4.3	8.3	7.3	6.0	1.3	6.7
	glyphosate	4	L	1	PO1									
	azafenidin	80	DF	0.25	PO2									
	glyphosate	4	L	1	PO2									
	NIS		L	0.5% v/v	PO2									
5	azafenidin	80	DF	0.5	PO1	1.0	8.0	3.7	4.7	7.3	3.7	6.3	1.7	7.0
	glyphosate	4	L	1	PO1									
	azafenidin	80	DF	0.25	PO2									
	glyphosate	4	L	1	PO2									
	NIS		L	0.5% v/v	PO2									
6	azafenidin	80	DF	0.75	PO1	1.0	10.0	8.7	8.3	8.0	8.3	10.0	1.0	9.7
	glyphosate	4	L	1	PO1									
	azafenidin	80	DF	0.25	PO2									
	glyphosate	4	L	1	PO2									
	NIS		L	0.5% v/v	PO2									
7	diuron	80	DF	3.2	PO1	1.0	8.0	6.7	5.0	7.7	8.3	10.0	1.0	7.7
	oryzalin	4	AS	2	PO1									
	glyphosate	4	L	1	PO1									
	glyphosate	4	L	1	PO2									
	NIS		L	0.5% v/v	PO2									
LSD (P=.05)						0.00	1.92	4.59	4.86	2.90	2.01	5.34	0.94	2.68
Standard Deviation						0.00	1.08	2.58	2.73	1.63	1.13	3.00	0.53	1.50
CV						0.00	12.26	41.96	49.88	22.06	17.85	37.50	44.27	18.47

Weed Control in Apple - HTRC

Trial ID: WC 125-99-01 **Location: East Lansing, MI**

No	Trt Name	Form Amt	Fm Ds	Rate lb ai/A	Grow Stg	DAND RATING 8-17-99	MATA RATING 8-17-99	ROFB RATING 8-17-99	APPLE RATING 9-16-99	ANBG RATING 9-16-99	QUGR RATING 9-16-99	DAND RATING 9-16-99	MATA RATING 9-16-99	ROFB RATING 9-16-99
1	azafenidin	80	DF	0.375	PO1	6.0	6.3	8.3	1.0	8.3	7.7	7.7	9.0	8.3
	glyphosate	4	L	1	PO1									
	glyphosate	4	L	1	PO2									
	NIS		L	0.5% v/v	PO2									
2	azafenidin	80	DF	0.5	PO1	6.7	6.7	10.0	1.0	9.7	9.0	8.7	7.7	10.0
	glyphosate	4	L	1	PO1									
	glyphosate	4	L	1	PO2									
	NIS		L	0.5% v/v	PO2									
3	azafenidin	80	DF	0.75	PO1	7.0	7.7	10.0	1.0	9.3	9.0	8.3	8.3	10.0
	glyphosate	4	L	1	PO1									
	glyphosate	4	L	1	PO2									
	NIS		L	0.5% v/v	PO2									
4	azafenidin	80	DF	0.375	PO1	6.3	8.3	9.0	1.0	5.7	7.0	6.3	8.7	10.0
	glyphosate	4	L	1	PO1									
	azafenidin	80	DF	0.25	PO2									
	glyphosate	4	L	1	PO2									
	NIS		L	0.5% v/v	PO2									
5	azafenidin	80	DF	0.5	PO1	4.7	7.3	7.3	1.0	6.3	8.7	6.3	8.7	8.0
	glyphosate	4	L	1	PO1									
	azafenidin	80	DF	0.25	PO2									
	glyphosate	4	L	1	PO2									
	NIS		L	0.5% v/v	PO2									
6	azafenidin	80	DF	0.75	PO1	8.7	8.0	10.0	1.0	9.3	9.7	9.7	9.7	10.0
	glyphosate	4	L	1	PO1									
	azafenidin	80	DF	0.25	PO2									
	glyphosate	4	L	1	PO2									
	NIS		L	0.5% v/v	PO2									
7	diuron	80	DF	3.2	PO1	5.7	7.3	10.0	1.0	7.0	8.3	6.7	8.7	10.0
	oryzalin	4	AS	2	PO1									
	glyphosate	4	L	1	PO1									
	glyphosate	4	L	1	PO2									
	NIS		L	0.5% v/v	PO2									
LSD (P=.05)						2.70	1.81	3.51	0.00	2.95	2.91	3.87	1.73	3.15
Standard Deviation						1.52	1.02	1.97	0.00	1.66	1.63	2.18	0.97	1.77
CV						23.60	13.81	21.35	0.00	20.87	19.27	28.39	11.21	18.71

Preemergence Weed Control in Blueberry - HTRC

Project Code:WC 127-99-01 Location :East Lansing, MI

Personnel: Bernard H. Zandstra, Joseph G. Masabni
Crop: Blueberry Variety: Jersey Field or Block: 114
Planting Method: Transplant Planting Date: 1991 Harvest: N/A
Spacing: 5 ft Row Spacing: 10 ft Perennial Age: 8 years
Tillage Type: None Study Design: RCBD Replications: 3
Plot Size: 4 trees or 20 ft

Soil Type: Capac Loam OM: 3.5% pH: 4.5
Sand: 65% Silt: 23% Clay: 12% CEC: 13.2

Herbicide Application Information

Timing	Date	Time	Air/Soil T	Soil Surf	Wind	Wet/Dry	RH	Sky	Dew
PO1	5-7	10:45am	69 F/ 57 F	dry	SW 7-9	57F/69F	46%	10% cloud	N

Crop and Weed Information at Application

Date	Crop or Weed	Height or Diameter	Number of Leaves	Density
5-7-99	Blueberry	budbreak	-	good
	ANBG	2-3"	many	few
	MATA	2-3"	6-10	few
	DAND	bloom	many	moderate

Notes and Comments
1. Sprays applied with 4-nozzle boom FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack.
2. Crop and weed injury ratings on scale of 1-10: 1 = no injury, 10 = complete kill or none present.
3. Herbicide treatments were applied after some weeds had emerged. For that reason the application was considered POST rather than PRE.

Preemergence Weed Control in Blueberry - HTRC

Project Code:WC 127-99-01 **Location :East Lansing, MI**

Trt No	Treatment Name	Form Amt	Fm Ds	Rate lb ai/A	Grow Stg	BLUEBERRY RATING 7-2-99	QUGR RATING 7-2-99	MATA RATING 7-2-99	WICA RATING 7-2-99	BLUEBERRY RATING 8-17-99	BYGR RATING 8-17-99	MATA RATING 8-17-99
1	Milestone	80	DF	0.25	PO1	1.0	10.0	5.7	7.7	1.0	9.0	6.0
	Roundup	4	L	1.0	PO1							
	NIS		L	0.25% v/v	PO1							
2	Milestone	80	DF	0.5	PO1	1.0	10.0	5.3	9.0	1.0	9.3	5.3
	Roundup	4	L	1.0	PO1							
	NIS		L	0.25% v/v	PO1							
3	Milestone	80	DF	0.75	PO1	1.0	10.0	6.7	10.0	1.0	10.0	6.7
	Roundup	4	L	1.0	PO1							
	NIS		L	0.25% v/v	PO1							
4	Milestone	80	DF	1.5	PO1	1.0	10.0	6.7	10.0	1.0	10.0	7.0
	Roundup	4	L	1.0	PO1							
	NIS		L	0.25% v/v	PO1							
5	Princep	90	WP	4.0	PO1	1.0	9.7	10.0	10.0	1.0	10.0	10.0
	Roundup	4	L	1.0	PO1							
	NIS		L	0.25% v/v	PO1							
6	Roundup	4	L	1.0	PO1	1.0	9.3	7.7	9.3	1.0	6.7	7.0
	NIS		L	0.25% v/v	PO1							
LSD (P=.05)						0.00	1.00	5.16	2.90	0.00	3.50	7.55
Standard Deviation						0.00	0.55	2.83	1.59	0.00	1.92	4.15
CV						0.00	5.57	40.49	17.05	0.00	20.98	59.30

Trt No	Treatment Name	Form Amt	Fm Ds	Rate lb ai/A	Grow Stg	WICA RATING 8-17-99	BLUEBERRY RATING 9-22-99	GORO RATING 9-22-99	MATA RATING 9-22-99	WICA RATING 9-22-99
1	Milestone	80	DF	0.25	PO1	8.3	1.0	7.7	5.7	5.3
	Roundup	4	L	1.0	PO1					
	NIS		L	0.25% v/v	PO1					
2	Milestone	80	DF	0.5	PO1	8.7	1.0	4.7	6.3	7.3
	Roundup	4	L	1.0	PO1					
	NIS		L	0.25% v/v	PO1					
3	Milestone	80	DF	0.75	PO1	10.0	1.0	7.0	6.3	9.0
	Roundup	4	L	1.0	PO1					
	NIS		L	0.25% v/v	PO1					
4	Milestone	80	DF	1.5	PO1	10.0	1.0	6.0	7.7	9.3
	Roundup	4	L	1.0	PO1					
	NIS		L	0.25% v/v	PO1					
5	Princep	90	WP	4.0	PO1	10.0	1.0	9.7	10.0	10.0
	Roundup	4	L	1.0	PO1					
	NIS		L	0.25% v/v	PO1					
6	Roundup	4	L	1.0	PO1	7.7	1.0	3.3	5.7	3.7
	NIS		L	0.25% v/v	PO1					
LSD (P=.05)						3.09	0.00	5.94	6.96	4.34
Standard Deviation						1.70	0.00	3.26	3.83	2.39
CV						18.65	0.00	51.09	55.13	32.04

Weed Control in Cherries - HTRC

Trial ID: WC 125-99-02 **Location: East Lansing, MI**

Personnel: Bernard H. Zandstra, Joseph G. Masabni
Crop: Cherries **Variety: Montmorency** **Field or Block: 13-16**
Planting Method: Transplant **Planting Date: May 1988** **Harvest: N/A**
Spacing: 10 ft **Row Spacing: 15 ft** **Perennial Age: 11 years**
Tillage Type: N/A **Study Design: RCBD** **Replications: 3**
Plot Size: 2 trees/plot, 10 ft wide * 20 ft long

Soil Type: Marlette Fine Sandy Loam **OM: 1.8%** **pH: 4.7**
Sand: 72% **Silt: 17%** **Clay: 11%** **CEC: 8.9**

Herbicide Application Information

Timing	Date	Time	Air/Soil T	Soil Surf	Wind	Wet/Dry	RH	Sky	Dew
PO1	5-7	9:45am	61 F/ 56 F	dry	SW 5-7	57F/61F	78%	10% cloud	N
PO2	7-13	3 pm	84 F/ 74 F	dry	SW 4-6	70F/84F	51%	50% cloud	N

Crop and Weed Information at Application

Date	Crop or Weed	Height or Diameter	Number of Leaves	Density
5-7-99	Cherry	late bloom	-	good
	QUGR	3-5"	many	moderate
	DAND	bloom	many	few
	MATA	4-6"	many	few
7-13-99	Cherry	ripe fruit		good
	GORO	12-18"	many	moderate
	MATA	6-12"	many	few
	WICA	12-24"	many	moderate

Notes and Comments

1. Sprays applied with 4-nozzle boom FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack.
2. Crop and weed injury ratings on scale of 1-10: 1 = no injury, 10 = complete kill or none present.
3. The first application was applied early in the season after early weeds had germinated.

Weed Control in Cherries - HTRC

Trial ID: WC 125-99-02 **Location: East Lansing, MI**

Trt No.	Treatment Name	Form Amt	Fm Ds	Rate lb ai/A	Grow Stg	CHERRY RATING 7-2-99	ANBG RATING 7-2-99	GORO RATING 7-2-99	WICA RATING 7-2-99	CHERRY RATING 8-17-99	QUGR RATING 8-17-99	GORO RATING 8-17-99	MATA RATING 8-17-99
1	azafenidin	80	DF	0.25	PO1	1.0	8.7	5.7	7.0	1.0	8.7	7.7	9.7
	glyphosate	4	L	1	PO1								
2	azafenidin	80	DF	0.5	PO1	1.0	9.3	6.7	8.3	1.0	9.0	7.3	9.7
	glyphosate	4	L	1	PO1								
3	azafenidin	80	DF	0.75	PO1	1.0	9.0	7.7	9.0	1.0	10.0	8.3	9.3
	glyphosate	4	L	1	PO1								
4	azafenidin	80	DF	1.5	PO1	1.0	8.7	6.0	8.7	1.0	10.0	7.7	10.0
	glyphosate	4	L	1	PO1								
5	azafenidin	80	DF	0.25	PO1	1.0	7.0	6.3	6.7	1.0	10.0	9.7	9.7
	glyphosate	4	L	1	PO1								
	azafenidin	80	DF	0.25	PO2								
	paraquat	2.5	L	1	PO2								
	NIS	L		0.5% v/v	PO2								
6	azafenidin	80	DF	0.5	PO1	1.0	9.3	7.7	7.3	1.0	10.0	9.3	9.7
	glyphosate	4	L	1	PO1								
	azafenidin	80	DF	0.25	PO2								
	paraquat	2.5	L	1	PO2								
	NIS	L		0.5% v/v	PO2								
7	simazine	90	DF	4	PO1	1.0	9.3	9.8	9.3	1.0	9.7	10.0	10.0
	glyphosate	4	L	1	PO1								
	paraquat	2.5	L	1	PO2								
	NIS	L		0.5% v/v	PO2								
LSD (P=.05)						0.00	2.22	4.42	3.43	0.00	1.21	2.97	0.90
Standard Deviation						0.00	1.25	2.46	1.93	0.00	0.68	1.67	0.50
CV						0.00	14.23	34.58	23.97	0.00	7.05	19.47	5.19

Trt No.	Treatment Name	Form Amt	Fm Ds	Rate lb ai/A	Grow Stg	WICA RATING 8-17-99	CHERRY RATING 9-22-99	QUGR RATING 9-22-99	GORO RATING 9-22-99	MATA RATING 9-22-99	WICA RATING 9-22-99
1	azafenidin	80	DF	0.25	PO1	9.0	1.0	9.3	6.3	10.0	8.3
	glyphosate	4	L	1	PO1						
2	azafenidin	80	DF	0.5	PO1	9.3	1.0	10.0	6.7	10.0	8.0
	glyphosate	4	L	1	PO1						
3	azafenidin	80	DF	0.75	PO1	9.0	1.0	10.0	8.3	10.0	9.7
	glyphosate	4	L	1	PO1						
4	azafenidin	80	DF	1.5	PO1	8.3	1.0	10.0	7.0	10.0	9.0
	glyphosate	4	L	1	PO1						
5	azafenidin	80	DF	0.25	PO1	9.7	1.0	10.0	9.0	9.3	7.7
	glyphosate	4	L	1	PO1						
	azafenidin	80	DF	0.25	PO2						
	paraquat	2.5	L	1	PO2						
	NIS	L		0.5% v/v	PO2						
6	azafenidin	80	DF	0.5	PO1	9.7	1.0	10.0	9.3	9.3	10.0
	glyphosate	4	L	1	PO1						
	azafenidin	80	DF	0.25	PO2						
	paraquat	2.5	L	1	PO2						
	NIS	L		0.5% v/v	PO2						
7	simazine	90	DF	4	PO1	10.0	1.0	10.0	10.0	10.0	10.0
	glyphosate	4	L	1	PO1						
	paraquat	2.5	L	1	PO2						
	NIS	L		0.5% v/v	PO2						
LSD (P=.05)						1.58	0.00	0.78	3.86	1.14	3.43
Standard Deviation						0.89	0.00	0.44	2.17	0.64	1.93
CV						9.59	0.00	4.41	26.82	6.55	21.50

Apple Herbicide Trials - CHES - 1999

J. Hull

Location: CHES
Soil Type: Loam
Plot Size: 6' X 15'

Cultivar: McIntosh, Red Delicious
Age of Trees: 17 years
Experimental Design: RCB
Replications: 6
Vegetation: quackgrass, groundsel, dandelion, Canada thistle, horseweed, redroot pigweed, common milkweed, burdock.

Herbicide Application information:

Timing	Date	GPA	Air T	Wind
Pink Stage	4-29-99	36	62 F	SW 18-20

TRT No	PESTICIDE COMMON NAME	FORMULATION	lb ai/A	Overall Rating 6-22-99	Overall Rating 9-8-99
1	azafenidin	80 DF	1.5	9.2	8.8
2	terbacil	80 WP	1	9.2	8.7
	diuron	80 DF	2		
3	azafenidin	80 DF	0.75	9.0	8.5
4	azafenidin	80 DF	1.0	9.8	9.5
5	azafenidin	80 DF	0.5	10.0	9.5
	diuron	80 DF	2		
6	azafenidin	80 DF	0.5	9.7	9.2
	simazine	90 DF	3		
7	simazine	90 DF	3	9.5	8.8
	oryzalin	4 AS	2		
8	terbacil	80 WP	1	9.5	9.2
	oryzalin	4 AS	2		
9	terbacil	80 WP	0.5	9.5	9.2
	simazine	90 DF	2		
	oryzalin	4 AS	2		
10	terbacil	80 WP	0.5	9.8	9.5
	simazine	90 DF	2		
	norflurazon	80 DF	2		
11	azafenidin	80 DF	0.5	9.5	9.0
	diuron	80 DF	1.5		
12	diuron	80 DF	2	9.2	8.0
	simazine	90 DF	3		
13	diuron	80 DF	2	9.2	7.7
	oryzalin	4 AS	2		
14	simazine	90 DF	2	8.8	8.3
	norflurazon	80 DF	2		
15	azafenidin	80 DF	0.75	9.0	8.7
	oryzalin	4 AS	2		
16	terbacil	80 WP	1	9.3	8.7
	napropramide	50 DF	2		
17	azafenidin	80 DF	0.75	8.7	8.7
	napropramide	50 DF	2		
18	oryzalin	4 AS	2	9.0	8.2
	isoxaben	75 DF	1		
19	simazine	90 DF	3	8.8	7.3
	napropamide	50 DF	2		
20	azafenidin	4 AS	0.5	8.8	8.0
	norflurazon	80 DF	2		
21	diuron	80 DF	2	8.3	6.2
	napropamide	50 DF	2		
LSD (P=.05)				1.20	1.70
Standard Deviation				0.16	0.22
CV				8.14	11.92

Notes: Glyphosate (1 lb/a) was included with all treatments.

Cherry Herbicide Study - 1999

J. Hull, J. Nugent

Location: Jim Bardenhagen
Route 1, PO Box 44
Suttons Bay, MI 49682

Soil Type: Sandy Loam
Plot Size: 6' X 30'

Cultivar: Montmorency

Age of Trees: 3 years

Experimental Design: RCB

Replications: 3

Herbicide Application information:

Timing	Date	GPA	Air T	Wind
	5-4-99	36	79 F	SSE 12-15

Vegetation: dandelion, pepperweed, horseweed, quackgrass, goldenrod, goatsbeard.

TRT No	PESTICIDE COMMON NAME	FORMULATION	lbai/A	Overall Rating 7-12-99	Overall Rating 9-9-99
1	azafenidin	80 DF	0.5	5.3	4.3
2	azafenidin	80 DF	0.75	6.3	4.3
3	azafenidin	80 DF	1	6.3	6.7
4	azafenidin	80 DF	0.5	8.3	7.7
	diuron	80 DF	1.5		
5	azafenidin	80 DF	0.75	9.3	8.7
	diuron	80 DF	2.25		
6	azafenidin	80 DF	0.5	8.7	8.0
	simazine	90 DF	2.0		
7	azafenidin	80 DF	0.75	8.7	9.0
	simazine	90 DF	2.0		
8	azafenidin	80 DF	0.75	6.3	5.0
	norflurazon	80 DF	2.0		
9	azafenidin	80 DF	0.75	6.7	6.0
	oryzalin	4 AS	2.0		
10	simazine	90 DF	3	7.3	7.0
	oryzalin	4 AS	2		
11	diuron	80 DF	2	8.7	7.7
	simazine	90 DF	3		
12	simazine	90 DF	3	8.7	7.7
	norflurazon	80 DF	2.0		
13	isoxaben	75 DF	1	7.7	6.7
	oryzalin	4 AS	2		
14	azafenidin	80 DF	1.5	8.0	7.0
15	azafenidin	80 DF	0.5	5.7	5.0
	napropamide	50 DF			
LSD (P=.05)				1.70	2.30
Standard Deviation				0.25	0.36
CV				13.30	20.56

Note:
Roundup Ultra (1 lb/a) was included with all treatments.

Cherry Herbicide Trial - Suttons Bay - 1999

J. Hull, J. Nugent

Location: Jim Bardenhagen
Route 1, PO Box 44
Suttons Bay, MI 49682

Soil Type: Sandy Loam
Plot Size: 6' X 30'

Cultivar: Montmorency

Age of Trees: 3 years

Experimental Design: RCB

Replications: 3 (2 trees/rep.)

Herbicide Application information:

Timing	Date	GPA	Air T	Wind
	5-11-99	36	67 F	SE 10-12

Vegetation: dandelion, field bindweed, horseweed, pepperweed.

PESTICIDE TRT No	COMMON NAME	FORMULATION	Lbai/A		Overall Rating 7-12-99	Overall Rating 9-9-99
1	azefenidin	80 DF	0.25		4.3	3.0
2	azefenidin	80 DF	0.5		5.7	4.7
3	azefenidin	80 DF	0.75		6.7	6.3
4	azefenidin	80 DF	1		8.7	6.7
5	azefenidin	80 DF	1.5		7.7	7.3
6	azefenidin	80 DF	0.5	X2	6.0	6.0
7	azefenidin	80 DF	0.75	X2	6.3	6.0
8	simazine	90 DF	3		6.3	6.7
	napropamide	50 DF	2			
LSD (P=.05)					1.91	2.31
Standard Deviation					0.38	0.46
CV					16.85	22.56

Notes:
1. Glyphosate (1 lb/a) was included with all treatments on 5-11-99.
2. Treatments 6 and 7 were repeated on 7-12-99.