HORTICULTURAL REPORT

2004 WEED CONTROL RESEARCH ON FRUIT & VEGTABLE CROPS

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WEED CONTROL IN HORTICULTURAL CROPS - 2004
FORWARD

This report summarizes the results of weed control experiments on horticultural crops in Michigan in 2003. 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:

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METHODS

Chemical Application

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 7.0.4, 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.
BABR	bald brome (upright brome)	*Bromus racemosus* L.
BFTF	birdsfoot trefoil	*Lotus corniculatus* L.
BHPL	buckhorn plantain	*Plantago lanceolata* L.
BLDO	broadleaf dock	*Rumex obtusifolius* L.
BLME	black medic	*Medicago lupulina* L.
BRFB	British fleabane	*Inula britannica* 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.
CLGC	clammy groundcherry	*Physalis heterophylla* Nees.
COBU	cocklebur	*Xanthium strumarium* L.
COCW	common chickweed	*Stellaria media* (L.) Cyrillo
COGR	common groundsel	*Senecio vulgaris* L.
COLQ	common lambsquarters	*Chenopodium album* L.
COMW	common milkweed	*Asclepias syriaca* 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
DOBG	downy bromegrass	*Bromus tectorum* L.
EBNS	eastern black nightshade	*Solanum ptycanthum* Dun.
FAPA	fall panicum	*Panicum dichotomiflorum* Michx.
FIBW	field bindweed	*Convolvulus arvensis* L.
FIPA	field pansy	*Viola rafinesquii* Greene
FIPC	field pennycress	*Thlaspi arvense* L.
FISB	field sandbur	*Cenchrus incertus* M.A.Curtis
GIRW	giant ragweed	*Ambrosia trifida* L.
GOGR	goosegrass	*Eleusine indica* (L.) Gaertn.
GORO	goldenrod	*Solidago nemoralis* Ait.
GIFT	giant foxtail	*Setaria faberi* Hermm.
GRFT	green foxtail	*Setaria viridis* (L.) Beauv.
GFPW	greenflower pepperweed	*Lepidium densiflorum* Schmd.
HANS	hairy nightshade	*Solanum sarrachoides* Sendtner
HOAL	hoary alyssum	*Berteroa incana* (L.) DC.
HONE	horsenettle	*Solanum carolinense* L.
HOWE	horseweed (marestail)	*Conyza canadensis* (L.) Scop.
IRFB	Irish fleabane	*Inula salicina*
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

WEED LIST

Abbr.	Common Name	Botanical Name
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.
ORGR	orchardgrass	*Dactylis glomerata* 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.
PUVI	puncturevine	*Tribulus terrestris* L.
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.
STGR	stinkgrass	*Eragrostis cilianensis* (All.) E. Mosher
SWSW	swamp smartweed	*Polygonum coccineum* Muhl. ex Willd.
TAFE	tall fescue	*Festuca arundinacea* Schreb.
TLSW	thymeleaf sandwort	*Arenaria serpyllifolia* L.
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.
YEFC	yellow fieldcress (kiek)	*Rorippa sylvestris* L.
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	PCC 1133	2.5 L	UAP
2,4-D amine	Weedar 64	3.8 L	Nufarm Inc.
atrazine	Aatrex	4 L	Syngenta
atrazine	Aatrex	90 DF	Syngenta
bensulide	Prefar	4 EC	Gowan
bentazon	Basagran	4 L	Micro Flo
bromoxynil	Buctril	4 EC	Bayer CropScience
butafenacil	Inspire	0.8 L	Syngenta
carfentrazone	Aim	2.0 EC	FMC
chlorimuron-ethyl	Classic	25 WDG	DuPont
clethodim	Envoy	0.94 L	Valent
clethodim	Select	2 EC	Valent
clethodim	V 10137	1 EC	Valent
clomazone	Command	3 ME	FMC
clopyralid	Lontrel	3 EC	Dow Agrosciences
clopyralid	Stinger	3 EC	Dow Agrosciences
clopyralid 0.42 lb ai + MCPA 2.35 lb ai	Curtail M	2.7L	Dow Agrosciences
cloransulam-methyl	Firstrate	84 WDG	Dow Agrosciences
DCPA	Dacthal	75 WP	Amvac Chemical
dicamba	Clarity	4 L	BASF
diflufenzopyr 21.4% + dicamba 55%	Distinct	76.4 WG	BASF
dimethenamid-p	Outlook	6 EC	BASF
diquat	Reglone	2 EC	Syngenta
diuron	Karmex	80 DF	DuPont
endothall	Desicate II	2 L	Cerexagri, Inc.
ethalfluralin	Curbit	3 EC	UAP
ethalfluralin 1.6 lb ai + clomazone 0.5 lb ai	Strategy	2.1 EC	UAP
ethofumesate	Nortron	4 SC	Bayer CropScience
ethometsulfuron	Muster	75 WG	DuPont
fluazifop-P	Fusilade DX	2 EC	Syngenta
flufenacet	Define	60 DF	Bayer CropScience
flufenacet 24% + metribuzin 36%	Domain	60 DF	Bayer CropScience
flufenacet 54.4% + metribuzin 13.6%	Axiom	68 DF	Bayer CropScience
flumetsulam	Python	80 WDG	Dow Agrosciences
flumioxazin	Chateau	51 WDG	Valent
flumioxazin	SureGuard	51 WG	Valent
flumioxazin	Valor	51 WG	Valent
fluroxypyr	Starane	1.5 L	Dow Agrosciences
fomesafen	Reflex	2 EC	Syngenta
foramsulfuron	Option	35 WG	Bayer CropScience

CHEMICAL LIST

COMMON NAME	TRADE NAME	FORMULATION	MANUFACTURER
glufosinate	Rely	1 L	Bayer CropScience
glufosinate	Liberty	1.67 EC	Bayer CropScience
glyphosate	Roundup WeatherMax	5.5 L	Monsanto
glyphosate	Touchdown	4 L	Syngenta
glyphosate	Roundup Original	4 L	Monsanto
glyphosate	Roundup Ultra	4 L	Monsanto
glyphosate	Roundup Ultramax	5 L	Monsanto
halosulfuron	Manage	75 WG	Monsanto
halosulfuron	Permit	75 WG	Monsanto
halosulfuron	Sandea	75 WG	Gowan
hexazinone	Velpar ULV	75 SG	DuPont
imazamox	Raptor	1 AS	BASF
imazapic	Plateau	70 WG	BASF
imazethapyr	Pursuit	2 EC	BASF
isoxaben	Gallery	75 DF	Dow Agrosciences
linuron	Lorox	50 DF	DuPont
mesotrione	Callisto	4 SC	Syngenta
metribuzin	Sencor	75 DF	Bayer CropScience
napropamide	Devrinol	50 DF	United Phosphorus
naptalam	Alanap	2 EC	Uniroyal
norflurazon	Solicam	80 DF	Syngenta
oryzalin	Surflan	4 AS	United Phosphorus
oxyfluorfen	Goal XL	2 L	Dow Agrosciences
paraquat	Gramoxone Max	3 L	Syngenta
pendimethalin	Prowl	3.3 EC	BASF
pendimethalin	Prowl H_2O	3.8 ACS	BASF
phenmedipham	Spin-Aid	1.3 L	Bayer CropScience
phenmedipham 0.6 lb ai+ desmedipham 0.6 lb ai + ethofumesate 0.6 lb ai	Progress	1.8 L	Bayer CropScience
prometryn	Caparol	4 L	Syngenta
pronamide	Kerb	50 WP	Dow Agrosciences
pyraflufen-ethyl	PCC 1195	0.2 EC	UAP
pyrazon	Pyramin	68 DF	Micro Flo
pyridate	Tough	3.75 EC	
rimsulfuron	Matrix	25 DF	DuPont
sethoxydim	Poast	1.53 EC	Micro Flo
sethoxydim	Vantage	1 L	TopPro
simazine	Princep	90 DF	Syngenta
s-metolachlor	Dual Magnum	7.62 EC	Syngenta
s-metolachlor 2.68 lb ai + mesotrione 0.268 lb ai + atrazine 1.0 lb ai	Lumax	3.948 L	Syngenta
s-metolachlor 3.34 lb ai + mesotrione 0.33 lb ai	Camix	3.67 L	Syngenta

CHEMICAL LIST

COMMON NAME	TRADE NAME	FORMULATION	MANUFACTURER
s-metolachlor II	Dual II Magnum	7.64 EC	Syngenta
s-metolochor	Pennant Magnum	7.62 EC	Syngenta
sulfentrazone	Spartan	4 F	FMC
sulfentrazone	Spartan	75 DF	FMC
sulfosulfuron	Maverick	75 WG	Monsanto
terbacil	Sinbar	80 WP	DuPont
triclopyr	Garlon	3 SC	Dow Agrosciences
triclopyr 2.25 lb ai + clopyralid 0.75 lb ai	Redeem R + P	3 L	Dow Agrosciences
trifloxysulfuron	Envoke	75 WG	Syngenta
trifluralin	Treflan	4 EC	Dow Agrosciences
V 10146	V 10146	3.3 F	Valent

ADJUVANTS

TRADE NAME	ABBREVIATION	DESCRIPTION	MANUFACTURER
Activator 90	NIS	nonionic surfactant	Loveland
ammonium nitrate		100% salt	
ammonium sulfate	AMS	spray grade fertilizer	
copper sulfate		100% salt	
Freeway		organosilicone surfactant	Loveland
Herbimax	COC	80% paraffin base petroleum oil 20% surfactant	Loveland
MSO		Methylated Seed Oil	Loveland
28% Nitrogen	UAN	28% urea ammonia nitrate solution	
Silwet L-77		organosilicone surfactant	Loveland
Sylgard 309		Organosilicone surfactant	DowCorning

ABBREVIATIONS USED IN THE REPORT

A = Acre
ai = Active Ingredient
Amt = Amount
ACS = Aqueous Capsule Suspension
AS = Aqueous Solution
ASPA = Asparagus
CEC = Cation Exchange Capacity
CV = Coefficient of Variability
DF = Dry Flowable
DS = Designator
EC = Emulsifiable Concentrate
F = Flowable
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
LPRE = Late PRE
LO = Low Odor
LSD = Least Significant Difference
LB = Pounds
ME = Microencapsulated
MKTBL = Marketable
MPH = Mile(s) per hour
MSU = Michigan State University
N = No
N/A = Not Applicable / Not Available
No. = Number
OM = Organic Matter
oz = Ounce
P = Probability
POH = Post harvest
PO1 = Postemergence 1
PO2 = Postemergence 2
POT = Post Transplant
PPI = Preplant Incorporated
PRE = Preemergence
PREC. = Precipitation (inches)
PRT = Pretransplant
PSI = Pounds per square inch
PT PR = Pint Product
QT = Quart
QT PR = Quart Product
RCBD = Randomized Complete Block Design
RH = Relative Humidity
REPS = Replication
SNBE = Snapbean
SP = Soluble Powder
STBE = Strawberry
SURF = Surface
T = Temperature
TRT = Treatment
UNMKTBL = Unmarketable
VOAS = Volunteer Asparagus
WDG = Water Dispersible Granule
WG = Water Soluble Granule
WP = Wettable Powder
WT = Weight
" = Inches
Y = Yes

TEMPERATURE AND PRECIPITATION DATA

MSU Horticulture Teaching and Research Center

Recorded at
MSU Horticulture Teaching and Research Center (HTRC)
East Lansing, Michigan
2004

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	50.9	33.4		**1**	60.0	43.2	0.80	**1**	72.9	54.6	
2	58.4	37.3		**2**	49.9	36.6	0.33	**2**	67.8	54.3	0.02
3	55.9	31.9	0.04	**3**	49.7	29.6		**3**	70.9	46.5	
4	41.5	27.5		**4**	62.0	27.0		**4**	72.3	42.5	
5	45.9	20.9		**5**	61.5	40.7		**5**	74.9	44.6	
6	59.3	26.4		**6**	80.1	41.2		**6**	77.3	57.7	
7	60.4	34.7		**7**	64.9	45.0	0.14	**7**	82.8	62.9	
8	48.2	40.9	0.04	**8**	70.5	41.8		**8**	88.5	66.3	
9	51.7	30.5		**9**	80.6	53.2	0.54	**9**	86.5	66.1	0.60
10	49.9	27.7		**10**	81.7	61.1	0.65	**10**	69.8	57.2	0.45
11	40.0	31.1		**11**	73.0	55.4	0.01	**11**	62.5	50.4	0.90
12	48.3	29.6		**12**	83.2	61.6		**12**	73.7	52.2	0.17
13	50.6	33.4		**13**	78.5	61.9	0.12	**13**	82.3	62.6	0.49
14	60.3	30.4		**14**	77.6	51.6	0.34	**14**	79.4	61.5	0.10
15	68.8	35.7		**15**	53.0	39.9		**15**	80.5	56.7	
16	76.9	45.3		**16**	68.3	34.8		**16**	76.8	62.5	
17	73.4	58.0	0.05	**17**	77.6	50.2	0.07	**17**	80.0	67.3	0.01
18	85.1	57.1		**18**	69.2	59.1	0.54	**18**	78.8	64.3	0.01
19	75.7	44.3		**19**	71.6	47.5		**19**	65.8	48.0	
20	54.5	33.7	0.04	**20**	76.9	54.2	1.22	**20**	70.4	42.9	
21	72.6	47.5		**21**	68.6	53.1	0.91	**21**	68.7	49.6	0.30
22	58.3	39.2		**22**	80.6	55.7	0.50	**22**	71.4	49.6	
23	64.0	35.2		**23**	79.8	58.1	1.09	**23**	78.1	47.0	0.29
24	59.8	33.3		**24**	69.2	50.0		**24**	68.4	50.2	0.13
25	71.5	43.7	0.26	**25**	62.0	48.5	0.28	**25**	68.6	43.8	
26	61.6	40.3		**26**	63.4	45.0		**26**	70.8	41.4	
27	43.8	30.7		**27**	71.0	40.2		**27**	73.0	48.5	
28	75.3	30.2		**28**	62.1	46.1		**28**	71.9	55.1	0.04
29	78.1	61.6		**29**	62.7	41.4		**29**	78.5	53.0	
30	71.4	56.6	0.12	**30**	70.8	50.2	0.30	**30**	81.9	55.9	
				31	74.1	56.7	0.23				

TEMPERATURE AND PRECIPITATION DATA

MSU Horticulture Teaching and Research Center

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MSU Horticulture Teaching and Research Center (HTRC)
East Lansing, Michigan
2004

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	83.1	60.0		**1**	82.3	53.2		**1**	80.1	52.0	
2	82.1	56.0		**2**	85.7	66.0	0.01	**2**	81.5	56.3	
3	82.8	56.6		**3**	85.1	62.5		**3**	82.4	60.6	
4	79.4	66.8	0.30	**4**	73.4	57.9	1.03	**4**	83.9	57.9	0.08
5	76.5	60.5		**5**	70.6	53.0		**5**	83.1	64.6	0.01
6	85.4	59.1	0.22	**6**	74.0	47.6		**6**	83.5	65.6	0.55
7	75.8	58.6	0.38	**7**	75.9	48.6		**7**	74.6	56.9	
8	65.0	57.9		**8**	76.1	53.8		**8**	71.8	53.3	
9	75.7	50.2		**9**	79.8	57.7		**9**	72.3	51.9	
10	84.5	61.5		**10**	70.5	57.9	0.09	**10**	78.2	46.7	
11	84.9	61.9	0.26	**11**	66.5	53.0	0.18	**11**	78.9	50.5	
12	79.9	65.5	0.18	**12**	62.3	50.0		**12**	83.2	54.6	
13	84.0	65.6	0.97	**13**	69.2	54.3	0.01	**13**	82.4	54.8	
14	74.2	62.0		**14**	70.7	52.4		**14**	83.8	63.7	
15	78.3	60.1		**15**	73.8	46.1		**15**	82.6	63.6	
16	80.6	53.1	0.21	**16**	74.8	48.2		**16**	73.2	53.0	0.24
17	78.5	59.8	0.10	**17**	73.6	53.5		**17**	66.6	48.1	
18	79.3	59.2		**18**	76.5	60.4		**18**	73.2	42.8	
19	79.3	55.4		**19**	72.2	50.7		**19**	72.9	43.0	
20	84.1	60.6		**20**	67.3	49.0		**20**	77.1	45.3	
21	86.3	65.0	0.80	**21**	69.5	46.5		**21**	80.9	45.0	
22	86.3	68.3		**22**	76.5	43.7		**22**	85.2	45.0	
23	72.4	54.6		**23**	76.4	62.0		**23**	84.4	47.9	
24	72.4	46.3		**24**	81.2	53.8		**24**	80.6	58.1	
25	74.3	55.9		**25**	84.3	66.3	0.19	**25**	66.0	51.9	
26	71.9	53.5		**26**	81.2	66.3	0.01	**26**	74.4	43.8	
27	64.6	56.1	0.56	**27**	87.8	70.7		**27**	75.3	41.5	
28	81.3	52.2		**28**	74.4	62.9	0.62	**28**	56.4	47.6	0.17
29	77.3	55.1		**29**	65.5	57.8	1.29	**29**	66.3	40.9	
30	72.3	58.6	0.02	**30**	71.8	51.9		**30**	72.1	36.2	
31	79.6	60.5		**31**	77.1	49.5					

TEMPERATURE AND PRECIPITATION DATA

MSU Muck Research Station

Recorded at
MSU Muck Research Station (Muck Farm)
Laingsburg, Michigan
2004

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	51.8	33.8		**1**	57.0	42.1	0.70	**1**	72.4	55.7	
2	57.9	31.8		**2**	49.5	35.9	0.38	**2**	67.0	53.7	0.01
3	55.8	27.5	0.07	**3**	48.4	28.3		**3**	69.4	44.4	
4	41.3	27.4	0.01	**4**	61.6	24.6	0.01	**4**	71.3	40.7	
5	45.6	19.7		**5**	61.8	34.1	0.05	**5**	74.6	43.1	
6	58.7	24.1		**6**	80.4	35.9		**6**	77.0	57.2	
7	61.2	27.0		**7**	60.8	46.2	0.05	**7**	83.0	58.7	
8	48.4	37.6	0.16	**8**	66.9	41.5	0.09	**8**	88.2	67.2	
9	51.4	26.0		**9**	79.3	53.3	0.84	**9**	87.3	66.5	1.59
10	49.2	23.2		**10**	83.1	61.8	1.27	**10**	66.9	57.0	0.85
11	39.1	31.7		**11**	73.5	55.6	0.02	**11**	63.5	51.9	0.30
12	48.0	25.3		**12**	82.8	61.7		**12**	73.5	52.5	0.09
13	51.1	33.8		**13**	79.2	59.8	0.20	**13**	82.4	63.6	0.34
14	60.6	21.2		**14**	78.0	51.2	0.31	**14**	78.9	60.6	0.16
15	69.6	30.1		**15**	52.3	38.5		**15**	79.5	53.6	
16	79.4	46.1		**16**	68.2	31.6		**16**	77.0	63.2	
17	74.2	49.2	0.06	**17**	76.5	50.9	0.10	**17**	80.7	64.9	0.05
18	87.1	53.8		**18**	70.2	57.7	0.41	**18**	78.5	64.1	0.01
19	76.5	42.1		**19**	72.0	40.9		**19**	66.3	44.8	
20	54.7	28.0	0.04	**20**	77.4	55.2	0.11	**20**	71.0	39.1	
21	74.8	47.7	0.01	**21**	68.3	53.0	1.30	**21**	69.8	46.2	0.25
22	59.1	30.8		**22**	80.0	53.7	0.32	**22**	70.8	47.5	0.01
23	64.3	28.6		**23**	79.4	53.7	2.35	**23**	78.3	42.7	0.21
24	58.7	27.2	0.01	**24**	69.3	51.4	0.01	**24**	67.2	48.0	0.12
25	70.9	43.6	0.23	**25**	61.4	50.0	0.30	**25**	68.3	38.1	
26	62.1	40.3		**26**	63.4	48.6		**26**	70.5	43.0	
27	44.4	25.4	0.01	**27**	68.8	43.1		**27**	73.8	41.6	
28	75.5	23.8	0.01	**28**	63.1	47.8		**28**	73.1	51.4	
29	78.8	61.9		**29**	62.1	44.5		**29**	79.3	47.9	0.04
30	72.7	56.6	0.06	**30**	70.5	54.2	0.22	**30**	83.4	52.4	0.17
				31	72.8	56.7	0.16				

TEMPERATURE AND PRECIPITATION DATA

MSU Muck Research Station

Recorded at
MSU Muck Research Station (Muck Farm)
Laingsburg, Michigan
2004

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	83.6	56.0		**1**	83.8	49.1		**1**	79.3	47.6	
2	81.2	51.2	0.01	**2**	87.7	62.4	0.27	**2**	82.4	54.9	
3	84.5	57.0		**3**	84.6	58.3	0.01	**3**	83.4	58.3	
4	79.8	66.9	0.37	**4**	74.7	57.2		**4**	84.9	55.5	
5	75.4	57.2		**5**	71.9	47.8		**5**	84.7	61.9	
6	85.3	56.4	0.08	**6**	75.5	40.7		**6**	84.8	66.0	0.38
7	75.3	56.7	0.32	**7**	77.1	43.3		**7**	74.5	51.8	
8	64.7	57.5		**8**	78.8	49.0		**8**	72.0	48.5	
9	75.9	47.4		**9**	81.1	53.2	0.01	**9**	73.7	48.4	
10	83.4	58.1		**10**	72.0	57.6	0.02	**10**	77.6	41.3	
11	86.8	55.4	0.33	**11**	63.5	53.3	0.18	**11**	80.3	46.3	0.05
12	83.5	65.8	0.58	**12**	64.5	49.5		**12**	84.3	51.2	
13	84.7	64.2	0.89	**13**	69.0	52.9		**13**	84.1	49.9	
14	74.4	61.7	0.07	**14**	71.0	47.8		**14**	84.7	63.7	
15	79.4	55.6		**15**	74.3	41.6		**15**	83.6	64.6	
16	83.0	49.0	0.11	**16**	76.6	42.3		**16**	73.6	48.5	0.27
17	79.5	60.0		**17**	74.6	52.0		**17**	66.5	41.0	
18	80.1	55.0		**18**	77.7	62.4		**18**	73.1	35.5	
19	80.0	51.2		**19**	72.5	47.8		**19**	72.8	36.8	
20	85.0	57.7	0.01	**20**	69.3	45.1		**20**	77.8	37.9	
21	87.5	63.5	0.37	**21**	70.6	38.7		**21**	82.3	40.1	
22	86.7	67.7		**22**	78.3	38.2	0.01	**22**	84.6	39.5	
23	72.7	51.9		**23**	75.0	62.1		**23**	85.3	42.3	
24	72.2	41.6		**24**	82.3	49.6		**24**	80.9	53.3	
25	76.0	52.6		**25**	84.7	66.9	0.25	**25**	67.6	46.6	0.09
26	72.2	47.9		**26**	82.4	67.2		**26**	73.5	37.6	0.04
27	65.9	56.0	0.53	**27**	88.1	67.7		**27**	75.7	34.4	
28	81.1	49.0		**28**	70.6	62.4	0.27	**28**	56.2	40.2	0.10
29	78.5	51.4		**29**	65.7	57.9	0.81	**29**	65.9	34.0	
30	71.8	55.0		**30**	72.0	50.9		**30**	72.0	29.1	
31	80.9	56.7	0.01	**31**	77.0	45.6					

TEMPERATURE AND PRECIPITATION DATA

Hamilton

Recorded at
MSU Trevor Nichols Research Complex
Fennville, Michigan
2004

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	46.4	31.8		**1**	51.5	43.0	0.13	**1**	71.6	55.1	
2	47.2	31.9		**2**	48.5	34.5	0.06	**2**	65.7	52.4	
3	49.2	31.7	0.01	**3**	46.1	28.4		**3**	66.5	46.0	
4	40.3	27.6		**4**	52.9	28.2		**4**	73.3	45.3	
5	40.7	19.1		**5**	54.4	34.4		**5**	73.9	47.9	
6	60.3	27.7	0.06	**6**	73.7	45.3		**6**	79.1	56.8	
7	64.8	36.0	0.01	**7**	64.8	46.3	0.21	**7**	85.7	59.0	
8	54.8	35.8		**8**	74.6	46.4	0.01	**8**	87.1	67.4	
9	50.2	27.8		**9**	82.2	55.5	0.58	**9**	80.5	64.2	0.32
10	50.6	29.3		**10**	79.8	58.3	0.07	**10**	65.8	56.7	0.58
11	46.8	27.8		**11**	80.3	56.8	0.42	**11**	61.4	56.1	0.65
12	47.0	26.0		**12**	83.9	62.0		**12**	75.9	54.8	0.07
13	47.0	30.3		**13**	75.1	63.5	0.14	**13**	82.3	60.9	
14	57.1	26.6		**14**	68.2	43.7	0.66	**14**	76.7	61.3	0.05
15	72.9	34.3		**15**	55.5	38.0		**15**	79.5	56.2	
16	75.5	53.0		**16**	68.3	36.0		**16**	83.0	59.4	
17	71.4	51.5	0.13	**17**	77.6	52.0	0.01	**17**	75.1	58.2	0.03
18	82.0	55.3		**18**	73.3	46.9	0.82	**18**	74.0	58.5	
19	74.8	43.7		**19**	76.5	45.2		**19**	63.6	46.4	0.01
20	58.2	37.9	0.07	**20**	78.0	61.8	0.01	**20**	67.8	42.6	
21	64.5	42.6	0.06	**21**	71.4	54.5	0.98	**21**	64.1	53.9	1.01
22	58.4	32.3		**22**	78.8	57.3	0.37	**22**	67.5	50.8	
23	60.1	38.0		**23**	80.4	58.0	1.02	**23**	74.6	50.3	0.14
24	63.1	33.4	0.17	**24**	70.8	43.6		**24**	71.1	48.8	0.29
25	64.6	41.9	0.61	**25**	67.9	44.7	0.07	**25**	65.2	42.8	
26	57.4	41.9		**26**	59.4	43.0		**26**	67.8	47.4	
27	43.1	30.7		**27**	69.7	41.2		**27**	73.2	47.6	
28	76.1	33.9		**28**	59.1	42.2		**28**	68.8	53.2	0.01
29	74.4	56.6	0.05	**29**	61.4	39.5	0.03	**29**	75.6	52.4	
30	66.0	43.4	0.52	**30**	70.6	54.2	1.29	**30**	78.1	56.1	
				31	67.0	57.1	0.29				

TEMPERATURE AND PRECIPITATION DATA

Hamilton

Recorded at
MSU Trevor Nichols Research Complex
Fennville, Michigan
2004

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	79.4	59.1		**1**	86.5	55.7		**1**	79.6	49.9	
2	84.5	57.9		**2**	84.9	64.0		**2**	83.6	58.5	
3	85.7	62.7	0.76	**3**	84.1	60.2		**3**	82.0	60.6	
4	75.1	67.2	0.06	**4**	77.2	60.0	0.68	**4**	83.2	58.9	
5	72.2	59.4		**5**	73.8	54.4		**5**	85.7	62.0	
6	80.7	60.3	0.03	**6**	71.1	45.4		**6**	84.7	64.1	0.14
7	67.5	58.7	0.03	**7**	73.8	48.8		**7**	71.4	56.3	
8	68.2	52.4		**8**	76.7	55.1		**8**	74.1	51.4	
9	76.4	48.7		**9**	80.6	59.5		**9**	74.3	52.1	
10	82.4	61.7		**10**	70.2	59.2	0.04	**10**	76.8	46.8	
11	87.5	59.2		**11**	62.6	55.3	0.10	**11**	79.7	54.3	
12	77.5	64.5	0.10	**12**	62.9	52.4	0.05	**12**	82.1	53.3	
13	83.8	63.4		**13**	68.4	52.0		**13**	85.2	55.6	
14	73.7	62.4		**14**	73.2	47.6		**14**	85.4	62.8	
15	76.0	58.2		**15**	76.4	44.6		**15**	86.5	64.9	0.04
16	80.9	54.8		**16**	75.6	46.9		**16**	72.0	49.1	0.14
17	78.1	57.8	0.02	**17**	76.1	57.8	0.15	**17**	72.7	45.8	
18	80.3	56.1		**18**	76.1	54.9		**18**	75.9	48.1	
19	78.4	55.5		**19**	68.8	50.1	0.01	**19**	77.1	46.6	
20	84.2	64.0		**20**	71.7	50.3		**20**	77.6	44.2	
21	88.7	68.1	0.43	**21**	71.5	44.7		**21**	80.1	47.4	
22	83.2	68.2		**22**	78.3	44.5		**22**	79.3	47.6	
23	71.5	54.6		**23**	81.6	64.8		**23**	85.9	51.2	
24	73.3	49.1		**24**	84.6	62.7	0.06	**24**	77.5	58.3	
25	77.5	56.0		**25**	80.6	N/A	0.12	**25**	65.3	49.9	
26	78.6	53.7	0.03	**26**	81.8	63.8	0.12	**26**	73.8	39.7	
27	72.6	55.5	0.02	**27**	83.8	68.4	0.02	**27**	74.9	41.5	
28	78.1	50.8		**28**	76.5	58.3	0.96	**28**	66.7	47.1	0.03
29	79.6	59.3		**29**	68.1	52.6	0.07	**29**	67.1	42.7	
30	73.2	61.3	0.09	**30**	72.1	45.2		**30**	68.2	34.3	
31	74.4	56.8	0.01	**31**	78.6	52.2					

TEMPERATURE AND PRECIPITATION DATA

Fremont & Grant

Recorded at
City of Fremont
Fremont, Michigan
2004

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	56.4	28.5		**1**	52.9	42.9	0.10	**1**	68.2	50.7	
2	63.3	30.6		**2**	52.9	32.5		**2**	70.8	52.9	
3	53.2	27.4	0.02	**3**	50.3	27.3		**3**	76.6	44.0	
4	40.5	26.2		**4**	62.0	30.0	0.01	**4**	74.3	47.8	
5	44.6	19.3		**5**	60.6	33.3		**5**	74.5	46.8	
6	57.3	27.9	0.02	**6**	75.6	42.4		**6**	76.1	57.5	
7	65.2	29.4		**7**	65.0	47.4		**7**	82.6	62.6	
8	49.4	36.6		**8**	67.8	40.6	3.63	**8**	86.1	70.6	0.13
9	51.9	30.1		**9**	75.1	53.3	1.06	**9**	82.8	67.2	3.05
10	49.4	27.1		**10**	76.3	54.1	0.38	**10**	67.5	53.5	0.28
11	43.9	28.4		**11**	71.8	53.4	0.01	**11**	64.0	52.0	0.17
12	46.7	23.6		**12**	82.1	63.8	0.10	**12**	74.3	52.9	0.11
13	53.4	27.8		**13**	72.5	62.6	0.56	**13**	80.4	61.2	
14	61.4	25.6		**14**	67.3	44.1	0.38	**14**	74.4	60.4	0.06
15	69.4	37.0		**15**	61.7	41.8		**15**	82.2	56.8	
16	72.4	52.2		**16**	66.8	37.9		**16**	83.1	59.4	
17	74.1	51.9	0.35	**17**	74.6	51.2		**17**	76.9	62.3	
18	79.3	54.5	0.36	**18**	66.5	48.8	1.00	**18**	76.4	61.8	
19	72.9	40.2		**19**	72.9	42.7		**19**	67.3	48.2	
20	55.8	32.5	0.14	**20**	77.3	61.1	0.38	**20**	68.0	42.8	
21	61.6	52.4	0.11	**21**	64.1	52.9	0.52	**21**	67.3	51.7	0.36
22	59.3	35.6		**22**	74.0	53.0	0.23	**22**	68.5	54.4	
23	60.7	35.4		**23**	69.2	53.0	1.27	**23**	72.0	49.4	0.38
24	58.8	36.0	0.03	**24**	61.4	44.3	0.03	**24**	61.2	44.3	0.37
25	61.6	38.1	0.63	**25**	69.7	49.1	0.03	**25**	66.1	40.1	
26	56.6	38.4	0.03	**26**	62.7	44.8		**26**	68.1	44.9	
27	44.9	30.0		**27**	69.0	41.0		**27**	71.8	47.2	0.10
28	73.7	36.3	0.02	**28**	65.7	41.2		**28**	72.1	51.8	0.12
29	74.6	60.6		**29**	60.9	37.2		**29**	76.8	55.2	0.02
30	63.0	46.9	0.06	**30**	68.5	54.9	0.59	**30**	80.3	59.6	0.12
				31	66.4	55.0	0.73				

TEMPERATURE AND PRECIPITATION DATA

Fremont & Grant

Recorded at
City of Fremont
East Lansing, Michigan
2004

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	81.2	57.1		**1**	82.5	55.1		**1**	76.8	52.3	
2	81.1	57.4		**2**	84.7	61.8	0.03	**2**	81.8	58.4	
3	82.1	59.0	0.24	**3**	87.7	58.9		**3**	82.5	60.0	
4	73.7	65.9	0.68	**4**	84.2	60.9	0.18	**4**	83.6	61.1	
5	76.1	55.9		**5**	75.6	52.0		**5**	82.1	60.6	
6	76.1	62.1	0.05	**6**	77.9	43.7		**6**	80.8	60.2	0.25
7	68.5	57.0	0.04	**7**	81.4	46.4		**7**	72.4	53.3	
8	65.1	54.5		**8**	76.8	53.1		**8**	74.8	49.2	
9	71.4	48.8		**9**	78.6	58.4		**9**	76.8	50.4	
10	84.3	57.3		**10**	68.2	56.5	0.02	**10**	77.5	46.8	
11	84.5	59.2		**11**	58.8	51.7	0.04	**11**	79.4	53.7	
12	84.3	67.4		**12**	63.7	43.7	0.31	**12**	84.1	55.9	
13	81.9	62.8	0.07	**13**	69.1	52.4	0.02	**13**	83.2	56.3	
14	76.0	60.2		**14**	75.7	46.9		**14**	83.1	63.9	
15	80.9	57.1		**15**	76.7	46.5		**15**	83.4	66.9	0.07
16	83.2	55.8	0.01	**16**	75.3	46.0		**16**	69.8	48.5	0.01
17	81.7	59.3	0.70	**17**	71.2	58.0	0.06	**17**	76.2	45.1	
18	82.9	56.9	0.01	**18**	75.8	53.8	0.02	**18**	76.1	45.9	
19	79.1	55.7		**19**	67.7	47.7	0.01	**19**	76.2	47.5	
20	84.1	62.8		**20**	73.3	46.4		**20**	75.5	48.1	
21	84.5	65.5	0.09	**21**	70.8	40.1		**21**	79.6	47.6	
22	87.5	62.4		**22**	76.7	41.0		**22**	84.0	45.6	
23	76.3	51.7		**23**	81.2	62.6	0.05	**23**	83.5	50.8	
24	72.8	48.1		**24**	84.3	57.5		**24**	78.6	55.1	
25	77.9	49.8		**25**	79.1	68.0	0.01	**25**	66.9	49.5	
26	82.3	48.7		**26**	76.1	64.5	0.13	**26**	77.5	36.4	
27	72.3	56.0		**27**	82.1	66.9	0.19	**27**	75.7	40.6	
28	82.8	52.0		**28**	70.3	55.9	1.64	**28**	67.6	46.1	0.10
29	79.3	59.2		**29**	70.9	51.8	0.10	**29**	69.6	38.5	
30	76.5	63.9		**30**	72.0	43.9		**30**	68.8	32.3	
31	78.2	57.6		**31**	78.2	51.1					

TEMPERATURE AND PRECIPITATION DATA

Hart

Recorded at
Asparagus Research Farm
Hart, Michigan
2004

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	49.0	27.6		**1**	49.8	41.4	0.04	**1**	68.3	50.3	
2	53.3	27.8		**2**	47.9	31.3		**2**	70.6	50.0	
3	49.4	26.4	0.06	**3**	47.4	28.6		**3**	70.6	40.4	
4	38.7	25.3		**4**	63.7	32.5	0.02	**4**	69.9	41.6	
5	41.6	16.6		**5**	54.5	31.6		**5**	75.2	46.3	
6	58.9	30.2	0.05	**6**	73.5	46.3	0.06	**6**	76.1	56.0	
7	61.8	26.6		**7**	63.4	38.8		**7**	82.2	65.1	
8	51.2	35.7	0.11	**8**	64.1	41.4	3.35	**8**	85.8	70.1	
9	49.2	32.1		**9**	76.6	53.2	0.06	**9**	79.8	60.9	1.00
10	45.6	28.5		**10**	74.2	53.5	0.26	**10**	63.7	57.0	0.36
11	45.0	25.2		**11**	73.4	51.9	0.01	**11**	66.9	53.0	0.10
12	43.0	19.1		**12**	80.3	61.8	0.09	**12**	79.0	55.5	0.03
13	46.9	22.8		**13**	76.8	60.7	0.80	**13**	79.8	59.3	
14	59.3	27.7		**14**	65.8	42.5	0.49	**14**	77.8	59.1	0.26
15	70.9	34.2		**15**	54.5	38.5	0.02	**15**	77.7	56.3	0.01
16	71.6	58.3		**16**	64.9	36.7		**16**	86.4	60.5	
17	66.4	49.3	0.19	**17**	74.9	52.2		**17**	70.5	59.8	0.09
18	76.9	55.7	0.36	**18**	65.9	46.5	1.11	**18**	75.1	58.1	0.02
19	69.8	43.4		**19**	74.1	41.2		**19**	63.2	49.7	
20	56.1	32.0	0.33	**20**	77.6	60.4	0.20	**20**	68.6	46.1	
21	60.6	41.1	0.29	**21**	64.1	47.9	0.66	**21**	66.7	56.7	0.09
22	57.9	36.7		**22**	69.8	53.0	0.24	**22**	68.0	55.5	
23	55.7	30.6		**23**	71.4	53.9	0.76	**23**	68.5	56.1	0.38
24	59.7	34.8	0.03	**24**	61.1	43.1	0.02	**24**	59.7	47.3	0.26
25	62.3	39.1	0.54	**25**	67.4	48.2	0.03	**25**	66.4	40.7	
26	54.5	35.7	0.01	**26**	60.3	47.2		**26**	68.0	43.9	
27	44.1	29.9	0.01	**27**	68.3	44.2	0.04	**27**	70.8	46.8	0.12
28	73.4	37.4	0.05	**28**	59.5	38.9		**28**	70.6	54.6	0.08
29	74.0	52.2		**29**	61.0	39.4		**29**	78.0	58.2	0.18
30	53.4	43.9	0.22	**30**	69.0	54.7	0.50	**30**	80.2	58.6	0.08
				31	65.5	55.0	0.89				

TEMPERATURE AND PRECIPITATION DATA

Hart

Recorded at
Asparagus Research Farm
Hart, Michigan
2004

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	68.3	N/A		**1**	81.4	53.7	0.02	**1**	78.1	53.2	
2	N/A	N/A		**2**	84.5	60.7	0.01	**2**	82.7	60.1	
3	N/A	N/A	0.16	**3**	85.5	57.0		**3**	85.0	61.6	
4	N/A	N/A	1.04	**4**	82.8	60.7	0.01	**4**	84.7	60.2	
5	N/A	N/A	0.01	**5**	73.0	47.2		**5**	81.6	62.5	
6	N/A	N/A	0.03	**6**	75.2	40.3		**6**	80.8	59.1	
7	61.4	55.0		**7**	78.2	47.1		**7**	67.8	52.5	
8	63.5	54.4	0.01	**8**	78.0	52.1		**8**	74.6	48.3	
9	71.3	47.9		**9**	77.9	62.8	0.22	**9**	74.7	48.3	
10	75.4	54.4		**10**	67.7	57.6	0.03	**10**	78.1	44.5	
11	83.2	56.6		**11**	58.5	51.0	0.40	**11**	80.9	55.0	
12	79.5	62.5		**12**	66.6	50.1	0.05	**12**	84.8	55.5	
13	82.9	59.9	0.04	**13**	71.0	51.7		**13**	84.4	60.7	
14	76.9	57.6		**14**	70.7	41.7		**14**	82.1	63.6	
15	77.3	54.9		**15**	73.9	43.6		**15**	84.3	67.8	0.24
16	80.1	55.4		**16**	75.4	43.5		**16**	67.9	47.5	0.15
17	79.4	60.1	0.11	**17**	71.1	53.8	0.39	**17**	73.4	44.7	
18	79.0	53.4		**18**	75.8	52.5	0.16	**18**	75.4	47.1	
19	80.8	51.2		**19**	66.1	50.3		**19**	76.5	49.7	
20	84.3	62.5		**20**	67.7	45.1		**20**	74.7	50.8	
21	85.1	65.4		**21**	67.5	38.4		**21**	79.5	50.5	
22	82.9	59.9		**22**	76.7	44.0		**22**	84.5	49.4	
23	72.4	44.5		**23**	81.0	60.0		**23**	83.2	53.4	
24	73.5	48.3		**24**	84.1	58.9		**24**	79.0	57.6	
25	74.6	45.2		**25**	76.5	67.4	0.18	**25**	68.6	38.8	
26	78.2	45.3		**26**	77.8	66.3		**26**	73.6	36.9	
27	79.0	53.4		**27**	79.4	64.2	0.12	**27**	74.5	41.1	
28	83.2	51.2		**28**	67.1	54.9	0.46	**28**	66.1	38.4	0.03
29	80.8	62.7		**29**	65.6	46.6	0.02	**29**	66.5	31.1	
30	72.8	62.9	0.04	**30**	71.2	40.8		**30**	69.5	31.9	
31	74.6	54.9		**31**	74.3	50.5					

TEMPERATURE AND PRECIPITATION DATA

Hudsonville

Recorded at
Michigan Celery Cooperative
Hudsonville, Michigan
2004

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	56.2	32.1		**1**	53.2	45.2	0.12	**1**	71.4	55.8	0.03
2	60.3	32.1		**2**	53.7	34.0	0.04	**2**	68.6	54.9	0.09
3	53.1	29.8	0.01	**3**	47.6	27.9		**3**	76.1	44.7	
4	43.5	28.2		**4**	64.4	31.1		**4**	76.7	49.4	
5	42.7	20.5		**5**	58.6	33.1		**5**	76.1	48.6	
6	61.0	29.4		**6**	76.4	48.6		**6**	79.0	58.6	
7	63.8	30.5		**7**	64.2	46.6	0.26	**7**	85.1	63.0	
8	54.2	36.9	0.01	**8**	72.4	46.1		**8**	88.4	69.9	
9	54.1	29.2		**9**	81.9	55.3	0.81	**9**	83.4	68.7	
10	52.0	29.6		**10**	78.8	59.1	0.09	**10**	68.9	57.7	0.33
11	43.6	29.2		**11**	75.9	58.4	0.21	**11**	62.6	54.9	0.45
12	48.0	25.5		**12**	83.9	64.7	0.14	**12**	76.2	56.3	0.01
13	55.2	29.9		**13**	73.3	64.0	0.35	**13**	83.4	62.2	
14	59.8	25.9		**14**	69.9	46.1	0.76	**14**	79.5	61.0	
15	74.2	35.9		**15**	60.8	41.9		**15**	83.8	57.5	
16	76.7	54.8		**16**	70.2	38.7		**16**	82.4	63.3	
17	77.5	55.9	0.27	**17**	78.7	54.4		**17**	75.1	60.7	0.08
18	83.5	60.2	0.01	**18**	69.1	54.3	0.66	**18**	77.1	59.8	
19	76.1	42.0		**19**	73.9	49.0		**19**	68.1	48.5	
20	55.9	36.7	0.08	**20**	78.1	59.9	0.47	**20**	69.2	43.1	
21	65.2	44.2	0.08	**21**	69.4	55.4	0.94	**21**	66.1	55.8	0.67
22	59.3	35.3		**22**	78.7	55.0	0.29	**22**	67.8	53.1	0.11
23	61.9	39.2		**23**	80.6	60.5	0.48	**23**	74.8	52.1	0.01
24	60.0	33.6	0.16	**24**	70.4	47.5	0.01	**24**	69.6	47.9	0.53
25	65.9	41.7	0.64	**25**	69.1	47.9	0.04	**25**	65.8	42.4	
26	57.7	40.9		**26**	60.5	45.6		**26**	68.2	47.1	
27	43.5	32.0		**27**	70.6	42.0		**27**	73.0	47.8	
28	77.7	35.3	0.01	**28**	65.4	46.0		**28**	71.7	56.3	0.05
29	76.5	57.8	0.01	**29**	62.5	41.1		**29**	77.3	54.7	
30	65.4	50.6	0.48	**30**	70.3	54.1	0.67	**30**	81.3	56.5	
				31	68.3	57.0	0.42				

TEMPERATURE AND PRECIPITATION DATA

Hudsonville

Recorded at
Michigan Celery Cooperative
Hudsonville, Michigan
2004

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	81.4	61.5		**1**	85.8	54.4		**1**	80.5	49.9	
2	85.7	60.2		**2**	84.7	65.8		**2**	84.6	55.7	
3	83.7	61.3	0.56	**3**	85.9	58.8		**3**	84.1	58.0	
4	76.5	65.8	0.64	**4**	81.7	61.4	0.71	**4**	84.8	58.1	
5	79.6	60.0		**5**	75.6	53.8		**5**	86.4	60.2	
6	81.1	64.2	0.01	**6**	73.3	44.2		**6**	84.0	61.0	0.18
7	70.5	58.9	0.01	**7**	78.0	46.8		**7**	74.6	53.1	
8	67.5	52.5		**8**	77.5	53.7		**8**	74.9	53.0	
9	77.7	49.7		**9**	81.7	61.8	0.03	**9**	77.3	47.2	
10	85.8	61.6		**10**	69.3	58.2	0.06	**10**	80.2	45.9	
11	87.5	60.8		**11**	61.3	47.6	0.24	**11**	82.9	53.3	
12	79.5	97.7		**12**	65.2	48.5	0.05	**12**	86.3	58.2	
13	85.1	65.5	0.10	**13**	69.5	53.7		**13**	84.7	54.7	
14	76.7	61.6		**14**	75.3	50.5		**14**	85.0	65.1	
15	78.9	55.8		**15**	77.5	44.3		**15**	85.5	67.0	
16	82.2	55.1	0.05	**16**	76.6	45.4		**16**	74.4	49.2	0.04
17	81.0	60.8	0.76	**17**	74.9	59.7	0.08	**17**	74.8	43.3	
18	83.6	55.3		**18**	77.1	59.7		**18**	76.7	45.4	
19	79.0	56.2		**19**	69.5	51.6	0.04	**19**	76.9	45.8	
20	84.5	64.6		**20**	74.5	51.5		**20**	78.7	46.0	
21	88.3	68.0	0.44	**21**	70.5	41.4		**21**	83.2	46.9	
22	83.0	68.6		**22**	78.2	42.0		**22**	84.6	45.9	
23	75.1	53.1		**23**	80.7	63.2		**23**	85.6	49.3	
24	74.5	48.5		**24**	83.4	59.1	0.01	**24**	80.8	57.2	
25	76.8	56.2		**25**	78.0	67.2	0.16	**25**	65.3	47.5	
26	81.0	52.8		**26**	80.2	62.9	0.15	**26**	75.6	38.0	
27	71.6	57.0		**27**	85.2	69.3		**27**	76.6	39.2	
28	80.6	50.4		**28**	73.1	58.1	1.41	**28**	68.6	48.8	0.05
29	81.1	58.8		**29**	71.1	54.0	0.10	**29**	71.6	39.9	
30	75.0	61.3	0.04	**30**	73.2	44.3		**30**	72.2	32.9	
31	75.9	56.8		**31**	79.0	51.6					

Weed Control in Asparagus - Hart

Project Code: WC 120-04-01 **Location: Hart, MI Res. Station**

Personnel: Bernard H. Zandstra, Michael Particka
Crop: Asparagus **Variety: SYN 4-56**
Planting Method: Transplant **Planting Date: 5/1/90**
Spacing: 12 IN **Row Spacing: 4.5 FT**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 5.33 ft wide x 50 ft long

Soil Type: Spinks Loamy Fine Sand **OM: 1.1%** **pH: 6.2**
Sand: 79% **Silt: 12%** **Clay: 9%** **CEC: 4.3**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	5/6/04	10:00 am	64/53	°F	Dry	7 SW	56	100% Cloudy	N
PO1	6/1/04	10:00 am	62/55	°F	Damp	3 SW	63	15% Cloudy	Y

Crop and Weed Information at Application

Date	Crop or Weed	Height or Diameter	Number of Leaves	Density
6/1	ASPA = Asparagus			
6/1	FISB = Field sandbur	0.5-1 in		
6/1	LACG = Large crabgrass			
6/1	BUDO = Burdock	2-3 in		
6/1	CLGC = Clammy groundcherry			
6/1	COLQ = Common lambsquarters	0.5-1.5 in		
6/1	COMW = Common milkweed	3-12 in		
6/1	EBNS = Eastern black nightshade			
6/1	RRPW = Redroot pigweed	0.5-1.5 in		
6/1	RUTH = Russian thistle	1-2 in		
6/1	WICA = Wild carrot	2-6 in		

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.

Weed Control in Asparagus - Hart

Dept. of Horticulture, MSU

Trial ID: WC 120-04-01 Study Director:
Location: Hart, MI Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	ASPA	FISB	BUDO	COLQ	COMW	RRPW
	Description											
	Rating Date						6/1/04	6/1/04	6/1/04	6/1/04	6/1/04	6/1/04
	Rating Data Type						RATING	RATING	RATING	RATING	RATING	RATING
	Rating Unit											
1	diuron	80	DF	1.2	lb ai/a	PRE	1.0	7.0	10.0	10.0	6.3	10.0
	dicamba	4	L	0.5	lb ai/a	PO1						
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1						
	NIS		L	0.5	% v/v	PO1						
2	diuron	80	DF	1.2	lb ai/a	PRE	1.7	7.7	10.0	10.0	7.7	10.0
	metribuzin	75	DF	0.6	lb ai/a	PRE						
3	flumioxazin	51	WG	0.2	lb ai/a	PRE	2.0	9.7	10.0	10.0	6.7	10.0
4	norflurazon	80	DF	2	lb ai/a	PRE	2.0	7.7	10.0	7.7	5.3	10.0
5	flumioxazin	51	WG	0.4	lb ai/a	PRE	1.3	10.0	10.0	10.0	7.3	10.0
6	sulfentrazone	75	DF	0.25	lb ai/a	PRE	2.0	7.7	7.0	10.0	4.7	10.0
7	halosulfuron	75	WG	0.047	lb ai/a	PRE	1.7	9.0	10.0	7.7	8.7	7.3
8	diuron	80	DF	1.2	lb ai/a	PRE	1.0	6.7	10.0	10.0	5.0	9.3
	halosulfuron	75	WG	0.047	lb ai/a	PO1						
	NIS		L	0.5	% v/v	PO1						
9	terbacil	80	WP	1.2	lb ai/a	PRE	1.3	9.3	10.0	9.0	7.3	9.0
10	halosulfuron	75	WG	0.023	lb ai/a	PO1	1.0	3.7	10.0	1.7	1.3	4.7
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1						
	NIS		L	0.5	% v/v	PO1						
11	dicamba	4	L	0.25	lb ai/a	PO1	1.0	4.7	10.0	7.0	1.7	5.3
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1						
	NIS		L	0.5	% v/v	PO1						
12	linuron	50	DF	0.5	lb ai/a	PO1	1.0	9.0	10.0	9.0	3.0	7.0
	clopyralid	3	EC	0.25	lb ai/a	PO1						
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1						
	NIS		L	0.5	% v/v	PO1						
13	linuron	50	DF	1	lb ai/a	PO1	1.0	5.0	10.0	1.0	4.3	6.3
	clopyralid	3	EC	0.188	lb ai/a	PO1						
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1						
	NIS		L	0.5	% v/v	PO1						
14	clomazone	3	ME	0.375	lb ai/a	PRE	1.7	10.0	10.0	9.7	6.0	9.3
15	AXIOM	68	DF	1	lb ai/a	PRE	1.0	9.3	10.0	10.0	5.3	10.0
	LSD (P=.05)						1.22	4.48	2.24	2.92	4.00	4.32
	Standard Deviation						0.73	2.68	1.34	1.75	2.39	2.58
	CV						53.16	34.53	13.69	21.36	44.52	30.16

Weed Control in Asparagus - Hart

Dept. of Horticulture, MSU

Description							WICA	ASPA	FISB	CLGC	COLQ
Rating Date							6/1/04	6/15/04	6/15/04	6/15/04	6/15/04
Rating Data Type							RATING	RATING	RATING	RATING	RATING
Rating Unit											
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
1	diuron	80	DF	1.2	lb ai/a	PRE	6.7	1.0	9.3	10.0	10.0
	dicamba	4	L	0.5	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.5	% v/v	PO1					
2	diuron	80	DF	1.2	lb ai/a	PRE	7.7	2.7	2.7	10.0	10.0
	metribuzin	75	DF	0.6	lb ai/a	PRE					
3	flumioxazin	51	WG	0.2	lb ai/a	PRE	3.3	2.7	7.0	10.0	10.0
4	norflurazon	80	DF	2	lb ai/a	PRE	4.3	2.0	10.0	10.0	5.0
5	flumioxazin	51	WG	0.4	lb ai/a	PRE	7.7	1.7	10.0	10.0	10.0
6	sulfentrazone	75	DF	0.25	lb ai/a	PRE	7.0	1.7	4.0	10.0	10.0
7	halosulfuron	75	WG	0.047	lb ai/a	PRE	10.0	2.0	4.7	6.0	7.0
8	diuron	80	DF	1.2	lb ai/a	PRE	8.3	1.7	2.0	10.0	10.0
	halosulfuron	75	WG	0.047	lb ai/a	PO1					
	NIS		L	0.5	% v/v	PO1					
9	terbacil	80	WP	1.2	lb ai/a	PRE	10.0	1.0	4.7	10.0	7.0
10	halosulfuron	75	WG	0.023	lb ai/a	PO1	2.0	1.0	10.0	8.3	5.7
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.5	% v/v	PO1					
11	dicamba	4	L	0.25	lb ai/a	PO1	2.7	1.0	10.0	10.0	10.0
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.5	% v/v	PO1					
12	linuron	50	DF	0.5	lb ai/a	PO1	5.3	1.7	9.7	10.0	10.0
	clopyralid	3	EC	0.25	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.5	% v/v	PO1					
13	linuron	50	DF	1	lb ai/a	PO1	5.0	1.7	10.0	10.0	10.0
	clopyralid	3	EC	0.188	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.5	% v/v	PO1					
14	clomazone	3	ME	0.375	lb ai/a	PRE	1.0	2.3	10.0	10.0	10.0
15	AXIOM	68	DF	1	lb ai/a	PRE	9.0	1.0	6.0	7.3	7.7
LSD (P=.05)							5.01	1.24	3.89	3.04	4.42
Standard Deviation							3.00	0.74	2.32	1.82	2.64
CV							49.96	44.4	31.69	19.27	29.95

Weed Control in Asparagus - Hart

Dept. of Horticulture, MSU

Description										
Rating Date							COMW 6/15/04	EBNS 6/15/04	RRPW 6/15/04	RUTH 6/15/04	WICA 6/15/04
Rating Data Type							RATING	RATING	RATING	RATING	RATING
Rating Unit											
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
1	diuron	80	DF	1.2	lb ai/a	PRE	8.3	10.0	10.0	10.0	6.0
	dicamba	4	L	0.5	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.5	% v/v	PO1					
2	diuron	80	DF	1.2	lb ai/a	PRE	4.7	10.0	5.3	10.0	9.0
	metribuzin	75	DF	0.6	lb ai/a	PRE					
3	flumioxazin	51	WG	0.2	lb ai/a	PRE	1.7	10.0	10.0	10.0	3.0
4	norflurazon	80	DF	2	lb ai/a	PRE	2.7	10.0	6.3	10.0	2.3
5	flumioxazin	51	WG	0.4	lb ai/a	PRE	1.3	10.0	10.0	10.0	5.3
6	sulfentrazone	75	DF	0.25	lb ai/a	PRE	4.0	9.0	10.0	10.0	7.0
7	halosulfuron	75	WG	0.047	lb ai/a	PRE	8.3	4.3	10.0	10.0	10.0
8	diuron	80	DF	1.2	lb ai/a	PRE	7.7	9.0	10.0	10.0	10.0
	halosulfuron	75	WG	0.047	lb ai/a	PO1					
	NIS		L	0.5	% v/v	PO1					
9	terbacil	80	WP	1.2	lb ai/a	PRE	7.7	10.0	1.7	10.0	10.0
10	halosulfuron	75	WG	0.023	lb ai/a	PO1	7.0	10.0	10.0	10.0	7.3
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.5	% v/v	PO1					
11	dicamba	4	L	0.25	lb ai/a	PO1	7.0	10.0	10.0	10.0	4.3
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.5	% v/v	PO1					
12	linuron	50	DF	0.5	lb ai/a	PO1	4.0	10.0	10.0	10.0	10.0
	clopyralid	3	EC	0.25	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.5	% v/v	PO1					
13	linuron	50	DF	1	lb ai/a	PO1	5.7	10.0	10.0	10.0	8.7
	clopyralid	3	EC	0.188	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.5	% v/v	PO1					
14	clomazone	3	ME	0.375	lb ai/a	PRE	4.0	10.0	4.7	10.0	1.0
15	AXIOM	68	DF	1	lb ai/a	PRE	4.7	9.0	2.3	9.3	4.7
LSD (P=.05)							3.70	2.44	3.19	0.50	4.49
Standard Deviation							2.21	1.46	1.91	0.30	2.68
CV							42.22	15.46	23.79	2.99	40.8

Weed Control in Asparagus - Hart

Dept. of Horticulture, MSU

Description						ASPA	ASPA	ASPA	ASPA	ASPA
Rating Date						5/9/04	5/11/04	5/12/04	5/14/04	5/17/04
Rating Data Type						YIELD	YIELD	YIELD	YIELD	YIELD
Rating Unit						G/PLOT	G/PLOT	G/PLOT	G/PLOT	G/PLOT
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
1	diuron	80	DF	1.2	lb ai/a	PRE	50.7	295.0	457.0	302.3	312.3
	dicamba	4	L	0.5	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.5	% v/v	PO1					
2	diuron	80	DF	1.2	lb ai/a	PRE	62.0	80.3	343.7	203.3	272.7
	metribuzin	75	DF	0.6	lb ai/a	PRE					
3	flumioxazin	51	WG	0.2	lb ai/a	PRE	45.0	47.7	291.3	414.3	363.0
4	norflurazon	80	DF	2	lb ai/a	PRE	71.3	199.0	234.7	147.0	149.7
5	flumioxazin	51	WG	0.4	lb ai/a	PRE	128.0	24.0	315.3	533.0	454.0
6	sulfentrazone	75	DF	0.25	lb ai/a	PRE	28.7	134.3	375.0	372.0	297.0
7	halosulfuron	75	WG	0.047	lb ai/a	PRE	147.0	332.0	320.0	354.7	303.0
8	diuron	80	DF	1.2	lb ai/a	PRE	96.7	248.7	358.0	395.7	326.3
	halosulfuron	75	WG	0.047	lb ai/a	PO1					
	NIS		L	0.5	% v/v	PO1					
9	terbacil	80	WP	1.2	lb ai/a	PRE	142.3	331.0	418.0	363.0	343.0
10	halosulfuron	75	WG	0.023	lb ai/a	PO1	201.0	319.0	477.7	425.0	416.0
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.5	% v/v	PO1					
11	dicamba	4	L	0.25	lb ai/a	PO1	165.7	292.7	466.7	389.0	348.3
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.5	% v/v	PO1					
12	linuron	50	DF	0.5	lb ai/a	PO1	92.3	390.0	425.0	400.0	345.0
	clopyralid	3	EC	0.25	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.5	% v/v	PO1					
13	linuron	50	DF	1	lb ai/a	PO1	97.7	227.0	342.3	339.3	307.7
	clopyralid	3	EC	0.188	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.5	% v/v	PO1					
14	clomazone	3	ME	0.375	lb ai/a	PRE	41.3	259.7	372.7	363.7	348.0
15	AXIOM	68	DF	1	lb ai/a	PRE	248.7	317.3	406.0	401.7	376.7
LSD (P=.05)							151.60	198.24	172.33	219.60	137.43
Standard Deviation							90.66	118.55	103.05	131.33	82.19
CV							84.03	50.84	27.59	36.45	24.84

Weed Control in Asparagus - Hart

Dept. of Horticulture, MSU

Description							ASPA	ASPA	ASPA	ASPA	ASPA
Rating Date							5/19/04	5/21/04	5/23/04	5/26/04	5/28/04
Rating Data Type							YIELD	YIELD	YIELD	YIELD	YIELD
Rating Unit							G/PLOT	G/PLOT	G/PLOT	G/PLOT	G/PLOT
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
1	diuron	80	DF	1.2	lb ai/a	PRE	294.7	271.0	216.3	179.7	138.3
	dicamba	4	L	0.5	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.5	% v/v	PO1					
2	diuron	80	DF	1.2	lb ai/a	PRE	151.7	239.0	165.3	131.0	87.3
	metribuzin	75	DF	0.6	lb ai/a	PRE					
3	flumioxazin	51	WG	0.2	lb ai/a	PRE	199.0	225.7	162.0	146.0	114.7
4	norflurazon	80	DF	2	lb ai/a	PRE	162.0	247.3	145.0	145.0	137.7
5	flumioxazin	51	WG	0.4	lb ai/a	PRE	240.3	346.3	247.7	220.7	125.0
6	sulfentrazone	75	DF	0.25	lb ai/a	PRE	195.0	275.0	179.7	292.7	147.0
7	halosulfuron	75	WG	0.047	lb ai/a	PRE	238.7	263.3	217.7	227.7	162.0
8	diuron	80	DF	1.2	lb ai/a	PRE	227.0	224.3	174.3	178.7	144.3
	halosulfuron	75	WG	0.047	lb ai/a	PO1					
	NIS		L	0.5	% v/v	PO1					
9	terbacil	80	WP	1.2	lb ai/a	PRE	312.3	316.3	204.7	154.3	187.0
10	halosulfuron	75	WG	0.023	lb ai/a	PO1	325.3	350.0	171.0	236.3	235.7
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.5	% v/v	PO1					
11	dicamba	4	L	0.25	lb ai/a	PO1	238.3	325.0	190.0	298.7	223.3
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.5	% v/v	PO1					
12	linuron	50	DF	0.5	lb ai/a	PO1	256.3	397.7	194.7	172.7	217.3
	clopyralid	3	EC	0.25	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.5	% v/v	PO1					
13	linuron	50	DF	1	lb ai/a	PO1	204.7	363.7	182.3	201.7	152.3
	clopyralid	3	EC	0.188	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.5	% v/v	PO1					
14	clomazone	3	ME	0.375	lb ai/a	PRE	258.7	337.0	240.3	232.7	135.3
15	AXIOM	68	DF	1	lb ai/a	PRE	301.0	370.0	296.0	230.3	136.7
LSD (P=.05)							125.22	139.20	105.76	125.46	77.09
Standard Deviation							74.88	83.24	63.25	75.03	46.10
CV							31.16	27.43	31.76	36.92	29.5

Weed Control in Asparagus - Hart

Dept. of Horticulture, MSU

Description						ASPA	ASPA	ASPA	ASPA	ASPA
Rating Date						5/31/04	6/2/04	6/4/04	6/6/04	6/7/04
Rating Data Type						YIELD	YIELD	YIELD	YIELD	YIELD
Rating Unit						G/PLOT	G/PLOT	G/PLOT	G/PLOT	G/PLOT
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
1	diuron	80	DF	1.2	lb ai/a	PRE	427.3	164.7	140.0	417.3	116.7
	dicamba	4	L	0.5	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.5	% v/v	PO1					
2	diuron	80	DF	1.2	lb ai/a	PRE	204.3	131.0	147.0	326.7	43.3
	metribuzin	75	DF	0.6	lb ai/a	PRE					
3	flumioxazin	51	WG	0.2	lb ai/a	PRE	340.7	179.3	145.7	403.3	72.0
4	norflurazon	80	DF	2	lb ai/a	PRE	245.7	148.3	97.0	231.0	35.3
5	flumioxazin	51	WG	0.4	lb ai/a	PRE	503.3	299.0	198.7	402.0	111.7
6	sulfentrazone	75	DF	0.25	lb ai/a	PRE	362.7	156.3	211.7	374.3	108.0
7	halosulfuron	75	WG	0.047	lb ai/a	PRE	396.0	162.0	143.0	394.3	107.7
8	diuron	80	DF	1.2	lb ai/a	PRE	335.0	123.0	149.3	364.3	66.7
	halosulfuron	75	WG	0.047	lb ai/a	PO1					
	NIS		L	0.5	% v/v	PO1					
9	terbacil	80	WP	1.2	lb ai/a	PRE	394.3	206.3	189.3	488.3	141.7
10	halosulfuron	75	WG	0.023	lb ai/a	PO1	496.7	195.7	259.7	470.7	120.0
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.5	% v/v	PO1					
11	dicamba	4	L	0.25	lb ai/a	PO1	482.7	269.7	187.0	420.0	154.7
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.5	% v/v	PO1					
12	linuron	50	DF	0.5	lb ai/a	PO1	422.0	220.7	229.3	495.7	137.3
	clopyralid	3	EC	0.25	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.5	% v/v	PO1					
13	linuron	50	DF	1	lb ai/a	PO1	395.0	167.3	172.0	397.7	89.3
	clopyralid	3	EC	0.188	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.5	% v/v	PO1					
14	clomazone	3	ME	0.375	lb ai/a	PRE	426.7	158.0	174.7	411.7	111.7
15	AXIOM	68	DF	1	lb ai/a	PRE	360.3	265.0	224.0	411.7	122.3
LSD (P=.05)							211.71	114.76	82.73	159.46	73.40
Standard Deviation							126.60	68.63	49.47	95.36	43.90
CV							32.78	36.17	27.81	23.8	42.8

Weed Control in Asparagus - Hart

Dept. of Horticulture, MSU

Description							ASPA	ASPA	ASPA	ASPA	ASPA
Rating Date							6/8/04	6/9/04	6/10/04	6/12/04	6/13/04
Rating Data Type							YIELD	YIELD	YIELD	YIELD	YIELD
Rating Unit							G/PLOT	G/PLOT	G/PLOT	G/PLOT	G/PLOT
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
1	diuron	80	DF	1.2	lb ai/a	PRE	178.0	146.0	77.3	112.3	135.3
	dicamba	4	L	0.5	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.5	% v/v	PO1					
2	diuron	80	DF	1.2	lb ai/a	PRE	102.0	180.3	80.7	92.3	127.7
	metribuzin	75	DF	0.6	lb ai/a	PRE					
3	flumioxazin	51	WG	0.2	lb ai/a	PRE	156.0	122.0	86.0	104.3	143.3
4	norflurazon	80	DF	2	lb ai/a	PRE	100.0	95.0	91.0	143.3	110.0
5	flumioxazin	51	WG	0.4	lb ai/a	PRE	197.7	223.0	124.0	190.0	223.0
6	sulfentrazone	75	DF	0.25	lb ai/a	PRE	93.0	214.3	125.7	99.0	165.7
7	halosulfuron	75	WG	0.047	lb ai/a	PRE	189.0	158.3	86.3	175.7	152.3
8	diuron	80	DF	1.2	lb ai/a	PRE	193.3	140.7	125.0	123.7	164.7
	halosulfuron	75	WG	0.047	lb ai/a	PO1					
	NIS		L	0.5	% v/v	PO1					
9	terbacil	80	WP	1.2	lb ai/a	PRE	169.7	140.7	86.3	164.3	134.0
10	halosulfuron	75	WG	0.023	lb ai/a	PO1	236.0	131.3	160.0	157.0	192.0
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.5	% v/v	PO1					
11	dicamba	4	L	0.25	lb ai/a	PO1	229.0	211.3	137.3	199.0	208.0
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.5	% v/v	PO1					
12	linuron	50	DF	0.5	lb ai/a	PO1	199.7	182.0	124.3	174.0	255.7
	clopyralid	3	EC	0.25	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.5	% v/v	PO1					
13	linuron	50	DF	1	lb ai/a	PO1	136.7	154.7	99.0	155.3	199.0
	clopyralid	3	EC	0.188	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.5	% v/v	PO1					
14	clomazone	3	ME	0.375	lb ai/a	PRE	193.3	212.7	95.7	165.0	148.0
15	AXIOM	68	DF	1	lb ai/a	PRE	198.7	186.7	158.3	188.0	159.3
LSD (P=.05)							83.07	101.74	68.91	108.43	91.56
Standard Deviation							49.68	60.84	41.21	64.84	54.76
CV							28.97	36.52	37.3	43.36	32.62

Weed Control in Asparagus - Hart

Dept. of Horticulture, MSU

Description							ASPA	ASPA	ASPA	ASPA
Rating Date							6/14/04	6/16/04	6/17/04	
Rating Data Type							YIELD	YIELD	YIELD	TOT YLD
Rating Unit							G/PLOT	G/PLOT	G/PLOT	KG/PLOT
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
1	diuron	80	DF	1.2	lb ai/a	PRE	87.0	298.3	107.0	4.92
	dicamba	4	L	0.5	lb ai/a	PO1				
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1				
	NIS		L	0.5	% v/v	PO1				
2	diuron	80	DF	1.2	lb ai/a	PRE	44.3	213.7	85.7	3.52
	metribuzin	75	DF	0.6	lb ai/a	PRE				
3	flumioxazin	51	WG	0.2	lb ai/a	PRE	118.3	300.7	110.0	4.29
4	norflurazon	80	DF	2	lb ai/a	PRE	64.3	213.0	74.0	3.29
5	flumioxazin	51	WG	0.4	lb ai/a	PRE	130.0	373.3	139.7	5.75
6	sulfentrazone	75	DF	0.25	lb ai/a	PRE	78.7	309.0	120.7	4.72
7	halosulfuron	75	WG	0.047	lb ai/a	PRE	112.7	320.7	94.0	5.06
8	diuron	80	DF	1.2	lb ai/a	PRE	86.3	283.0	104.7	4.63
	halosulfuron	75	WG	0.047	lb ai/a	PO1				
	NIS		L	0.5	% v/v	PO1				
9	terbacil	80	WP	1.2	lb ai/a	PRE	125.3	336.0	106.3	5.45
10	halosulfuron	75	WG	0.023	lb ai/a	PO1	129.7	487.3	91.3	6.28
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1				
	NIS		L	0.5	% v/v	PO1				
11	dicamba	4	L	0.25	lb ai/a	PO1	146.7	394.7	116.3	6.09
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1				
	NIS		L	0.5	% v/v	PO1				
12	linuron	50	DF	0.5	lb ai/a	PO1	97.3	387.3	102.0	5.92
	clopyralid	3	EC	0.25	lb ai/a	PO1				
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1				
	NIS		L	0.5	% v/v	PO1				
13	linuron	50	DF	1	lb ai/a	PO1	65.3	347.3	103.7	4.90
	clopyralid	3	EC	0.188	lb ai/a	PO1				
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1				
	NIS		L	0.5	% v/v	PO1				
14	clomazone	3	ME	0.375	lb ai/a	PRE	72.3	271.0	115.0	5.15
15	AXIOM	68	DF	1	lb ai/a	PRE	130.0	376.7	75.0	5.94
LSD (P=.05)							71.58	181.15	55.41	1.541
Standard Deviation							42.81	108.33	33.13	0.921
CV							43.14	33.08	32.16	18.21

Weed Control in a New Asparagus Field - Hart

Project Code: WC 120-04-02 **Location: Hart, MI Res. Station**

Personnel: Bernard H. Zandstra, Michael Particka
Crop: Asparagus **Variety: Millennium (Guelph)**
Planting Method: Transplant **Planting Date: 4/30/04**
Spacing: 12 IN **Row Spacing: 4.5 FT**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 4 ft wide x 50 ft long

Soil Type: Spinks Loamy Fine Sand **OM: 1.1%** **pH: 6.2**
Sand: 79% **Silt: 12%** **Clay: 9%** **CEC: 4.3**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
LPRE	5/6/04	11:00 am	60/54	°F	Damp	3 SE	75	100% Cloudy	Y

Crop and Weed Information at Application

Date	Crop or Weed	Height or Diameter	Number of Leaves	Density
6/15	ASPA = Asparagus			
6/15	FISB = Field snadbur			
6/15	RRPW = Redroot pigweed			
6/15	RUTH = Russian thistle			

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.

Weed Control in a New Asparagus Field - Hart

Dept. of Horticulture, MSU

Trial ID: WC 120-04-02 Study Director:
Location: Hart MI Investigator: Dr. Bernard Zandstra

Description							ASPA	FISB	RRPW	RUTH
Rating Date							6/15/04	6/15/04	6/15/04	6/15/04
Rating Data Type							RATING	RATING	RATING	RATING
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
1	diuron	80	DF	1.5	lb ai/a	PRE	1.3	7.7	2.7	9.3
2	metribuzin	75	DF	0.5	lb ai/a	PRE	1.3	7.0	2.7	6.0
3	linuron	50	DF	0.5	lb ai/a	PRE	1.7	9.0	5.0	4.3
4	halosulfuron	75	WG	0.032	lb ai/a	PRE	2.3	7.3	8.0	6.7
5	clomazone	3	ME	0.375	lb ai/a	PRE	2.3	10.0	5.7	10.0
6	flumioxazin	51	WDG	0.096	lb ai/a	PRE	2.3	10.0	10.0	10.0
7	sulfentrazone	75	DF	0.1875	lb ai/a	PRE	2.0	9.7	7.7	10.0
8	s-metolachlor	7.62	EC	1.3	lb ai/a	PRE	2.0	9.3	3.0	7.0
9	imazamox	1	AS	0.031	lb ai/a	PRE	2.3	10.0	4.3	7.3
10	napropramide	50	DF	4	lb ai/a	PRE	2.3	7.3	10.0	10.0
LSD (P=.05)							1.19	4.57	3.77	4.62
Standard Deviation							0.70	2.66	2.20	2.69
CV							34.83	30.47	37.25	33.39

Weed Control in Newly Planted Asparagus Crowns - Hart

Project Code: WC 120-03-03 **Location: Hart, MI Res. Station**

Personnel: Bernard H. Zandstra, Michael Particka
Crop: Asparagus **Variety: Jersey Giant & others**
Planting Method: Transplant **Planting Date: 5-10-03**
Spacing: 12 IN **Row Spacing: 4.5 FT**
Tillage Type: Conventional **Study Design: RCB** **Replications: 2**
Plot Size: 4 ft wide x 25 ft long

Soil Type: Spinks Loamy Fine Sand **OM: 11%** **pH: 6.1**
Sand: 83% **Silt: 9%** **Clay: 8%** **CEC: 4.1**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
LPRE	6/5/03	1:30 pm	65/66	°F	Dry	SW 1	44%	50% cloudy	N

Crop and Weed Information at Application

Date	Crop or Weed	Height or Diameter	Number of Leaves	Density
6/5	Asparagus	6″		
6/5	FISB = Field sandbur	1.5″	1-2	many
6/5	GRFT = Green foxtail			
6/5	LACG = Large crabgrass			
6/5	COLQ = Common lambsquarters	2″	2-6	many
6/5	RRPW = Redroot pigweed			
6/5	RUTH = Russian thistle	2.25″	2-4	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.
3. All treatments include Poast at 0.19 lb ai/A on 6-5-03.
4. All asparagus fern from each plot harvested 6/1/04.

Weed Control in Newly Planted Asparagus Crowns - Hart

Dept. of Horticulture, MSU

Trial ID: WC 120-03-03 Study Director:
Location: Hart, MI Res. Station Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	ASPA	FISB	COLQ	RRPW	RUTH
Description							ASPA	FISB	COLQ	RRPW	RUTH
Rating Date							6/25/03	6/25/03	6/25/03	6/25/03	6/25/03
Rating Data Type							RATING	RATING	RATING	RATING	RATING
Rating Unit											
1	diuron	80	DF	1.5	lb ai/a	PRE	1.0	9.5	9.0	9.0	6.0
2	metribuzin	75	DF	0.25	lb ai/a	PRE	1.5	10.0	9.0	9.0	4.0
3	linuron	50	DF	0.5	lb ai/a	PRE	1.5	8.5	10.0	9.0	2.0
4	halosulfuron	75	WG	0.032	lb ai/a	PRE	1.5	6.5	4.0	10.0	9.0
5	clomazone	3	ME	0.25	lb ai/a	PRE	2.5	10.0	3.0	7.5	1.5
6	flumioxazin	51	WG	0.047	lb ai/a	PRE	4.5	7.5	8.5	10.0	7.5
7	sulfentrazone	4	F	0.25	lb ai/a	PRE	4.5	10.0	10.0	10.0	10.0
8	norflurazon	80	DF	2	lb ai/a	PRE	2.5	6.5	1.0	9.0	2.0
9	s-metolachlor	7.62	EC	1.3	lb ai/a	PRE	2.0	10.0	1.0	5.5	1.5
10	DOMAIN	60	DF	0.6	lb ai/a	PRE	1.5	10.0	10.0	9.0	4.0
11	flufenacet	60	DF	0.6	lb ai/a	PRE	2.0	9.0	1.5	7.5	6.5
12	untreated						3.5	2.0	1.0	2.5	4.5
LSD (P=.05)							2.98	4.93	2.78	5.30	4.85
Standard Deviation							1.35	2.24	1.26	2.41	2.20
CV							56.95	27.0	22.26	29.5	45.22

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	ASPA	FISB	GRFT	LACG	COLQ
Description							ASPA	FISB	GRFT	LACG	COLQ
Rating Date							7/23/03	7/23/03	7/23/03	7/23/03	7/23/03
Rating Data Type							RATING	RATING	RATING	RATING	RATING
Rating Unit											
1	diuron	80	DF	1.5	lb ai/a	PRE	1.0	10.0	10.0	10.0	9.5
2	metribuzin	75	DF	0.25	lb ai/a	PRE	2.5	10.0	10.0	10.0	8.5
3	linuron	50	DF	0.5	lb ai/a	PRE	3.0	5.5	6.5	5.5	7.5
4	halosulfuron	75	WG	0.032	lb ai/a	PRE	3.0	9.5	10.0	10.0	4.0
5	clomazone	3	ME	0.25	lb ai/a	PRE	5.0	10.0	10.0	10.0	1.0
6	flumioxazin	51	WG	0.047	lb ai/a	PRE	3.0	9.5	10.0	7.0	9.5
7	sulfentrazone	4	F	0.25	lb ai/a	PRE	3.5	10.0	10.0	2.5	10.0
8	norflurazon	80	DF	2	lb ai/a	PRE	4.0	10.0	10.0	7.0	1.0
9	s-metolachlor	7.62	EC	1.3	lb ai/a	PRE	2.0	10.0	10.0	10.0	1.0
10	DOMAIN	60	DF	0.6	lb ai/a	PRE	2.5	10.0	10.0	10.0	7.5
11	flufenacet	60	DF	0.6	lb ai/a	PRE	4.5	10.0	10.0	10.0	1.0
12	untreated						5.5	10.0	10.0	10.0	1.0
LSD (P=.05)							4.52	4.17	3.14	5.75	2.93
Standard Deviation							2.06	1.89	1.43	2.61	1.33
CV							62.43	19.85	14.72	30.72	25.95

Weed Control in Newly Planted Asparagus Crowns - Hart

Dept. of Horticulture, MSU

Description							RRPW	RUTH	ASPA	ASPA
Rating Date							7/23/03	7/23/03	6/1/04	6/1/04
Rating Data Type							RATING	RATING	RATING	FERN WT
Rating Unit										KG/PLOT
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
1	diuron	80	DF	1.5	lb ai/a	PRE	6.0	4.5	2.0	0.99
2	metribuzin	75	DF	0.25	lb ai/a	PRE	8.5	2.5	3.0	0.89
3	linuron	50	DF	0.5	lb ai/a	PRE	8.0	1.5	3.0	0.88
4	halosulfuron	75	WG	0.032	lb ai/a	PRE	9.0	6.5	4.0	0.83
5	clomazone	3	ME	0.25	lb ai/a	PRE	10.0	4.5	4.5	0.56
6	flumioxazin	51	WG	0.047	lb ai/a	PRE	10.0	6.5	4.5	0.42
7	sulfentrazone	4	F	0.25	lb ai/a	PRE	10.0	10.0	3.0	1.34
8	norflurazon	80	DF	2	lb ai/a	PRE	9.0	5.5	5.5	0.28
9	s-metolachlor	7.62	EC	1.3	lb ai/a	PRE	9.0	5.5	4.5	0.53
10	DOMAIN	60	DF	0.6	lb ai/a	PRE	8.5	3.5	2.0	1.26
11	flufenacet	60	DF	0.6	lb ai/a	PRE	8.0	8.5	4.0	0.48
12	untreated						8.5	7.0	5.5	0.27
LSD (P=.05)							2.85	4.44	3.72	1.085
Standard Deviation							1.30	2.02	1.69	0.493
CV							14.88	36.71	44.6	67.97

Weed Control in Asparagus - HTRC

Project Code: WC 120-04-03 **Location: HTRC, Sandhill**

Personnel: Bernard H. Zandstra, Michael Particka
Crop: Asparagus **Variety: Jersey Giant**
Planting Method: Transplant **Planting Date: 4/20/99**
Spacing: 12 IN **Row Spacing: 6 FT**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 6 ft wide x 50 ft long

Soil Type: Riddles Sandy Loam **OM: 1.0%** **pH: 8.1**
Sand: 83% **Silt: 6%** **Clay: 8%** **CEC: 13.7**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	4/16/04	5:00 pm	77/61	°F	Dry	6 SW	30	50% Cloudy	N
PO1	5/26/04	3:00 pm	60/64	°F	Damp	5 W	63	50% Cloudy	N

Crop and Weed Information at Application

Date	Crop or Weed	Height or Diameter	Number of Leaves	Density
4/16	ASPA = Asparagus			
4/16	FISB = Field sandbur			
4/16	QUGR = Quackgrass	3-5 in		
4/16	CORW = Common ragweed			
4/16	EBNS = Eastern black nightshade			
4/16	MATA = Marestail (horseweed)			
4/16	WICA = Wild carrot	1 in		
5/26	ASPA = Asparagus			
5/26	FISB = Field sandbur			
5/26	QUGR = Quackgrass	4-8 in		
5/26	CORW = Common ragweed			
5/26	EBNS = Eastern black nightshade			
5/26	MATA = Marestail (horseweed)	2-6 in	6-10	
5/26	WICA = Wild carrot			

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.

Weed Control in Asparagus - HTRC

Dept. of Horticulture, MSU

Trial ID: WC 120-04-03 Study Director:

Location: HTRC Sandhill Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	ASPA 5/26/04 RATING	QUGR 5/26/04 RATING	CORW 5/26/04 RATING	MATA 5/26/04 RATING	WICA 5/26/04 RATING
1	diuron	80	DF	1.2	lb ai/a	PRE	1.0	2.7	8.7	6.0	4.0
2	metribuzin	75	DF	0.5	lb ai/a	PRE	1.3	7.7	10.0	9.7	7.7
3	diuron	80	DF	1.2	lb ai/a	PRE	1.7	9.0	10.0	10.0	9.3
	metribuzin	75	DF	0.5	lb ai/a	PRE					
4	terbacil	80	WP	1.2	lb ai/a	PRE	2.0	9.3	10.0	10.0	10.0
5	flumioxazin	51	WDG	0.192	lb ai/a	PRE	1.3	4.3	9.3	4.3	6.0
6	sulfentrazone	75	DF	0.375	lb ai/a	PRE	1.3	4.7	5.7	6.3	4.7
7	halosulfuron	75	WG	0.47	lb ai/a	PRE	1.3	2.7	10.0	6.7	10.0
8	mesotrione	4	SC	0.094	lb ai/a	PRE	1.7	3.7	9.0	10.0	6.7
9	diuron	80	DF	1.2	lb ai/a	PRE	1.0	4.7	10.0	8.7	6.0
	s-metolachlor	7.62	EC	1.3	lb ai/a	PRE					
10	clomazone	3	ME	1	lb ai/a	PRE	1.7	8.7	7.7	4.3	6.0
11	diuron	80	DF	1.2	lb ai/a	PRE	1.3	4.0	9.7	3.0	1.0
	mesotrione	4	SC	0.094	lb ai/a	PO1					
	COC		L	1	% v/v	PO1					
	AMS	100	DF	2	% ai/v	PO1					
12	diuron	80	DF	1.2	lb ai/a	PRE	1.3	5.3	7.7	7.0	2.3
	carfentrazone	2	EW	0.03	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	COC		L	1	% v/v	PO1					
	AMS	100	DF	2	% ai/v	PO1					
LSD (P=.05)							0.88	4.01	3.13	3.54	4.74
Standard Deviation							0.52	2.37	1.85	2.09	2.80
CV							36.86	42.61	20.57	29.15	45.63

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	ASPA 6/11/04 RATING	FISB 6/11/04 RATING	QUGR 6/11/04 RATING	CORW 6/11/04 RATING	MATA 6/11/04 RATING
1	diuron	80	DF	1.2	lb ai/a	PRE	1.0	8.0	3.0	7.3	6.0
2	metribuzin	75	DF	0.5	lb ai/a	PRE	1.3	6.7	7.3	9.3	9.3
3	diuron	80	DF	1.2	lb ai/a	PRE	1.3	9.0	8.3	10.0	9.7
	metribuzin	75	DF	0.5	lb ai/a	PRE					
4	terbacil	80	WP	1.2	lb ai/a	PRE	1.7	9.0	9.3	10.0	9.7
5	flumioxazin	51	WDG	0.192	lb ai/a	PRE	1.3	10.0	4.7	9.0	4.0
6	sulfentrazone	75	DF	0.375	lb ai/a	PRE	1.0	7.0	3.7	2.3	4.3
7	halosulfuron	75	WG	0.47	lb ai/a	PRE	1.3	10.0	4.7	10.0	4.3
8	mesotrione	4	SC	0.094	lb ai/a	PRE	1.3	7.3	3.0	7.7	10.0
9	diuron	80	DF	1.2	lb ai/a	PRE	1.0	9.7	4.3	10.0	7.7
	s-metolachlor	7.62	EC	1.3	lb ai/a	PRE					
10	clomazone	3	ME	1	lb ai/a	PRE	1.7	9.7	8.3	9.7	2.7
11	diuron	80	DF	1.2	lb ai/a	PRE	1.3	10.0	8.3	10.0	10.0
	mesotrione	4	SC	0.094	lb ai/a	PO1					
	COC		L	1	% v/v	PO1					
	AMS	100	DF	2	% ai/v	PO1					
12	diuron	80	DF	1.2	lb ai/a	PRE	1.0	10.0	7.7	10.0	8.3
	carfentrazone	2	EW	0.03	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	COC		L	1	% v/v	PO1					
	AMS	100	DF	2	% ai/v	PO1					
LSD (P=.05)							0.82	1.63	3.52	2.76	3.31
Standard Deviation							0.48	0.96	2.08	1.63	1.96
CV							37.72	10.83	34.34	18.59	27.29

Weed Control in Asparagus - HTRC

Dept. of Horticulture, MSU

Description							WICA	ASPA	ASPA	ASPA	ASPA
Rating Date							6/11/04	4/21/04	4/21/04	4/21/04	4/21/04
Rating Data Type							RATING	GOOD SPR	BAD SPR	GOOD SPR	BAD SPR
Rating Unit								NUMBER	NUMBER	G/PLOT	G/PLOT
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
1	diuron	80	DF	1.2	lb ai/a	PRE	6.0	6.7	0.0	137.0	0.0
2	metribuzin	75	DF	0.5	lb ai/a	PRE	5.3	25.7	2.3	502.7	47.0
3	diuron	80	DF	1.2	lb ai/a	PRE	8.7	18.7	3.0	406.3	62.7
	metribuzin	75	DF	0.5	lb ai/a	PRE					
4	terbacil	80	WP	1.2	lb ai/a	PRE	10.0	5.7	6.0	108.0	107.0
5	flumioxazin	51	WDG	0.192	lb ai/a	PRE	5.3	5.3	10.3	86.0	227.3
6	sulfentrazone	75	DF	0.375	lb ai/a	PRE	4.0	5.7	10.3	96.3	184.0
7	halosulfuron	75	WG	0.47	lb ai/a	PRE	9.7	14.0	1.7	262.0	38.7
8	mesotrione	4	SC	0.094	lb ai/a	PRE	6.0	16.0	0.3	360.7	5.0
9	diuron	80	DF	1.2	lb ai/a	PRE	5.0	14.0	2.0	257.7	36.7
	s-metolachlor	7.62	EC	1.3	lb ai/a	PRE					
10	clomazone	3	ME	1	lb ai/a	PRE	4.3	19.3	0.7	408.0	8.7
11	diuron	80	DF	1.2	lb ai/a	PRE	8.0	12.7	0.3	249.0	11.7
	mesotrione	4	SC	0.094	lb ai/a	PO1					
	COC		L	1	% v/v	PO1					
	AMS	100	DF	2	% ai/v	PO1					
12	diuron	80	DF	1.2	lb ai/a	PRE	3.0	12.3	0.7	280.7	7.3
	carfentrazone	2	EW	0.03	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	COC		L	1	% v/v	PO1					
	AMS	100	DF	2	% ai/v	PO1					
LSD (P=.05)							5.60	15.36	8.40	312.62	147.32
Standard Deviation							3.31	9.07	4.96	184.61	87.00
CV							52.72	69.76	157.98	70.23	141.85

Description							ASPA	ASPA	ASPA	ASPA	ASPA
Rating Date							4/23/04	4/23/04	4/23/04	4/23/04	4/26/04
Rating Data Type							GOOD SPR	BAD SPR	GOOD SPR	BAD SPR	GOOD SPR
Rating Unit							NUMBER	NUMBER	G/PLOT	G/PLOT	NUMBER
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
1	diuron	80	DF	1.2	lb ai/a	PRE	6.7	1.3	136.3	27.3	22.3
2	metribuzin	75	DF	0.5	lb ai/a	PRE	16.0	0.7	285.7	14.7	20.0
3	diuron	80	DF	1.2	lb ai/a	PRE	12.3	0.7	244.0	12.0	31.3
	metribuzin	75	DF	0.5	lb ai/a	PRE					
4	terbacil	80	WP	1.2	lb ai/a	PRE	8.7	1.7	164.3	26.7	20.3
5	flumioxazin	51	WDG	0.192	lb ai/a	PRE	4.3	2.7	102.3	66.0	20.0
6	sulfentrazone	75	DF	0.375	lb ai/a	PRE	12.7	3.0	222.0	51.0	23.7
7	halosulfuron	75	WG	0.47	lb ai/a	PRE	7.0	0.7	155.3	12.7	21.3
8	mesotrione	4	SC	0.094	lb ai/a	PRE	14.0	2.0	284.7	41.3	27.7
9	diuron	80	DF	1.2	lb ai/a	PRE	7.7	1.0	135.7	21.7	22.7
	s-metolachlor	7.62	EC	1.3	lb ai/a	PRE					
10	clomazone	3	ME	1	lb ai/a	PRE	19.0	2.0	372.0	28.7	26.7
11	diuron	80	DF	1.2	lb ai/a	PRE	10.3	0.7	212.0	13.0	14.3
	mesotrione	4	SC	0.094	lb ai/a	PO1					
	COC		L	1	% v/v	PO1					
	AMS	100	DF	2	% ai/v	PO1					
12	diuron	80	DF	1.2	lb ai/a	PRE	10.3	0.7	228.0	12.0	20.7
	carfentrazone	2	EW	0.03	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	COC		L	1	% v/v	PO1					
	AMS	100	DF	2	% ai/v	PO1					
LSD (P=.05)							9.96	2.34	185.15	56.05	16.53
Standard Deviation							5.88	1.38	109.34	33.10	9.76
CV							54.72	97.34	51.61	121.47	43.23

Weed Control in Asparagus - HTRC

Dept. of Horticulture, MSU

Description							ASPA	ASPA	ASPA	ASPA	ASPA
Rating Date							4/26/04	4/26/04	4/26/04	4/29/04	4/29/04
Rating Data Type							BAD SPR	GOOD SPR	BAD SPR	GOOD SPR	BAD SPR
Rating Unit							NUMBER	G/PLOT	G/PLOT	NUMBER	NUMBER
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
1	diuron	80	DF	1.2	lb ai/a	PRE	2.7	399.0	52.3	30.0	3.7
2	metribuzin	75	DF	0.5	lb ai/a	PRE	4.0	353.0	77.3	50.3	2.7
3	diuron	80	DF	1.2	lb ai/a	PRE	1.7	552.3	25.3	33.3	3.3
	metribuzin	75	DF	0.5	lb ai/a	PRE					
4	terbacil	80	WP	1.2	lb ai/a	PRE	4.7	332.7	86.0	18.7	1.7
5	flumioxazin	51	WDG	0.192	lb ai/a	PRE	5.0	368.3	88.3	21.0	15.3
6	sulfentrazone	75	DF	0.375	lb ai/a	PRE	4.0	430.7	76.7	29.3	3.0
7	halosulfuron	75	WG	0.47	lb ai/a	PRE	1.7	437.7	35.0	27.0	5.3
8	mesotrione	4	SC	0.094	lb ai/a	PRE	4.0	497.0	72.3	33.7	4.0
9	diuron	80	DF	1.2	lb ai/a	PRE	3.0	416.7	57.0	25.3	2.3
	s-metolachlor	7.62	EC	1.3	lb ai/a	PRE					
10	clomazone	3	ME	1	lb ai/a	PRE	2.3	507.3	42.0	28.7	2.3
11	diuron	80	DF	1.2	lb ai/a	PRE	2.7	305.0	63.7	32.3	4.0
	mesotrione	4	SC	0.094	lb ai/a	PO1					
	COC		L	1	% v/v	PO1					
	AMS	100	DF	2	% ai/v	PO1					
12	diuron	80	DF	1.2	lb ai/a	PRE	2.3	411.0	52.3	34.7	3.0
	carfentrazone	2	EW	0.03	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	COC		L	1	% v/v	PO1					
	AMS	100	DF	2	% ai/v	PO1					
LSD (P=.05)							3.53	305.39	72.51	18.03	3.57
Standard Deviation							2.08	180.34	42.82	10.65	2.11
CV							65.79	43.19	70.55	35.07	49.89

Description							ASPA	ASPA	ASPA	ASPA	ASPA
Rating Date							4/29/04	4/29/04	5/3/04	5/3/04	5/3/04
Rating Data Type							GOOD SPR	BAD SPR	GOOD SPR	BAD SPR	GOOD SPR
Rating Unit							G/PLOT	G/PLOT	NUMBER	NUMBER	G/PLOT
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
1	diuron	80	DF	1.2	lb ai/a	PRE	497.0	68.3	26.7	1.3	547.3
2	metribuzin	75	DF	0.5	lb ai/a	PRE	794.7	43.0	43.7	3.0	857.3
3	diuron	80	DF	1.2	lb ai/a	PRE	578.3	49.3	37.7	2.0	759.3
	metribuzin	75	DF	0.5	lb ai/a	PRE					
4	terbacil	80	WP	1.2	lb ai/a	PRE	395.7	40.7	28.7	1.3	582.0
5	flumioxazin	51	WDG	0.192	lb ai/a	PRE	363.0	324.7	37.7	4.0	767.3
6	sulfentrazone	75	DF	0.375	lb ai/a	PRE	542.0	56.0	37.7	3.7	717.7
7	halosulfuron	75	WG	0.47	lb ai/a	PRE	508.3	94.0	26.7	2.0	595.0
8	mesotrione	4	SC	0.094	lb ai/a	PRE	570.7	56.7	37.3	2.7	754.3
9	diuron	80	DF	1.2	lb ai/a	PRE	418.0	47.3	31.7	3.0	595.3
	s-metolachlor	7.62	EC	1.3	lb ai/a	PRE					
10	clomazone	3	ME	1	lb ai/a	PRE	480.7	49.7	32.7	3.7	632.7
11	diuron	80	DF	1.2	lb ai/a	PRE	564.7	72.3	33.7	3.7	678.0
	mesotrione	4	SC	0.094	lb ai/a	PO1					
	COC		L	1	% v/v	PO1					
	AMS	100	DF	2	% ai/v	PO1					
12	diuron	80	DF	1.2	lb ai/a	PRE	676.3	57.0	38.7	3.3	799.7
	carfentrazone	2	EW	0.03	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	COC		L	1	% v/v	PO1					
	AMS	100	DF	2	% ai/v	PO1					
LSD (P=.05)							300.74	86.35	18.51	2.32	392.16
Standard Deviation							177.60	50.99	10.93	1.37	231.58
CV							33.35	63.81	31.78	48.82	33.54

Weed Control in Asparagus - HTRC

Dept. of Horticulture, MSU

Description							ASPA	ASPA	ASPA	ASPA	ASPA
Rating Date							5/3/04	5/10/04	5/10/04	5/10/04	5/10/04
Rating Data Type							BAD SPR	GOOD SPR	BAD SPR	GOOD SPR	BAD SPR
Rating Unit							G/PLOT	NUMBER	NUMBER	G/PLOT	G/PLOT
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
1	diuron	80	DF	1.2	lb ai/a	PRE	24.3	19.0	3.0	371.0	59.3
2	metribuzin	75	DF	0.5	lb ai/a	PRE	51.0	27.7	3.3	484.7	53.7
3	diuron	80	DF	1.2	lb ai/a	PRE	37.0	25.0	2.0	504.0	32.7
	metribuzin	75	DF	0.5	lb ai/a	PRE					
4	terbacil	80	WP	1.2	lb ai/a	PRE	18.0	20.3	4.0	383.3	57.0
5	flumioxazin	51	WDG	0.192	lb ai/a	PRE	80.7	17.0	3.0	333.3	53.7
6	sulfentrazone	75	DF	0.375	lb ai/a	PRE	81.7	26.0	3.3	478.3	63.0
7	halosulfuron	75	WG	0.47	lb ai/a	PRE	32.3	14.0	2.3	256.3	46.3
8	mesotrione	4	SC	0.094	lb ai/a	PRE	47.3	26.0	2.7	502.0	56.0
9	diuron	80	DF	1.2	lb ai/a	PRE	52.3	29.0	4.7	513.7	90.7
	s-metolachlor	7.62	EC	1.3	lb ai/a	PRE					
10	clomazone	3	ME	1	lb ai/a	PRE	68.7	25.7	2.3	497.0	37.3
11	diuron	80	DF	1.2	lb ai/a	PRE	64.0	21.0	3.0	405.0	50.3
	mesotrione	4	SC	0.094	lb ai/a	PO1					
	COC		L	1	% v/v	PO1					
	AMS	100	DF	2	% ai/v	PO1					
12	diuron	80	DF	1.2	lb ai/a	PRE	74.3	32.0	5.0	623.3	111.3
	carfentrazone	2	EW	0.03	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	COC		L	1	% v/v	PO1					
	AMS	100	DF	2	% ai/v	PO1					
LSD (P=.05)							47.47	14.61	4.12	279.25	89.25
Standard Deviation							28.03	8.63	2.43	164.90	52.71
CV							53.26	36.63	75.42	36.97	88.92

Description							ASPA	ASPA	ASPA	ASPA	ASPA
Rating Date							5/12/04	5/12/04	5/12/04	5/12/04	5/17/04
Rating Data Type							GOOD SPR	BAD SPR	GOOD SPR	BAD SPR	GOOD SPR
Rating Unit							NUMBER	NUMBER	G/PLOT	G/PLOT	NUMBER
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
1	diuron	80	DF	1.2	lb ai/a	PRE	28.3	3.0	493.3	39.3	16.7
2	metribuzin	75	DF	0.5	lb ai/a	PRE	32.7	3.0	541.7	33.0	22.7
3	diuron	80	DF	1.2	lb ai/a	PRE	35.0	1.7	579.7	27.7	21.3
	metribuzin	75	DF	0.5	lb ai/a	PRE					
4	terbacil	80	WP	1.2	lb ai/a	PRE	27.3	3.7	436.7	49.3	17.0
5	flumioxazin	51	WDG	0.192	lb ai/a	PRE	30.3	4.0	569.7	71.3	18.0
6	sulfentrazone	75	DF	0.375	lb ai/a	PRE	32.7	3.7	629.3	80.0	22.3
7	halosulfuron	75	WG	0.47	lb ai/a	PRE	32.0	3.0	551.3	40.3	17.7
8	mesotrione	4	SC	0.094	lb ai/a	PRE	31.3	2.3	557.0	30.0	24.7
9	diuron	80	DF	1.2	lb ai/a	PRE	29.3	2.3	495.3	32.0	22.7
	s-metolachlor	7.62	EC	1.3	lb ai/a	PRE					
10	clomazone	3	ME	1	lb ai/a	PRE	31.0	2.3	565.3	36.0	22.7
11	diuron	80	DF	1.2	lb ai/a	PRE	26.0	1.7	469.3	35.0	18.0
	mesotrione	4	SC	0.094	lb ai/a	PO1					
	COC		L	1	% v/v	PO1					
	AMS	100	DF	2	% ai/v	PO1					
12	diuron	80	DF	1.2	lb ai/a	PRE	34.7	3.7	680.3	79.7	19.0
	carfentrazone	2	EW	0.03	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	COC		L	1	% v/v	PO1					
	AMS	100	DF	2	% ai/v	PO1					
LSD (P=.05)							19.03	2.88	338.35	53.44	10.15
Standard Deviation							11.24	1.70	199.80	31.56	5.99
CV							36.38	59.43	36.5	68.4	29.64

Weed Control in Asparagus - HTRC

Dept. of Horticulture, MSU

Description							ASPA	ASPA	ASPA	ASPA	ASPA
Rating Date							5/17/04	5/17/04	5/17/04	5/19/04	5/19/04
Rating Data Type							BAD SPR	GOOD SPR	BAD SPR	GOOD SPR	BAD SPR
Rating Unit							NUMBER	G/PLOT	G/PLOT	NUMBER	NUMBER
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
1	diuron	80	DF	1.2	lb ai/a	PRE	3.7	319.3	66.3	25.3	4.0
2	metribuzin	75	DF	0.5	lb ai/a	PRE	2.3	414.0	53.0	39.3	4.7
3	diuron	80	DF	1.2	lb ai/a	PRE	1.0	370.7	17.0	30.0	4.0
	metribuzin	75	DF	0.5	lb ai/a	PRE					
4	terbacil	80	WP	1.2	lb ai/a	PRE	1.3	332.3	25.3	22.7	5.3
5	flumioxazin	51	WDG	0.192	lb ai/a	PRE	3.3	358.0	80.7	25.3	4.0
6	sulfentrazone	75	DF	0.375	lb ai/a	PRE	2.3	437.3	39.0	30.0	5.3
7	halosulfuron	75	WG	0.47	lb ai/a	PRE	3.3	327.0	59.7	22.3	4.3
8	mesotrione	4	SC	0.094	lb ai/a	PRE	2.7	446.0	48.3	32.0	3.7
9	diuron	80	DF	1.2	lb ai/a	PRE	3.7	415.7	55.3	27.0	7.0
	s-metolachlor	7.62	EC	1.3	lb ai/a	PRE					
10	clomazone	3	ME	1	lb ai/a	PRE	2.7	378.0	48.3	31.0	3.0
11	diuron	80	DF	1.2	lb ai/a	PRE	4.0	363.0	57.7	31.0	4.0
	mesotrione	4	SC	0.094	lb ai/a	PO1					
	COC		L	1	% v/v	PO1					
	AMS	100	DF	2	% ai/v	PO1					
12	diuron	80	DF	1.2	lb ai/a	PRE	3.3	362.3	28.7	32.0	4.7
	carfentrazone	2	EW	0.03	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	COC		L	1	% v/v	PO1					
	AMS	100	DF	2	% ai/v	PO1					
LSD (P=.05)							2.71	211.70	55.40	15.25	3.90
Standard Deviation							1.60	125.01	32.72	9.01	2.30
CV							57.01	33.16	67.77	31.05	51.14

Description							ASPA	ASPA	ASPA	ASPA	ASPA
Rating Date							5/19/04	5/19/04	5/26/04	5/26/04	5/26/04
Rating Data Type							GOOD SPR	BAD SPR	GOOD SPR	BAD SPR	GOOD SPR
Rating Unit							G/PLOT	G/PLOT	NUMBER	NUMBER	G/PLOT
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
1	diuron	80	DF	1.2	lb ai/a	PRE	496.0	95.0	17.0	3.7	293.0
2	metribuzin	75	DF	0.5	lb ai/a	PRE	689.3	78.7	14.3	1.3	191.3
3	diuron	80	DF	1.2	lb ai/a	PRE	534.3	80.0	16.3	2.7	237.0
	metribuzin	75	DF	0.5	lb ai/a	PRE					
4	terbacil	80	WP	1.2	lb ai/a	PRE	415.3	95.3	9.3	1.7	140.3
5	flumioxazin	51	WDG	0.192	lb ai/a	PRE	456.0	66.3	10.0	4.0	159.3
6	sulfentrazone	75	DF	0.375	lb ai/a	PRE	538.3	93.3	11.3	2.7	190.7
7	halosulfuron	75	WG	0.47	lb ai/a	PRE	450.0	65.7	14.0	2.0	225.0
8	mesotrione	4	SC	0.094	lb ai/a	PRE	574.3	55.0	15.0	2.3	234.3
9	diuron	80	DF	1.2	lb ai/a	PRE	497.3	122.7	12.7	2.7	203.3
	s-metolachlor	7.62	EC	1.3	lb ai/a	PRE					
10	clomazone	3	ME	1	lb ai/a	PRE	553.7	43.7	17.0	3.0	227.0
11	diuron	80	DF	1.2	lb ai/a	PRE	524.7	72.7	10.7	2.7	187.3
	mesotrione	4	SC	0.094	lb ai/a	PO1					
	COC		L	1	% v/v	PO1					
	AMS	100	DF	2	% ai/v	PO1					
12	diuron	80	DF	1.2	lb ai/a	PRE	600.7	93.0	17.0	1.7	242.0
	carfentrazone	2	EW	0.03	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	COC		L	1	% v/v	PO1					
	AMS	100	DF	2	% ai/v	PO1					
LSD (P=.05)							295.78	80.95	5.90	2.98	89.23
Standard Deviation							174.66	47.81	3.48	1.76	52.69
CV							33.11	59.67	25.37	69.69	24.99

Weed Control in Asparagus - HTRC

Dept. of Horticulture, MSU

Description							ASPA	ASPA	ASPA	ASPA	ASPA
Rating Date							5/26/04				
Rating Data Type							BAD SPR	GOOD SPR	BAD SPR	GOOD SPR	BAD SPR
Rating Unit							G/PLOT	TOT NO.	TOT NO.	TOT KG/PL	TOT KG/PL
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
1	diuron	80	DF	1.2	lb ai/a	PRE	52.7	198.7	26.3	3.689	0.485
2	metribuzin	75	DF	0.5	lb ai/a	PRE	12.7	292.3	27.3	5.114	0.464
3	diuron	80	DF	1.2	lb ai/a	PRE	35.7	261.0	22.0	4.766	0.379
	metribuzin	75	DF	0.5	lb ai/a	PRE					
4	terbacil	80	WP	1.2	lb ai/a	PRE	29.0	178.7	31.3	3.291	0.534
5	flumioxazin	51	WDG	0.192	lb ai/a	PRE	70.7	189.0	55.7	3.563	1.130
6	sulfentrazone	75	DF	0.375	lb ai/a	PRE	47.3	231.3	41.3	4.283	0.772
7	halosulfuron	75	WG	0.47	lb ai/a	PRE	50.7	196.0	26.3	3.768	0.475
8	mesotrione	4	SC	0.094	lb ai/a	PRE	45.3	257.7	26.7	4.781	0.457
9	diuron	80	DF	1.2	lb ai/a	PRE	46.0	222.0	31.7	3.949	0.562
	s-metolachlor	7.62	EC	1.3	lb ai/a	PRE					
10	clomazone	3	ME	1	lb ai/a	PRE	40.3	253.7	24.3	4.622	0.403
11	diuron	80	DF	1.2	lb ai/a	PRE	85.3	210.0	26.7	3.958	0.526
	mesotrione	4	SC	0.094	lb ai/a	PO1					
	COC		L	1	% v/v	PO1					
	AMS	100	DF	2	% ai/v	PO1					
12	diuron	80	DF	1.2	lb ai/a	PRE	26.3	251.3	28.3	4.904	0.542
	carfentrazone	2	EW	0.03	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	COC		L	1	% v/v	PO1					
	AMS	100	DF	2	% ai/v	PO1					
LSD (P=.05)							52.52	113.45	15.89	2.0912	0.3236
Standard Deviation							31.01	67.00	9.38	1.2349	0.1911
CV							68.67	29.32	30.6	29.24	34.08

Weed Control in Snap Bean - HTRC

Project Code: WC 125-04-01 **Location: HTRC Block 83**

Personnel: Bernard H. Zandstra, Michael Particka
Crop: Snap Bean **Variety: Hercules**
Planting Method: Seeded **Planting Date: 6/4/04**
Spacing: 3 IN **Row Spacing: 14 IN**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 8 ft wide x 30 ft long

Soil Type: Marlette Fine Sandy Loam **OM: 2.1%** **pH: 6.8**
Sand: 55% **Silt: 17%** **Clay: 28%** **CEC: 8.8**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	6/4/04	1:30 pm	66/69	°F	Moist	3 NE	35	Clear	N
PO1	6/28/04	11:30 am	63/68	°F	Dry	2 SW	60	100% Cloudy	N

Crop and Weed Information at Application

Date	Crop or Weed	Height or Diameter	Number of Leaves	Density
6/28	SNBE = Snapbean	3-6 in	1-2 tri	
6/28	GRFT = Green foxtail	1-2 in	2-4	moderate
6/28	COLQ = Common lambsquarters	0.25-1 in	cot-4	many
6/28	COPU = Common purslane	0.25-0.75 in	cot-2	many
6/28	CORW = Common ragweed	0.5-2 in	2-4	moderate
6/28	EBNS = Eastern black nightshade	0.25-0.75 in	cot-4	many
6/28	LATH = Ladysthumb	1-2 in	2-6	moderate
6/28	RRPW = Redroot pigweed			

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.
3. Planted 3 rows of snap bean 14 inches apart.
4. Harvested all plants in plot.

Weed Control in Snap Bean - HTRC

Dept. of Horticulture, MSU

Trial ID: WC 125-04-01 Study Director:
Location: HTRC Block 83 Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	SNBE 6/28/04 RATING	GRFT 6/28/04 RATING	COLQ 6/28/04 RATING	COPU 6/28/04 RATING	CORW 6/28/04 RATING
1	s-metolachlor	7.62	EC	1.3	lb ai/a	PRE	2.7	10.0	8.7	9.7	6.3
2	dimethenamid-p	6	EC	0.75	lb ai/a	PRE	2.3	10.0	9.7	10.0	9.7
3	pendimethalin	3.8	ACS	1	lb ai/a	PRE	2.3	8.7	10.0	9.0	6.3
4	sulfentrazone	75	DF	0.141	lb ai/a	PRE	3.7	10.0	10.0	10.0	6.3
5	clomazone	3	ME	0.375	lb ai/a	PRE	2.0	10.0	10.0	9.7	9.0
6	flufenacet	4	SC	0.6	lb ai/a	PRE	1.3	10.0	9.7	9.7	9.3
7	V10146	3.3	F	0.1	lb ai/a	PRE	4.0	2.3	10.0	10.0	9.3
8	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	2.7	10.0	10.0	9.7	9.7
	halosulfuron	75	WG	0.023	lb ai/a	PRE					
9	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	2.7	10.0	10.0	10.0	10.0
	halosulfuron	75	WG	0.031	lb ai/a	PRE					
10	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	2.0	10.0	7.3	10.0	6.7
	halosulfuron	75	WG	0.023	lb ai/a	PO1					
11	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	1.3	10.0	9.3	9.0	7.3
	halosulfuron	75	WG	0.031	lb ai/a	PO1					
12	fomesafen	2	EC	0.25	lb ai/a	PO1	1.7	1.7	1.0	2.7	3.0
13	halosulfuron	75	WG	0.023	lb ai/a	PO1	1.7	1.0	1.0	1.0	1.0
14	imazamox	1	AS	0.03	lb ai/a	PO1	2.3	3.0	1.0	1.0	1.0
15	sulfentrazone	75	DF	0.141	lb ai/a	PO1	1.3	2.7	1.0	1.0	1.0
16	V10146	3.3	F	0.1	lb ai/a	PO1	1.0	1.0	1.0	1.0	1.0
17	bentazon	4	L	1	lb ai/a	PO1	1.0	1.0	1.0	1.0	1.0
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	COC		L	1	% v/v	PO1					
18	untreated						1.0	1.0	1.0	1.0	1.0
LSD (P=.05)							1.43	1.92	1.65	1.57	3.50
Standard Deviation							0.86	1.15	0.99	0.94	2.10
CV							41.72	18.47	15.98	14.71	38.19

Weed Control in Snap Bean - HTRC

Dept. of Horticulture, MSU

Description						EBNS	LATH	RRPW	SNBE	GRFT
Rating Date						6/28/04	6/28/04	6/28/04	7/6/04	7/6/04
Rating Data Type						RATING	RATING	RATING	RATING	RATING
Rating Unit										
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
1	s-metolachlor	7.62	EC	1.3	lb ai/a	PRE	10.0	10.0	8.0	1.3	10.0
2	dimethenamid-p	6	EC	0.75	lb ai/a	PRE	10.0	9.7	10.0	2.3	10.0
3	pendimethalin	3.8	ACS	1	lb ai/a	PRE	10.0	9.3	8.7	2.7	8.7
4	sulfentrazone	75	DF	0.141	lb ai/a	PRE	10.0	10.0	10.0	3.3	9.3
5	clomazone	3	ME	0.375	lb ai/a	PRE	9.7	10.0	9.7	1.0	8.3
6	flufenacet	4	SC	0.6	lb ai/a	PRE	10.0	10.0	9.7	1.3	10.0
7	V10146	3.3	F	0.1	lb ai/a	PRE	3.7	10.0	9.3	5.0	3.0
8	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	10.0	9.7	10.0	1.7	9.7
	halosulfuron	75	WG	0.023	lb ai/a	PRE					
9	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	10.0	10.0	10.0	1.7	9.7
	halosulfuron	75	WG	0.031	lb ai/a	PRE					
10	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	10.0	9.3	8.3	2.3	9.7
	halosulfuron	75	WG	0.023	lb ai/a	PO1					
11	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	10.0	9.3	9.3	3.0	10.0
	halosulfuron	75	WG	0.031	lb ai/a	PO1					
12	fomesafen	2	EC	0.25	lb ai/a	PO1	1.0	1.7	1.0	2.0	4.3
13	halosulfuron	75	WG	0.023	lb ai/a	PO1	1.0	1.0	1.0	2.7	3.7
14	imazamox	1	AS	0.03	lb ai/a	PO1	1.0	1.0	1.0	2.7	6.0
15	sulfentrazone	75	DF	0.141	lb ai/a	PO1	1.0	1.0	1.0	5.0	4.0
16	V10146	3.3	F	0.1	lb ai/a	PO1	1.0	1.0	1.0	3.0	3.0
17	bentazon	4	L	1	lb ai/a	PO1	1.0	1.0	1.0	2.0	10.0
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	COC		L	1	% v/v	PO1					
18	untreated						1.0	1.0	1.0	1.0	6.0
LSD (P=.05)							0.52	0.77	1.16	1.44	3.32
Standard Deviation							0.31	0.46	0.70	0.86	1.99
CV							5.08	7.21	11.42	35.31	26.49

Weed Control in Snap Bean - HTRC

Dept. of Horticulture, MSU

Description							COLQ	COPU	CORW	EBNS	LATH	RRPW
Rating Date							7/6/04	7/6/04	7/6/04	7/6/04	7/6/04	7/6/04
Rating Data Type							RATING	RATING	RATING	RATING	RATING	RATING
Rating Unit												
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage						
1	s-metolachlor	7.62	EC	1.3	lb ai/a	PRE	4.7	8.7	4.0	9.3	8.7	6.7
2	dimethenamid-p	6	EC	0.75	lb ai/a	PRE	8.7	9.3	6.7	10.0	9.0	9.7
3	pendimethalin	3.8	ACS	1	lb ai/a	PRE	10.0	9.3	4.3	9.0	8.7	9.3
4	sulfentrazone	75	DF	0.141	lb ai/a	PRE	10.0	10.0	3.3	10.0	10.0	10.0
5	clomazone	3	ME	0.375	lb ai/a	PRE	10.0	10.0	5.7	8.3	10.0	6.0
6	flufenacet	4	SC	0.6	lb ai/a	PRE	6.3	8.0	6.3	8.7	8.0	4.3
7	V10146	3.3	F	0.1	lb ai/a	PRE	10.0	9.7	10.0	2.3	10.0	10.0
8	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	9.7	10.0	10.0	9.3	9.7	10.0
	halosulfuron	75	WG	0.023	lb ai/a	PRE						
9	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	10.0	10.0	10.0	10.0	10.0	10.0
	halosulfuron	75	WG	0.031	lb ai/a	PRE						
10	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	4.3	8.3	10.0	10.0	9.7	10.0
	halosulfuron	75	WG	0.023	lb ai/a	PO1						
11	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	5.7	8.3	10.0	9.3	10.0	10.0
	halosulfuron	75	WG	0.031	lb ai/a	PO1						
12	fomesafen	2	EC	0.25	lb ai/a	PO1	6.0	8.7	9.3	9.3	9.7	9.7
13	halosulfuron	75	WG	0.023	lb ai/a	PO1	4.0	1.7	10.0	2.7	9.0	10.0
14	imazamox	1	AS	0.03	lb ai/a	PO1	2.3	5.3	10.0	9.3	9.3	10.0
15	sulfentrazone	75	DF	0.141	lb ai/a	PO1	9.3	6.7	7.0	10.0	10.0	10.0
16	V10146	3.3	F	0.1	lb ai/a	PO1	3.0	5.0	8.3	10.0	10.0	10.0
17	bentazon	4	L	1	lb ai/a	PO1	10.0	10.0	10.0	10.0	10.0	9.0
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1						
	COC		L	1	% v/v	PO1						
18	untreated						8.3	6.7	8.3	9.0	8.3	8.3
LSD (P=.05)							3.05	3.50	3.86	2.09	1.97	1.89
Standard Deviation							1.83	2.10	2.31	1.25	1.18	1.13
CV							24.84	25.97	29.05	14.38	12.54	12.51

Weed Control in Snap Bean - HTRC

Dept. of Horticulture, MSU

Description						BEAN PLANT	BEAN FRUIT
Rating Date						8/5/04	8/5/04
Rating Data Type						BIOMASS	YIELD
Rating Unit						KG/PLOT	KG/PLOT
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage		
1	s-metolachlor	7.62	EC	1.3	lb ai/a	PRE	6.66	6.66
2	dimethenamid-p	6	EC	0.75	lb ai/a	PRE	7.59	9.34
3	pendimethalin	3.8	ACS	1	lb ai/a	PRE	5.94	5.32
4	sulfentrazone	75	DF	0.141	lb ai/a	PRE	6.55	5.08
5	clomazone	3	ME	0.375	lb ai/a	PRE	8.06	9.73
6	flufenacet	4	SC	0.6	lb ai/a	PRE	6.87	7.06
7	V10146	3.3	F	0.1	lb ai/a	PRE	5.80	4.22
8	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	11.91	14.75
	halosulfuron	75	WG	0.023	lb ai/a	PRE		
9	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	11.89	16.01
	halosulfuron	75	WG	0.031	lb ai/a	PRE		
10	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	8.33	11.26
	halosulfuron	75	WG	0.023	lb ai/a	PO1		
11	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	7.59	12.00
	halosulfuron	75	WG	0.031	lb ai/a	PO1		
12	fomesafen	2	EC	0.25	lb ai/a	PO1	6.07	7.07
13	halosulfuron	75	WG	0.023	lb ai/a	PO1	5.57	6.55
14	imazamox	1	AS	0.03	lb ai/a	PO1	4.07	6.15
15	sulfentrazone	75	DF	0.141	lb ai/a	PO1	3.83	3.54
16	V10146	3.3	F	0.1	lb ai/a	PO1	6.34	2.00
17	bentazon	4	L	1	lb ai/a	PO1	7.65	12.59
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1		
	COC		L	1	% v/v	PO1		
18	untreated						4.92	6.85
LSD (P=.05)							2.198	3.703
Standard Deviation							1.318	2.221
CV							18.89	27.35

Hairy Nightshade Control in Dry Bean – Presque Isle Co.

Project Code: **Location: Marvin Delekta Farm, Presque Isle Co.**

Personnel: Bernard H. Zandstra, Vijaikumar Pandian
Crop: Dry Bean **Variety: Montcalm, Dark Red Kidney**
Planting Method: Seeded **Planting Date: 6/18/04**
Spacing: 2.5 in **Row Spacing: 12 in**
Tillage Type: Conventional **Study Design: RCB** **Replications: 4**
Plot Size: 3 ft wide x 25 ft long

Soil Type: Sandy Loam **OM: 2.3%** **pH: 6.6**
Sand: 41% **Silt: 39%** **Clay: 20%** **CEC: 6.3**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	6/25/04	10:30 am	58/57	°F		6	49	5% Cloudy	
PO1	7/16/04	10:00 am	70/63	°F		3	53	10% Cloudy	

Crop and Weed Information at Application

Date	Crop or Weed	Height or Diameter	Number of Leaves	Density
7/16	Dry bean	6-8 in	3 tri fol	
7/16	BYGR = Barnyard grass	4 in		
7/16	COLQ = Common lanbsquarters	4 in		
7/16	HANS = Hairy nightshade	4 in		

Notes and Comments

1. **Sprays applied with 2 nozzle boom FF11002, 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.**
3. **Harvest: Plants in entire plot were hand pulled and thrashed using a stationary thrasher.**

Hairy Nightshade Control in Dry Bean – Presque Isle Co.

Dept. of Horticulture, MSU

Trial ID: Study Director:
Location: Presque Isle Co., Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	DRYBEAN 7/16/04 RATING	BYGR 7/16/04 RATING	COLQ 7/16/04 RATING	HANS 7/16/04 RATING	DRYBEAN 7/24/04 RATING
1	metribuzin	75	DF	0.5	lb ai/a	PRE	7.5	9.5	5.5	2.5	7.3
2	rimsulfuron	25	DF	0.031	lb ai/a	PRE	1.0	10.0	3.8	6.8	2.3
3	sulfosulfuron	75	WG	0.031	lb ai/a	PRE	1.0	2.8	3.3	3.8	3.0
4	halosulfuron	75	WG	0.031	lb ai/a	PRE	1.0	2.5	5.5	1.0	1.0
5	sulfentrazone	75	DF	0.3	lb ai/a	PRE	1.0	6.7	10.0	10.0	1.0
6	imazethapyr	70	DG	0.031	lb ai/a	PRE	1.0	1.0	3.3	1.8	1.0
7	s-metolachlor	7.62	EC	1.6	lb ai/a	PRE	1.0	10.0	4.0	1.5	1.0
8	flumioxazin	51	WDG	0.047	lb ai/a	PRE	2.3	1.0	9.8	10.0	2.0
9	metribuzin	75	DF	0.25	lb ai/a	PO1	1.0	1.0	1.0	1.0	7.3
10	rimsulfuron	25	DF	0.031	lb ai/a	PO1	1.0	1.0	1.0	1.0	4.5
	NIS		L	0.5	% v/v	PO1					
11	sulfosulfuron	75	WG	0.031	lb ai/a	PO1	1.0	1.0	1.0	1.0	3.5
	NIS		L	0.5	% v/v	PO1					
12	halosulfuron	75	WG	0.031	lb ai/a	PO1	1.0	1.0	1.0	1.0	2.8
	NIS		L	0.5	% v/v	PO1					
13	sulfentrazone	75	DG	0.1	lb ai/a	PO1	1.0	1.0	1.0	1.0	3.0
14	imazethapyr	70	DG	0.031	lb ai/a	PO1	1.0	1.0	1.0	1.0	2.0
	NIS		L	0.5	% v/v	PO1					
15	imazamox	1	L	0.032	lb ai/a	PO1	1.0	1.0	1.0	1.0	2.0
	NIS		L	0.5	% v/v	PO1					
16	untreated						1.0	1.0	1.0	1.0	1.0
LSD (P=.05)							0.89	1.48	3.82	1.82	1.81
Standard Deviation							0.62	1.04	2.67	1.28	1.27
CV							41.83	32.26	80.75	45.1	45.48

Hairy Nightshade Control in Dry Bean – Presque Isle Co.

Dept. of Horticulture, MSU

Description							BYGR	COLQ	HANS	DRYBEAN	BYGR
Rating Date							7/24/04	7/24/04	7/24/04	8/1/04	8/1/04
Rating Data Type							RATING	RATING	RATING	RATING	RATING
Rating Unit											
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
1	metribuzin	75	DF	0.5	lb ai/a	PRE	7.0	10.0	5.5	10.0	9.3
2	rimsulfuron	25	DF	0.031	lb ai/a	PRE	10.0	2.5	7.3	3.8	10.0
3	sulfosulfuron	75	WG	0.031	lb ai/a	PRE	4.3	3.5	2.5	2.8	6.3
4	halosulfuron	75	WG	0.031	lb ai/a	PRE	1.0	1.0	1.0	1.0	1.0
5	sulfentrazone	75	DF	0.3	lb ai/a	PRE	6.7	10.0	10.0	1.3	5.7
6	imazethapyr	70	DG	0.031	lb ai/a	PRE	1.0	1.0	1.3	1.0	1.0
7	s-metolachlor	7.62	EC	1.6	lb ai/a	PRE	7.8	7.8	3.0	1.0	9.8
8	flumioxazin	51	WDG	0.047	lb ai/a	PRE	1.0	10.0	10.0	1.0	1.0
9	metribuzin	75	DF	0.25	lb ai/a	PO1	1.0	9.5	2.0	9.0	1.0
10	rimsulfuron	25	DF	0.031	lb ai/a	PO1	1.0	9.0	3.0	6.5	7.3
	NIS		L	0.5	% v/v	PO1					
11	sulfosulfuron	75	WG	0.031	lb ai/a	PO1	1.8	4.3	2.5	6.8	7.0
	NIS		L	0.5	% v/v	PO1					
12	halosulfuron	75	WG	0.031	lb ai/a	PO1	2.3	5.0	1.8	2.8	1.0
	NIS		L	0.5	% v/v	PO1					
13	sulfentrazone	75	DG	0.1	lb ai/a	PO1	1.0	9.5	4.0	3.0	1.0
14	imazethapyr	70	DG	0.031	lb ai/a	PO1	1.5	3.8	3.3	2.0	6.5
	NIS		L	0.5	% v/v	PO1					
15	imazamox	1	L	0.032	lb ai/a	PO1	1.0	1.0	3.0	1.7	5.7
	NIS		L	0.5	% v/v	PO1					
16	untreated						1.0	1.0	1.0	1.0	1.0
LSD (P=.05)							2.70	3.37	3.03	1.27	3.14
Standard Deviation							1.89	2.36	2.12	0.89	2.20
CV							61.49	42.54	55.7	26.16	47.25

Hairy Nightshade Control in Dry Bean – Presque Isle Co.

Dept. of Horticulture, MSU

Description							COLQ	HANS	DRYBEAN
Rating Date							8/1/04	8/1/04	9/1/04
Rating Data Type							RATING	RATING	YIELD
Rating Unit									G/PLOT
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage			
1	metribuzin	75	DF	0.5	lb ai/a	PRE	10.0	1.0	18.6
2	rimsulfuron	25	DF	0.031	lb ai/a	PRE	1.0	9.0	104.6
3	sulfosulfuron	75	WG	0.031	lb ai/a	PRE	1.0	1.5	105.9
4	halosulfuron	75	WG	0.031	lb ai/a	PRE	2.3	1.0	382.2
5	sulfentrazone	75	DF	0.3	lb ai/a	PRE	10.0	10.0	437.9
6	imazethapyr	70	DG	0.031	lb ai/a	PRE	1.0	1.0	222.1
7	s-metolachlor	7.62	EC	1.6	lb ai/a	PRE	4.0	3.3	436.3
8	flumioxazin	51	WDG	0.047	lb ai/a	PRE	10.0	10.0	384.6
9	metribuzin	75	DF	0.25	lb ai/a	PO1	10.0	1.0	3.3
10	rimsulfuron	25	DF	0.031	lb ai/a	PO1	7.0	6.0	16.1
	NIS		L	0.5	% v/v	PO1			
11	sulfosulfuron	75	WG	0.031	lb ai/a	PO1	3.8	3.8	122.3
	NIS		L	0.5	% v/v	PO1			
12	halosulfuron	75	WG	0.031	lb ai/a	PO1	1.0	1.0	88.8
	NIS		L	0.5	% v/v	PO1			
13	sulfentrazone	75	DG	0.1	lb ai/a	PO1	7.8	5.0	92.7
14	imazethapyr	70	DG	0.031	lb ai/a	PO1	3.5	6.5	203.0
	NIS		L	0.5	% v/v	PO1			
15	imazamox	1	L	0.032	lb ai/a	PO1	1.0	8.0	216.9
	NIS		L	0.5	% v/v	PO1			
16	untreated						1.0	1.0	232.0
LSD (P=.05)							3.27	2.90	229.65
Standard Deviation							2.29	2.03	160.70
CV							49.31	47.05	83.83

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

Project Code: WC 109-04-01 **Location: HTRC Block 127**

Personnel: Bernard H. Zandstra, Michael Particka
Crop: See notes **Variety: See notes**
Planting Method: Seeded **Planting Date: 5/7/04**
Spacing: 3 IN **Row Spacing: 14 IN**
Tillage Type: Conventional **Study Design: RCBD** **Replications: 3**
Plot Size: 8 ft wide x 30 ft long

Soil Type: Capac Loam **OM: 2.6%** **pH: 7.6**
Sand: 52% **Silt: 27%** **Clay: 21%** **CEC: 13.8**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	5/7/04	1:30 pm	61/59	°F	Dry	8 NE	27	5% Cloudy	N
PO1	6/8/04	10:00 pm	79/72	°F	Dry	6 SW	69	Clear	N

Crop and Weed Information at Application

Date	Crop or Weed	Height or Diameter	Number of Leaves	Density
6/8	REBE = Red Beet	4-5 in	3-5	
6/8	SUBE = Sugar Beet	4-5 in	4-6	
6/8	CHARD = Swiss Chard	3-4 in	3-4	
6/8	SPIN = Spinach	3-5 in	4-6	
6/8	GRFT = Green foxtail	2-4 in	2-3	few
6/8	COLQ = Common lambsquarters	1-3 in	2-6	moderate
6/8	EBNS = Eastern black nightshade	1-2 in	2-6	moderate
6/8	LATH = Ladysthumb	1-3 in	4-5	moderate
6/8	RRPW = Redroot pigweed	2-4 in	4-6	few

Notes and Comments

1. Sprays applied with 5-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.
3. Planted 1 row of red beet, sugar beet, and swiss chard per plot; planted 2 rows of spinach per plot.
4. Crops and varieties: Red beet – Detroit Dark Red, Sugar beet – E-17, Swiss Chard – Large White Ribbed, Spinach – Bloomsdale Long Standing.
5. Spinach and Swiss Chard not harvested because of poor stand after flood damage.

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

Dept. of Horticulture, MSU

Trial ID: WC 109-04-01 Study Director:

Location: HTRC Block 127 Investigator: Dr. Bernard Zandstra

Description							REBE	SUBE	CHARD	SPIN	GRFT
Rating Date							6/7/04	6/7/04	6/7/04	6/7/04	6/7/04
Rating Data Type							RATING	RATING	RATING	RATING	RATING
Rating Unit											
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
1	pyrazon	68	DF	3	lb ai/a	PRE	6.0	2.3	8.7	9.7	10.0
2	s-metolachlor	7.62	EC	1.3	lb ai/a	PRE	4.0	3.3	9.3	9.3	10.0
3	ethofumesate	4	SC	2	lb ai/a	PRE	5.0	4.7	9.0	10.0	10.0
4	dimethenamid-p	6	EC	0.75	lb ai/a	PRE	7.3	7.0	9.3	10.0	10.0
5	V10146	3.3	F	0.05	lb ai/a	PRE	10.0	10.0	10.0	10.0	9.3
6	linuron	50	DF	0.1	lb ai/a	PRE	1.3	2.3	7.0	8.7	7.0
7	s-metolachlor	7.62	EC	0.5	lb ai/a	PRE	2.7	4.0	6.3	8.0	10.0
	PROGRESS	1.8	L	0.33	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.25	% v/v	PO1					
8	s-metolachlor	7.62	EC	0.5	lb ai/a	PRE	2.7	2.0	5.7	8.0	10.0
	triflusulfuron	50	WG	0.0156	lb ai/a	PO1					
	phenmedipham	1.3	L	1	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
9	s-metolachlor	7.62	EC	0.5	lb ai/a	PRE	3.0	2.3	3.7	6.7	10.0
	clopyralid	3	EC	0.125	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
10	untreated						2.0	1.0	3.0	4.7	3.0
LSD (P=.05)							3.88	3.42	3.34	3.58	2.60
Standard Deviation							2.26	1.99	1.95	2.09	1.52
CV							51.4	51.12	27.07	24.57	16.98

Description							COLQ	EBNS	LATH	REBE TOP
Rating Date							6/7/04	6/7/04	6/7/04	7/8/04
Rating Data Type							RATING	RATING	RATING	YIELD
Rating Unit										KG/PLOT
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
1	pyrazon	68	DF	3	lb ai/a	PRE	10.0	10.0	10.0	2.88
2	s-metolachlor	7.62	EC	1.3	lb ai/a	PRE	10.0	10.0	10.0	2.90
3	ethofumesate	4	SC	2	lb ai/a	PRE	10.0	10.0	10.0	3.45
4	dimethenamid-p	6	EC	0.75	lb ai/a	PRE	10.0	10.0	10.0	3.28
5	V10146	3.3	F	0.05	lb ai/a	PRE	10.0	1.0	10.0	0.00
6	linuron	50	DF	0.1	lb ai/a	PRE	7.0	7.3	2.7	2.11
7	s-metolachlor	7.62	EC	0.5	lb ai/a	PRE	9.0	10.0	9.3	3.51
	PROGRESS	1.8	L	0.33	lb ai/a	PO1				
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1				
	NIS		L	0.25	% v/v	PO1				
8	s-metolachlor	7.62	EC	0.5	lb ai/a	PRE	8.0	10.0	9.0	3.63
	triflusulfuron	50	WG	0.0156	lb ai/a	PO1				
	phenmedipham	1.3	L	1	lb ai/a	PO1				
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1				
9	s-metolachlor	7.62	EC	0.5	lb ai/a	PRE	8.7	9.3	8.3	3.37
	clopyralid	3	EC	0.125	lb ai/a	PO1				
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1				
10	untreated						1.7	1.0	1.0	1.96
LSD (P=.05)							2.98	2.62	1.51	1.046
Standard Deviation							1.74	1.53	0.88	0.607
CV							20.63	19.39	10.95	22.4

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

Dept. of Horticulture, MSU

Description						REBE ROOT	SUBE	SUBE
Rating Date						7/8/04	10/21/04	10/21/04
Rating Data Type						YIELD	COUNT	YIELD
Rating Unit						KG/PLOT	BEETS	KG/PLOT
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage			
1	pyrazon	68	DF	3	lb ai/a	PRE	2.41	55.7	45.83
2	s-metolachlor	7.62	EC	1.3	lb ai/a	PRE	3.23	44.7	39.07
3	ethofumesate	4	SC	2	lb ai/a	PRE	2.93	54.0	41.59
4	dimethenamid-p	6	EC	0.75	lb ai/a	PRE	3.27	35.7	49.50
5	V10146	3.3	F	0.05	lb ai/a	PRE	0.00	0.0	0.00
6	linuron	50	DF	0.1	lb ai/a	PRE	1.78	43.0	20.04
7	s-metolachlor	7.62	EC	0.5	lb ai/a	PRE	3.31	39.0	28.73
	PROGRESS	1.8	L	0.33	lb ai/a	PO1			
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1			
	NIS		L	0.25	% v/v	PO1			
8	s-metolachlor	7.62	EC	0.5	lb ai/a	PRE	3.64	53.0	42.34
	triflusulfuron	50	WG	0.0156	lb ai/a	PO1			
	phenmedipham	1.3	L	1	lb ai/a	PO1			
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1			
9	s-metolachlor	7.62	EC	0.5	lb ai/a	PRE	2.96	51.3	30.41
	clopyralid	3	EC	0.125	lb ai/a	PO1			
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1			
10	untreated						1.30	49.0	10.92
LSD (P=.05)							1.217	16.80	13.164
Standard Deviation							0.706	9.79	7.674
CV							28.47	23.03	24.88

Weed Control in Broccoli and Cabbage – HTRC

Project Code: WC 114-04-02 **Location: HTRC Block 121-122**

Personnel: Bernard H. Zandstra, Michael Particka
Crop: Broccoli, Cabbage **Variety: Packman, Blue Lagoon**
Planting Method: Transplant **Planting Date: 5-27-04**
Spacing: 24 IN **Row Spacing: 36 IN**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 8 ft wide x 30 ft long

Soil Type: Spinks Loamy Sand **OM: 1.0%** **pH: 6.0**
Sand: 85% **Silt: 8%** **Clay: 7%** **CEC: 2.1**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PPI	5-27-04	1:30 pm	61/60	°F	Wet	4 SE	83	100% Cloudy	N
PRT	5-27-04	1:30 pm	61/60	°F	Wet	4 SE	83	100% Cloudy	N
POT	5-27-04	4:00 pm	76/65	°F	Wet	4 SE	59	90% Cloudy	N
PO1	7-6-04	9:00 am	66/66	°F	Dry	7 SW	75	30% Cloudy	N

Crop and Weed Information at Application

Date	Crop or Weed	Height or Diameter	Number of Leaves	Density
7-6	BROC = Broccoli	8-10 in		
7-6	CABB = Cabbage	5-7 in		
7-6	GRFT = Green foxtail	4-18 in		
7-6	LACG = Large crabgrass			
7-6	COLQ = Common lambsquarters	2-4 in		
7-6	COPU = Common purslane	2-3 in		
7-6	CORW = Common ragweed	3-5 in		
7-6	EBNS = Eastern black nightshade	2-3 in		
7-6	RRPW = Redroot pigweed			
7-6	WIRA = Wild radish			

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.
3. One row planted for each crop/plot.
4. Broccoli harvested 2 times, all mature heads each harvest.
5. Head cabbage harvested 3 times, all mature heads each harvest.

Weed Control in Broccoli and Cabbage – HTRC

Dept. of Horticulture, MSU

Trial ID: WC 114-04-02 Study Director:
Location: HTRC Block 122 Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	BROC 6/21/04 RATING	CABB 6/21/04 RATING	GRFT 6/21/04 RATING	WIRA 6/21/04 RATING	BROC 7/13/04 RATING
1	trifluralin	4	EC	1	lb ai/a	PPI	1.7	1.7	4.7	3.7	2.3
2	trifluralin	4	EC	1	lb ai/a	PPI	2.0	1.7	7.3	9.3	2.0
	oxyfluorfen	2	L	0.5	lb ai/a	PRT					
3	napropramide	50	DF	2	lb ai/a	POT	1.0	1.0	6.7	3.3	1.0
4	oxyfluorfen	2	L	0.5	lb ai/a	PRT	1.3	1.3	6.0	8.7	1.0
5	s-metolachlor	7.62	EC	1.3	lb ai/a	POT	1.7	1.7	7.0	7.3	2.3
6	s-metolachlor	7.62	EC	1.7	lb ai/a	POT	2.3	2.7	8.0	6.7	1.3
7	clomazone	3	ME	0.375	lb ai/a	POT	1.7	2.0	7.3	4.7	2.0
8	ethalfluralin	3	EC	1.13	lb ai/a	POT	1.0	1.3	7.0	6.7	1.0
9	ethalfluralin	3	EC	0.75	lb ai/a	POT	1.3	1.3	5.7	4.0	1.0
	clomazone	3	ME	0.25	lb ai/a	POT					
10	dimethenamid-p	6	EC	0.98	lb ai/a	POT	3.3	2.7	7.3	8.0	2.3
11	flufenacet	60	DF	0.6	lb ai/a	POT	2.3	2.7	7.0	7.7	2.0
12	sulfentrazone	75	DF	0.19	lb ai/a	POT	2.0	3.0	7.0	3.3	2.3
13	trifluralin	4	EC	0.5	lb ai/a	PPI	1.7	1.7	3.7	3.3	1.3
	sulfentrazone	75	DF	0.14	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
14	trifluralin	4	EC	0.5	lb ai/a	PPI	2.0	1.7	5.0	2.3	2.0
	oxyfluorfen	2	L	0.032	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
15	V10146	3.3	F	0.1	lb ai/a	PRT	7.0	7.7	9.0	9.7	9.3
16	V10146	3.3	F	0.1	lb ai/a	PO1	1.3	1.3	1.7	2.0	5.7
17	trifluralin	4	EC	0.5	lb ai/a	PPI	1.3	1.3	1.7	4.3	1.7
	clopyralid	3	EC	0.125	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.25	% v/v	PO1					
18	untreated						1.0	1.0	1.0	3.7	1.0
LSD (P=.05)							1.07	1.29	3.40	4.01	1.58
Standard Deviation							0.64	0.77	2.04	2.40	0.95
CV							31.96	37.02	35.67	43.82	40.85

Weed Control in Broccoli and Cabbage – HTRC

Dept. of Horticulture, MSU

Description							CABB	GRFT	LACG	COLQ	CORW
Rating Date							7/13/04	7/13/04	7/13/04	7/13/04	7/13/04
Rating Data Type							RATING	RATING	RATING	RATING	RATING
Rating Unit											
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
1	trifluralin	4	EC	1	lb ai/a	PPI	2.3	6.0	6.7	8.3	4.0
2	trifluralin	4	EC	1	lb ai/a	PPI	2.0	8.3	8.0	8.7	8.3
	oxyfluorfen	2	L	0.5	lb ai/a	PRT					
3	napropramide	50	DF	2	lb ai/a	POT	1.3	8.3	8.3	7.0	10.0
4	oxyfluorfen	2	L	0.5	lb ai/a	PRT	1.3	7.7	7.3	9.3	10.0
5	s-metolachlor	7.62	EC	1.3	lb ai/a	POT	2.3	9.7	10.0	7.7	7.7
6	s-metolachlor	7.62	EC	1.7	lb ai/a	POT	2.3	10.0	9.7	5.0	9.7
7	clomazone	3	ME	0.375	lb ai/a	POT	1.7	4.3	4.3	10.0	9.3
8	ethalfluralin	3	EC	1.13	lb ai/a	POT	1.7	4.3	3.0	8.0	4.3
9	ethalfluralin	3	EC	0.75	lb ai/a	POT	1.0	3.3	3.0	8.3	8.7
	clomazone	3	ME	0.25	lb ai/a	POT					
10	dimethenamid-p	6	EC	0.98	lb ai/a	POT	3.0	10.0	10.0	8.3	10.0
11	flufenacet	60	DF	0.6	lb ai/a	POT	2.3	9.7	9.7	8.0	10.0
12	sulfentrazone	75	DF	0.19	lb ai/a	POT	3.3	4.3	7.0	7.7	10.0
13	trifluralin	4	EC	0.5	lb ai/a	PPI	1.3	9.3	8.7	10.0	10.0
	sulfentrazone	75	DF	0.14	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
14	trifluralin	4	EC	0.5	lb ai/a	PPI	2.3	9.7	10.0	9.3	9.7
	oxyfluorfen	2	L	0.032	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
15	V10146	3.3	F	0.1	lb ai/a	PRT	9.3	8.0	8.3	10.0	10.0
16	V10146	3.3	F	0.1	lb ai/a	PO1	5.7	1.0	1.0	7.7	10.0
17	trifluralin	4	EC	0.5	lb ai/a	PPI	1.7	8.7	9.3	9.0	10.0
	clopyralid	3	EC	0.125	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.25	% v/v	PO1					
18	untreated						1.0	7.0	6.3	10.0	10.0
LSD (P=.05)							1.72	3.53	3.54	3.85	3.26
Standard Deviation							1.03	2.12	2.12	2.31	1.95
CV							40.39	29.41	29.25	27.29	21.74

Weed Control in Broccoli and Cabbage – HTRC

Dept. of Horticulture, MSU

Description							EBNS	RRPW	WIRA	BROC	BROC
Rating Date							7/13/04	7/13/04	7/13/04	8/2/04	8/2/04
Rating Data Type							RATING	RATING	RATING	COUNT	YIELD
Rating Unit											KG/PLOT
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
1	trifluralin	4	EC	1	lb ai/a	PPI	5.0	9.3	1.3	12.3	5.95
2	trifluralin	4	EC	1	lb ai/a	PPI	9.0	10.0	5.0	13.7	6.15
	oxyfluorfen	2	L	0.5	lb ai/a	PRT					
3	napropramide	50	DF	2	lb ai/a	POT	3.0	10.0	1.0	15.7	6.78
4	oxyfluorfen	2	L	0.5	lb ai/a	PRT	10.0	10.0	5.0	13.0	5.88
5	s-metolachlor	7.62	EC	1.3	lb ai/a	POT	9.0	8.7	2.0	12.0	5.12
6	s-metolachlor	7.62	EC	1.7	lb ai/a	POT	10.0	10.0	2.0	12.0	5.18
7	clomazone	3	ME	0.375	lb ai/a	POT	5.0	7.3	2.3	11.0	4.61
8	ethalfluralin	3	EC	1.13	lb ai/a	POT	4.3	9.0	1.0	17.0	9.66
9	ethalfluralin	3	EC	0.75	lb ai/a	POT	4.7	8.7	1.7	15.7	8.40
	clomazone	3	ME	0.25	lb ai/a	POT					
10	dimethenamid-p	6	EC	0.98	lb ai/a	POT	10.0	10.0	3.3	7.3	3.25
11	flufenacet	60	DF	0.6	lb ai/a	POT	9.3	9.3	4.3	7.3	3.42
12	sulfentrazone	75	DF	0.19	lb ai/a	POT	10.0	9.3	3.3	6.3	1.95
13	trifluralin	4	EC	0.5	lb ai/a	PPI	10.0	10.0	1.0	11.7	5.77
	sulfentrazone	75	DF	0.14	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
14	trifluralin	4	EC	0.5	lb ai/a	PPI	10.0	10.0	3.0	7.7	4.57
	oxyfluorfen	2	L	0.032	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
15	V10146	3.3	F	0.1	lb ai/a	PRT	6.7	10.0	6.3	0.0	0.00
16	V10146	3.3	F	0.1	lb ai/a	PO1	4.3	10.0	3.0	0.3	0.07
17	trifluralin	4	EC	0.5	lb ai/a	PPI	10.0	9.0	2.3	7.7	2.05
	clopyralid	3	EC	0.125	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.25	% v/v	PO1					
18	untreated						10.0	10.0	8.0	14.0	8.36
LSD (P=.05)							3.28	1.44	3.30	6.98	5.272
Standard Deviation							1.97	0.87	1.98	4.18	3.162
CV							25.21	9.14	63.71	40.79	65.29

Weed Control in Broccoli and Cabbage – HTRC

Dept. of Horticulture, MSU

Description							BROC	BROC	BROC	BROC	CABB
Rating Date							8/10/04	8/10/04			8/10/04
Rating Data Type							COUNT	YIELD	TOT	TOT YIELD	COUNT
Rating Unit								KG/PLOT	COUNT	KG/PLOT	
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
1	trifluralin	4	EC	1	lb ai/a	PPI	0.7	0.19	13.0	6.15	5.0
2	trifluralin	4	EC	1	lb ai/a	PPI	1.7	0.51	15.3	6.66	7.3
	oxyfluorfen	2	L	0.5	lb ai/a	PRT					
3	napropramide	50	DF	2	lb ai/a	POT	1.7	0.69	17.3	7.47	10.7
4	oxyfluorfen	2	L	0.5	lb ai/a	PRT	2.0	0.79	15.0	6.67	5.0
5	s-metolachlor	7.62	EC	1.3	lb ai/a	POT	0.7	0.13	12.7	5.25	3.3
6	s-metolachlor	7.62	EC	1.7	lb ai/a	POT	0.7	0.20	12.7	5.38	2.3
7	clomazone	3	ME	0.375	lb ai/a	POT	2.7	0.85	13.7	5.47	5.7
8	ethalfluralin	3	EC	1.13	lb ai/a	POT	1.3	0.38	18.3	10.04	9.0
9	ethalfluralin	3	EC	0.75	lb ai/a	POT	2.0	0.83	17.7	9.23	8.3
	clomazone	3	ME	0.25	lb ai/a	POT					
10	dimethenamid-p	6	EC	0.98	lb ai/a	POT	2.7	0.91	10.0	4.17	3.3
11	flufenacet	60	DF	0.6	lb ai/a	POT	4.0	1.44	11.3	4.86	5.3
12	sulfentrazone	75	DF	0.19	lb ai/a	POT	2.7	0.76	9.0	2.71	0.7
13	trifluralin	4	EC	0.5	lb ai/a	PPI	1.7	0.57	13.3	6.33	6.7
	sulfentrazone	75	DF	0.14	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
14	trifluralin	4	EC	0.5	lb ai/a	PPI	3.0	0.75	10.7	5.32	5.0
	oxyfluorfen	2	L	0.032	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
15	V10146	3.3	F	0.1	lb ai/a	PRT	0.0	0.00	0.0	0.00	0.0
16	V10146	3.3	F	0.1	lb ai/a	PO1	0.0	0.00	0.3	0.07	0.0
17	trifluralin	4	EC	0.5	lb ai/a	PPI	2.3	0.55	10.0	2.60	3.7
	clopyralid	3	EC	0.125	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.25	% v/v	PO1					
18	untreated						3.0	1.17	17.0	9.53	7.0
LSD (P=.05)							2.18	0.739	5.95	5.101	5.95
Standard Deviation							1.31	0.443	3.57	3.060	3.57
CV							72.15	74.46	29.54	56.25	72.74

Weed Control in Broccoli and Cabbage – HTRC

Dept. of Horticulture, MSU

Description							CABB	CABB	CABB	CABB	CABB
Rating Date							8/10/04	8/16/04	8/16/04	8/23/04	8/23/04
Rating Data Type							YIELD	COUNT	YIELD	COUNT	YIELD
Rating Unit							KG/PLOT		KG/PLOT		KG/PLOT
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
1	trifluralin	4	EC	1	lb ai/a	PPI	7.49	3.3	3.25	5.3	4.34
2	trifluralin	4	EC	1	lb ai/a	PPI	10.91	4.3	5.05	2.7	2.22
	oxyfluorfen	2	L	0.5	lb ai/a	PRT					
3	napropramide	50	DF	2	lb ai/a	POT	13.36	1.7	1.61	3.0	2.62
4	oxyfluorfen	2	L	0.5	lb ai/a	PRT	6.24	6.0	6.08	3.7	3.03
5	s-metolachlor	7.62	EC	1.3	lb ai/a	POT	4.57	6.0	5.91	3.7	2.86
6	s-metolachlor	7.62	EC	1.7	lb ai/a	POT	2.35	3.7	3.73	4.7	3.83
7	clomazone	3	ME	0.375	lb ai/a	POT	8.45	4.7	5.19	4.3	3.53
8	ethalfluralin	3	EC	1.13	lb ai/a	POT	12.17	4.0	4.49	3.0	2.68
9	ethalfluralin	3	EC	0.75	lb ai/a	POT	12.59	3.7	3.93	3.0	2.77
	clomazone	3	ME	0.25	lb ai/a	POT					
10	dimethenamid-p	6	EC	0.98	lb ai/a	POT	3.83	2.0	1.80	4.0	3.29
11	flufenacet	60	DF	0.6	lb ai/a	POT	8.26	2.0	1.87	4.0	3.37
12	sulfentrazone	75	DF	0.19	lb ai/a	POT	1.01	1.3	1.33	4.3	3.45
13	trifluralin	4	EC	0.5	lb ai/a	PPI	9.37	5.0	5.00	5.0	4.45
	sulfentrazone	75	DF	0.14	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
14	trifluralin	4	EC	0.5	lb ai/a	PPI	8.44	2.3	2.66	4.0	2.79
	oxyfluorfen	2	L	0.032	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
15	V10146	3.3	F	0.1	lb ai/a	PRT	0.00	0.3	0.30	0.0	0.00
16	V10146	3.3	F	0.1	lb ai/a	PO1	0.00	0.0	0.00	0.0	0.00
17	trifluralin	4	EC	0.5	lb ai/a	PPI	4.90	5.0	4.63	5.0	4.01
	clopyralid	3	EC	0.125	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.25	% v/v	PO1					
18	untreated						9.81	5.0	5.31	3.0	2.68
LSD (P=.05)							9.011	4.66	4.895	3.87	3.052
Standard Deviation							5.405	2.79	2.936	2.32	1.831
CV							78.61	83.36	85.05	66.69	63.45

Weed Control in Broccoli and Cabbage – HTRC

Dept. of Horticulture, MSU

Description							CABB	CABB
Rating Date								
Rating Data Type							TOT	TOT YIELD
Rating Unit							COUNT	KG/PLOT
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage		
1	trifluralin	4	EC	1	lb ai/a	PPI	13.7	15.08
2	trifluralin	4	EC	1	lb ai/a	PPI	14.3	18.18
	oxyfluorfen	2	L	0.5	lb ai/a	PRT		
3	napropramide	50	DF	2	lb ai/a	POT	15.3	17.59
4	oxyfluorfen	2	L	0.5	lb ai/a	PRT	14.7	15.35
5	s-metolachlor	7.62	EC	1.3	lb ai/a	POT	13.0	13.34
6	s-metolachlor	7.62	EC	1.7	lb ai/a	POT	10.7	9.91
7	clomazone	3	ME	0.375	lb ai/a	POT	14.7	17.17
8	ethalfluralin	3	EC	1.13	lb ai/a	POT	16.0	19.35
9	ethalfluralin	3	EC	0.75	lb ai/a	POT	15.0	19.29
	clomazone	3	ME	0.25	lb ai/a	POT		
10	dimethenamid-p	6	EC	0.98	lb ai/a	POT	9.3	8.92
11	flufenacet	60	DF	0.6	lb ai/a	POT	11.3	13.51
12	sulfentrazone	75	DF	0.19	lb ai/a	POT	6.3	5.79
13	trifluralin	4	EC	0.5	lb ai/a	PPI	16.7	18.82
	sulfentrazone	75	DF	0.14	lb ai/a	PO1		
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1		
14	trifluralin	4	EC	0.5	lb ai/a	PPI	11.3	13.88
	oxyfluorfen	2	L	0.032	lb ai/a	PO1		
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1		
15	V10146	3.3	F	0.1	lb ai/a	PRT	0.3	0.30
16	V10146	3.3	F	0.1	lb ai/a	PO1	0.0	0.00
17	trifluralin	4	EC	0.5	lb ai/a	PPI	13.7	13.54
	clopyralid	3	EC	0.125	lb ai/a	PO1		
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1		
	NIS		L	0.25	% v/v	PO1		
18	untreated						15.0	17.80
LSD (P=.05)							5.57	8.363
Standard Deviation							3.34	5.016
CV							28.46	37.96

Preemergence Weed Control in Carrot – Fremont

Project Code: WC 107-04-01 **Location: Vogel Farm, Wisner & 80th, Fremont**

Personnel: Bernard H. Zandstra, Michael Particka
Crop: Carrot **Variety: Sugarsnax**
Planting Method: Seeded **Planting Date:5/17/04**
Spacing: 0.32 IN **Row Spacing: 18 IN, 3 row/plot**
Tillage Type: Conventional **Study Design: RCB** **Replications:3**
Plot Size: 5.5 ft wide x 30 ft long

Soil Type: Pipestone Sand **OM: 2.6%** **pH: 6.8**
Sand: 83% **Silt: 6%** **Clay: 10%** **CEC: 6.0**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	5/25/04	10:00 am	54/55	°F	Wet	5 NE	85	100% Cloudy	N

Crop and Weed Information at Application

Date	Crop or Weed	Height or Diameter	Number of Leaves	Density
6/15	Carrot			
6/15	COLQ = Common lambsquarters			
6/15	COPU = Common purslane			
6/15	LATH = Ladysthumb			
6/15	RRPW = Redroot pigweed			

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.
3. Harvested all carrots from 5 ft of bed.

Preemergence Weed Control in Carrot – Fremont

Dept. of Horticulture, MSU

Trial ID: WC 107-04-01 Study Director:
Location: Fremont Investigator: Dr. Bernard Zandstra

Description							CARROT	COLQ	COPU	LATH	RRPW
Rating Date							6/15/04	6/15/04	6/15/04	6/15/04	6/15/04
Rating Data Type							RATING	RATING	RATING	RATING	RATING
Rating Unit											
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
1	linuron	50	DF	0.25	lb ai/a	PRE	1.0	9.3	9.7	9.3	8.3
2	linuron	50	DF	0.5	lb ai/a	PRE	2.3	10.0	10.0	10.0	10.0
3	clomazone	3	ME	0.25	lb ai/a	PRE	2.0	10.0	10.0	9.0	8.7
4	clomazone	3	ME	0.5	lb ai/a	PRE	3.0	10.0	10.0	9.3	9.3
5	clomazone	3	ME	0.75	lb ai/a	PRE	3.7	10.0	10.0	9.3	10.0
6	s-metolachlor	7.62	EC	1.7	lb ai/a	PRE	5.0	9.3	10.0	8.0	10.0
7	pendimethalin	3.8	ACS	2	lb ai/a	PRE	1.7	10.0	10.0	7.7	10.0
8	V10146	3.3	F	0.1	lb ai/a	PRE	10.0	9.7	10.0	10.0	8.7
9	V10146	3.3	F	0.2	lb ai/a	PRE	10.0	10.0	10.0	10.0	10.0
10	prometryn	4	L	1	lb ai/a	PRE	5.7	10.0	10.0	10.0	10.0
11	untreated					PRE	1.0	1.0	1.0	4.0	1.0
LSD (P=.05)							1.01	0.93	0.30	3.84	1.48
Standard Deviation							0.59	0.54	0.17	2.26	0.87
CV							14.32	6.03	1.9	25.68	9.93

Description							CARROT	CARROT	RRPW	CARROT
Rating Date							6/29/04	7/19/04	7/19/04	8/31/04
Rating Data Type							RATING	RATING	RATING	YIELD
Rating Unit										KG/5FT
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
1	linuron	50	DF	0.25	lb ai/a	PRE	1.3	1.3	10.0	17.53
2	linuron	50	DF	0.5	lb ai/a	PRE	1.7	2.3	10.0	16.85
3	clomazone	3	ME	0.25	lb ai/a	PRE	2.0	1.7	10.0	16.32
4	clomazone	3	ME	0.5	lb ai/a	PRE	3.0	1.7	10.0	17.03
5	clomazone	3	ME	0.75	lb ai/a	PRE	4.7	3.0	10.0	15.26
6	s-metolachlor	7.62	EC	1.7	lb ai/a	PRE	4.3	3.3	10.0	14.34
7	pendimethalin	3.8	ACS	2	lb ai/a	PRE	1.7	2.3	10.0	15.06
8	V10146	3.3	F	0.1	lb ai/a	PRE	10.0	10.0	10.0	0.22
9	V10146	3.3	F	0.2	lb ai/a	PRE	10.0	10.0	10.0	0.00
10	prometryn	4	L	1	lb ai/a	PRE	4.3	3.0	10.0	14.04
11	untreated					PRE	1.3	2.0	10.0	16.53
LSD (P=.05)							1.20	0.93	0.00	2.706
Standard Deviation							0.70	0.54	0.00	1.589
CV							17.44	14.74	0.0	12.2

Postemergence Weed Control in Carrot - Fremont

Project Code: WC 107-04-02 **Location: Vogel Farm, Wisner & 80th, Fremont**

Personnel: Bernard H. Zandstra, Michael Particka
Crop: Carrot **Variety: Sugarsnax**
Planting Method: Seeded **Planting Date: 5/17/04**
Spacing: 0.32 IN **Row Spacing: 18 IN, 3 rows/plot**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 5.5 ft wide x 30 ft long

Soil Type: Pipestone Sand **OM: 2.6%** **pH: 6.8**
Sand: %83 **Silt: 6%** **Clay: 10%** **CEC: 6.0**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PO1	6/15/04	11:00 am	75/69	°F	Damp	3 SW	54	10% Cloudy	Y

Crop and Weed Information at Application

Date	Crop or Weed	Height or Diameter	Number of Leaves	Density
6/15	Carrot	2-3 in	2-3	good
6/15	COLQ = Common lambsquarters	2-3 in	2-4	few
6/15	COPU = Common purslane	1-2 in	2-6	few
6/15	LATH = Ladysthumb	2-3 in	1-4	few
6/15	PRSP = Prostrate spurge			
6/15	RRPW = Redroot pigweed	1-3 in	2-8	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.
3. Harvested all carrots in 5 ft. of each bed.

Postemergence Weed Control in Carrot - Fremont

Dept. of Horticulture, MSU

Trial ID: WC 107-04-02 Study Director:
Location: Fremont Investigator: Dr. Bernard Zandstra

Description							CARROT	COLQ	PRSP	RRPW	CARROT
Rating Date							6/29/04	6/29/04	6/29/04	6/29/04	7/19/04
Rating Data Type							RATING	RATING	RATING	RATING	RATING
Rating Unit											
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
1	linuron	50	DF	0.25	lb ai/a	PO1	1.3	10.0	10.0	10.0	1.7
2	linuron	50	DF	0.25	lb ai/a	PO1	1.0	10.0	10.0	10.0	2.0
	COC		L	1	% v/v	PO1					
3	linuron	50	DF	0.5	lb ai/a	PO1	1.0	10.0	10.0	10.0	1.3
4	linuron	50	DF	0.5	lb ai/a	PO1	1.3	10.0	10.0	10.0	1.3
	COC		L	1	% v/v	PO1					
5	oxyfluorfen	2	L	0.063	lb ai/a	PO1	1.3	10.0	3.3	8.3	2.7
6	oxyfluorfen	2	L	0.125	lb ai/a	PO1	1.3	10.0	7.0	9.7	1.3
7	flumioxazin	51	WDG	0.032	lb ai/a	PO1	3.7	10.0	9.7	10.0	1.7
8	flumioxazin	51	WDG	0.063	lb ai/a	PO1	5.3	10.0	10.0	10.0	2.0
9	V10146	3.3	F	0.1	lb ai/a	PO1	8.7	10.0	4.7	8.7	10.0
10	prometryn	4	L	1	lb ai/a	PO1	4.0	10.0	10.0	10.0	3.0
11	untreated					PO1	1.0	1.0	1.0	1.0	2.3
LSD (P=.05)							1.01	0.00	2.84	1.77	1.50
Standard Deviation							0.59	0.00	1.67	1.04	0.88
CV							21.74	0.0	21.44	11.7	33.03

Description							RRPW	CARROT
Rating Date							7/19/04	8/31/04
Rating Data Type							RATING	YIELD
Rating Unit								KG/5FT
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage		
1	linuron	50	DF	0.25	lb ai/a	PO1	10.0	13.48
2	linuron	50	DF	0.25	lb ai/a	PO1	9.7	13.85
	COC		L	1	% v/v	PO1		
3	linuron	50	DF	0.5	lb ai/a	PO1	9.7	15.00
4	linuron	50	DF	0.5	lb ai/a	PO1	9.3	14.79
	COC		L	1	% v/v	PO1		
5	oxyfluorfen	2	L	0.063	lb ai/a	PO1	4.7	14.34
6	oxyfluorfen	2	L	0.125	lb ai/a	PO1	8.0	14.45
7	flumioxazin	51	WDG	0.032	lb ai/a	PO1	8.3	13.58
8	flumioxazin	51	WDG	0.063	lb ai/a	PO1	9.0	13.66
9	V10146	3.3	F	0.1	lb ai/a	PO1	5.7	0.00
10	prometryn	4	L	1	lb ai/a	PO1	9.7	13.63
11	untreated					PO1	5.7	13.31
LSD (P=.05)							2.17	2.685
Standard Deviation							1.27	1.576
CV							15.61	12.38

Preemergence Weed Control in Carrot – Muck Farm

Project Code: WC 107-04-03 **Location: Muck Farm B18**

Personnel: Bernard H. Zandstra, Michael Particka
Crop: Carrot **Variety: Paramount**
Planting Method: Seeded **Planting Date: 6/29/04**
Spacing: 0.5 IN **Row Spacing: 18 IN, 3 rows/plot**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 5.5 ft wide x 16.67 ft long

Soil Type: Houghton Muck **OM: 79%** **pH: 6.6**
Sand: 1% **Silt: 18%** **Clay: 2%** **CEC: N/A**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	7/1/04	3:00 pm	85/70	°F	Damp	2 W	33	10% Cloudy	N

Crop and Weed Information at Application

Date	Crop or Weed	Height or Diameter	Number of Leaves	Density
7/20	Carrot			
7/20	LACG = Large crabgrass			
7/20	YENS = Yellow nutsedge			
7/20	COLQ = Common lambsquarters			
7/20	COPU = Common purslane			
7/20	LATH = Ladysthumb			
7/20	MAYC = Marsh yellowcress			
7/20	RRPW = Redroot pigweed			

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.
3. Harvested all carrots in 5 ft. of each bed.

Preemergence Weed Control in Carrot – Muck Farm

Dept. of Horticulture, MSU

Trial ID: WC107-04-03 Study Director:
Location: Muck Farm Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	CARROT 7/20/04 RATING	LACG 7/20/04 RATING	YENS 7/20/04 RATING	COLQ 7/20/04 RATING	COPU 7/20/04 RATING
1	linuron	50	DF	0.5	lb ai/a	PRE	1.3	5.7	1.3	10.0	5.7
2	linuron	50	DF	1	lb ai/a	PRE	1.7	9.7	2.0	10.0	7.7
3	pendimethalin	3.3	EC	2	lb ai/a	PRE	1.7	10.0	1.0	9.7	10.0
4	s-metolachlor	7.62	EC	1.3	lb ai/a	PRE	1.7	10.0	1.7	6.3	7.7
5	clomazone	3	ME	0.25	lb ai/a	PRE	1.0	5.3	1.0	4.3	6.0
6	flufenacet	4	SC	0.6	lb ai/a	PRE	2.0	10.0	1.0	7.7	6.7
7	prometryn	4	L	1	lb ai/a	PRE	1.7	10.0	1.0	10.0	8.7
8	V10146	3.3	F	0.1	lb ai/a	PRE	10.0	5.3	9.3	7.0	1.3
9	flumioxazin	51	WDG	0.064	lb ai/a	PRE	4.0	9.3	1.3	10.0	9.3
10	untreated					PRE	1.0	1.0	1.0	1.0	1.0
LSD (P=.05)							1.24	3.72	0.97	3.38	1.81
Standard Deviation							0.72	2.17	0.57	1.97	1.06
CV							27.7	28.38	27.47	25.96	16.5

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	LATH 7/20/04 RATING	RRPW 7/20/04 RATING	CARROT 8/20/04 RATING	LACG 8/20/04 RATING	YENS 8/20/04 RATING
1	linuron	50	DF	0.5	lb ai/a	PRE	8.0	8.0	2.3	3.7	1.0
2	linuron	50	DF	1	lb ai/a	PRE	8.3	8.3	1.7	6.3	2.0
3	pendimethalin	3.3	EC	2	lb ai/a	PRE	9.7	9.3	1.0	9.0	1.3
4	s-metolachlor	7.62	EC	1.3	lb ai/a	PRE	9.3	9.3	1.3	9.0	3.0
5	clomazone	3	ME	0.25	lb ai/a	PRE	9.3	1.7	3.7	4.7	1.0
6	flufenacet	4	SC	0.6	lb ai/a	PRE	10.0	7.7	1.7	7.7	2.3
7	prometryn	4	L	1	lb ai/a	PRE	9.7	9.3	1.7	8.3	1.0
8	V10146	3.3	F	0.1	lb ai/a	PRE	9.7	9.0	10.0	5.3	7.0
9	flumioxazin	51	WDG	0.064	lb ai/a	PRE	10.0	10.0	3.0	6.7	1.0
10	untreated					PRE	1.0	3.0	2.3	8.0	7.3
LSD (P=.05)							1.24	2.44	1.87	4.34	0.87
Standard Deviation							0.72	1.42	1.09	2.53	0.51
CV							8.5	18.78	38.04	36.87	18.72

Preemergence Weed Control in Carrot – Muck Farm

Dept. of Horticulture, MSU

Description										
Rating Date							8/20/04	8/20/04	8/20/04	8/20/04	8/20/04
Rating Data Type							RATING	RATING	RATING	RATING	RATING
Rating Unit											
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
1	linuron	50	DF	0.5	lb ai/a	PRE	7.3	1.7	6.3	8.3	4.0
2	linuron	50	DF	1	lb ai/a	PRE	8.0	2.3	5.0	8.7	5.3
3	pendimethalin	3.3	EC	2	lb ai/a	PRE	9.7	7.7	5.3	7.3	5.0
4	s-metolachlor	7.62	EC	1.3	lb ai/a	PRE	1.7	2.3	5.7	7.7	6.7
5	clomazone	3	ME	0.25	lb ai/a	PRE	3.7	3.7	3.7	1.0	1.3
6	flufenacet	4	SC	0.6	lb ai/a	PRE	5.0	2.0	6.0	7.7	5.0
7	prometryn	4	L	1	lb ai/a	PRE	8.0	3.3	7.0	6.0	5.3
8	V10146	3.3	F	0.1	lb ai/a	PRE	4.0	1.0	7.7	9.3	6.7
9	flumioxazin	51	WDG	0.064	lb ai/a	PRE	9.0	3.7	8.3	3.0	8.0
10	untreated					PRE	9.3	6.3	9.3	8.3	8.7
LSD (P=.05)							3.36	2.22	4.16	2.07	2.82
Standard Deviation							1.96	1.29	2.42	1.21	1.64
CV							29.79	38.05	37.69	17.92	29.34

Description							CARROT
Rating Date							10/7/04
Rating Data Type							YIELD
Rating Unit							KG/5 FT
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	
1	linuron	50	DF	0.5	lb ai/a	PRE	8.14
2	linuron	50	DF	1	lb ai/a	PRE	10.11
3	pendimethalin	3.3	EC	2	lb ai/a	PRE	11.24
4	s-metolachlor	7.62	EC	1.3	lb ai/a	PRE	5.32
5	clomazone	3	ME	0.25	lb ai/a	PRE	3.71
6	flufenacet	4	SC	0.6	lb ai/a	PRE	8.35
7	prometryn	4	L	1	lb ai/a	PRE	10.24
8	V10146	3.3	F	0.1	lb ai/a	PRE	0.00
9	flumioxazin	51	WDG	0.064	lb ai/a	PRE	8.53
10	untreated					PRE	15.10
LSD (P=.05)							3.099
Standard Deviation							1.807
CV							22.37

Postemergence Weed Control in Carrot – Muck Farm

Project Code: WC 107-04-04 **Location: Muck Farm B18**

Personnel: Bernard H. Zandstra, Michael Particka
Crop: Carrot **Variety: Paramount**
Planting Method: Seeded **Planting Date: 6/29/04**
Spacing: 0.5 IN **Row Spacing: 18 IN, 3 rows/plot**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 5.5 ft wide x 16.67 ft long

Soil Type: Houghton Muck **OM: 79%** **pH: 6.6**
Sand: 1% **Silt: 18%** **Clay: 2%** **CEC: N/A**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PO1	7/20/04	9:30 am	75/70	°F	Dry	5 SW	68	10% Cloudy	N
PO2	8/3/04	10:45 am	83/73	°F	Damp	2 WNW	69	Clear	N

Crop and Weed Information at Application

Date	Crop or Weed	Height or Diameter	Number of Leaves	Density
7/20	Carrot			
7/20	YENS = Yellow nutsedge	1-3 in		Many
7/20	COPU = Common purslane	1-4 in		Many
7/20	LATH = Ladysthumb	1-6 in	4-10	Moderate
7/20	RRPW = Redroot pigweed	2-4 in	6-10	Many
8/3	Carrot	4-7 in	4-5	
8/3	LACG = Large crabgrass	4-6 in		Few
8/3	YENS = Yellow nutsedge	4-6 in		Moderate
8/3	COLQ = Common lambsquarters	2-6 in		Moderate
8/3	COPU = Common purslane	1-2 in		Many
8/3	LATH = Ladysthumb	4-6 in		Few
8/3	RRPW = Redroot pigweed	2-6 in		Moderate
8/3	TUPW = Tumble pigweed	2-4 in		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.
3. Harvested all carrots in 5ft. of each bed.

Postemergence Weed Control in Carrot – Muck Farm

Dept. of Horticulture, MSU

Trial ID: WC 107-04-04 Study Director:
Location: Muck Farm Investigator: Dr. Bernard Zandstra

Description						CARROT	LACG	YENS	COLQ	COPU
Rating Date						7/28/04	7/28/04	7/28/04	7/28/04	7/28/04
Rating Data Type						RATING	RATING	RATING	RATING	RATING
Rating Unit										
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
1	linuron	50	DF	0.25	lb ai/a	PO1,2	1.0	10.0	6.3	10.0	7.7
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1,2					
	COC		L	1	% v/v	PO1,2					
2	linuron	50	DF	0.5	lb ai/a	PO1,2	1.0	10.0	7.3	10.0	9.7
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1,2					
	COC		L	1	% v/v	PO1,2					
3	oxyfluorfen	2	L	0.063	lb ai/a	PO1,2	1.7	7.0	5.0	8.7	8.3
4	oxyfluorfen	2	L	0.125	lb ai/a	PO1,2	2.0	6.3	6.0	9.3	9.7
5	flumioxazin	51	WDG	0.032	lb ai/a	PO1,2	1.7	4.7	5.0	6.0	7.3
6	metribuzin	75	DF	0.25	lb ai/a	PO1,2	1.0	5.0	5.0	10.0	9.0
7	metribuzin	75	DF	0.5	lb ai/a	PO1,2	2.0	7.0	5.7	10.0	10.0
8	prometryn	4	L	1	lb ai/a	PO1,2	1.0	5.7	6.0	10.0	10.0
9	untreated					PO1,2	1.0	5.7	1.0	10.0	1.0
LSD (P=.05)							0.49	3.68	1.38	2.23	1.70
Standard Deviation							0.28	2.13	0.80	1.29	0.98
CV							20.47	31.21	15.14	13.83	12.18

Description						LATH	RRPW	TUPW	CARROT	LACG
Rating Date						7/28/04	7/28/04	7/28/04	8/10/04	8/10/04
Rating Data Type						RATING	RATING	RATING	RATING	RATING
Rating Unit										
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
1	linuron	50	DF	0.25	lb ai/a	PO1,2	8.0	8.7	8.7	1.0	10.0
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1,2					
	COC		L	1	% v/v	PO1,2					
2	linuron	50	DF	0.5	lb ai/a	PO1,2	9.3	9.7	9.7	1.0	10.0
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1,2					
	COC		L	1	% v/v	PO1,2					
3	oxyfluorfen	2	L	0.063	lb ai/a	PO1,2	9.7	8.0	9.3	2.0	6.0
4	oxyfluorfen	2	L	0.125	lb ai/a	PO1,2	9.0	9.0	9.7	2.0	6.7
5	flumioxazin	51	WDG	0.032	lb ai/a	PO1,2	10.0	8.3	8.7	2.0	5.3
6	metribuzin	75	DF	0.25	lb ai/a	PO1,2	8.7	8.7	9.0	1.0	6.0
7	metribuzin	75	DF	0.5	lb ai/a	PO1,2	10.0	9.0	9.0	1.0	7.3
8	prometryn	4	L	1	lb ai/a	PO1,2	9.0	7.7	9.0	1.0	7.0
9	untreated					PO1,2	10.0	1.0	1.0	1.0	9.7
LSD (P=.05)							2.09	1.41	1.31	0.00	1.40
Standard Deviation							1.21	0.82	0.75	0.00	0.81
CV							12.97	10.5	9.18	0.0	10.69

Postemergence Weed Control in Carrot – Muck Farm

Dept. of Horticulture, MSU

Description						YENS	COLQ	COPU	LATH	MAYC
Rating Date						8/10/04	8/10/04	8/10/04	8/10/04	8/10/04
Rating Data Type						RATING	RATING	RATING	RATING	RATING
Rating Unit										
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
1	linuron	50	DF	0.25	lb ai/a	PO1,2	7.7	10.0	9.7	8.3	10.0
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1,2					
	COC		L	1	% v/v	PO1,2					
2	linuron	50	DF	0.5	lb ai/a	PO1,2	8.7	10.0	10.0	9.3	10.0
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1,2					
	COC		L	1	% v/v	PO1,2					
3	oxyfluorfen	2	L	0.063	lb ai/a	PO1,2	5.3	9.0	10.0	8.0	7.0
4	oxyfluorfen	2	L	0.125	lb ai/a	PO1,2	7.3	9.0	10.0	9.0	7.7
5	flumioxazin	51	WDG	0.032	lb ai/a	PO1,2	5.7	4.3	6.3	8.3	5.3
6	metribuzin	75	DF	0.25	lb ai/a	PO1,2	7.3	10.0	10.0	9.3	10.0
7	metribuzin	75	DF	0.5	lb ai/a	PO1,2	8.3	10.0	10.0	10.0	10.0
8	prometryn	4	L	1	lb ai/a	PO1,2	7.7	10.0	10.0	8.3	9.7
9	untreated					PO1,2	9.0	10.0	8.7	10.0	10.0
LSD (P=.05)							1.15	1.56	0.56	1.80	1.28
Standard Deviation							0.67	0.90	0.33	1.04	0.74
CV							8.96	9.87	3.47	11.59	8.39

Description						RRPW	TUPW	CARROT	LACG	YENS
Rating Date						8/10/04	8/10/04	8/20/04	8/20/04	8/20/04
Rating Data Type						RATING	RATING	RATING	RATING	RATING
Rating Unit										
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
1	linuron	50	DF	0.25	lb ai/a	PO1,2	8.3	7.7	1.0	10.0	7.7
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1,2					
	COC		L	1	% v/v	PO1,2					
2	linuron	50	DF	0.5	lb ai/a	PO1,2	9.7	9.0	1.0	10.0	9.0
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1,2					
	COC		L	1	% v/v	PO1,2					
3	oxyfluorfen	2	L	0.063	lb ai/a	PO1,2	7.7	7.0	1.3	1.0	1.7
4	oxyfluorfen	2	L	0.125	lb ai/a	PO1,2	9.3	9.3	2.0	1.7	3.0
5	flumioxazin	51	WDG	0.032	lb ai/a	PO1,2	6.7	6.3	2.0	1.0	3.0
6	metribuzin	75	DF	0.25	lb ai/a	PO1,2	9.7	9.3	1.3	1.3	4.0
7	metribuzin	75	DF	0.5	lb ai/a	PO1,2	9.3	9.7	1.7	4.7	8.7
8	prometryn	4	L	1	lb ai/a	PO1,2	8.7	9.3	2.0	4.7	5.0
9	untreated					PO1,2	9.0	9.3	1.0	10.0	9.3
LSD (P=.05)							1.18	1.40	0.81	2.49	2.84
Standard Deviation							0.68	0.81	0.47	1.44	1.64
CV							7.86	9.44	31.49	29.17	28.75

Postemergence Weed Control in Carrot – Muck Farm

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	COLQ 8/20/04 RATING	COPU 8/20/04 RATING	LATH 8/20/04 RATING	MAYC 8/20/04 RATING	RRPW 8/20/04 RATING
1	linuron	50	DF	0.25	lb ai/a	PO1,2	10.0	8.7	8.7	9.3	9.7
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1,2					
	COC		L	1	% v/v	PO1,2					
2	linuron	50	DF	0.5	lb ai/a	PO1,2	10.0	10.0	9.3	10.0	10.0
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1,2					
	COC		L	1	% v/v	PO1,2					
3	oxyfluorfen	2	L	0.063	lb ai/a	PO1,2	8.3	9.7	7.7	2.0	8.0
4	oxyfluorfen	2	L	0.125	lb ai/a	PO1,2	9.0	9.0	8.3	5.7	9.3
5	flumioxazin	51	WDG	0.032	lb ai/a	PO1,2	3.7	6.7	8.3	3.0	9.3
6	metribuzin	75	DF	0.25	lb ai/a	PO1,2	10.0	10.0	10.0	10.0	8.7
7	metribuzin	75	DF	0.5	lb ai/a	PO1,2	10.0	10.0	10.0	10.0	10.0
8	prometryn	4	L	1	lb ai/a	PO1,2	10.0	9.7	9.0	10.0	9.3
9	untreated					PO1,2	10.0	8.0	10.0	9.7	9.0
LSD (P=.05)							3.09	2.14	1.51	1.58	1.42
Standard Deviation							1.79	1.23	0.87	0.91	0.82
CV							19.86	13.6	9.64	11.76	8.88

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	CARROT 10/7/04 YIELD KG/5 FT
1	linuron	50	DF	0.25	lb ai/a	PO1,2	15.21
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1,2	
	COC		L	1	% v/v	PO1,2	
2	linuron	50	DF	0.5	lb ai/a	PO1,2	16.49
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1,2	
	COC		L	1	% v/v	PO1,2	
3	oxyfluorfen	2	L	0.063	lb ai/a	PO1,2	10.43
4	oxyfluorfen	2	L	0.125	lb ai/a	PO1,2	12.35
5	flumioxazin	51	WDG	0.032	lb ai/a	PO1,2	9.15
6	metribuzin	75	DF	0.25	lb ai/a	PO1,2	14.69
7	metribuzin	75	DF	0.5	lb ai/a	PO1,2	14.61
8	prometryn	4	L	1	lb ai/a	PO1,2	12.94
9	untreated					PO1,2	15.13
LSD (P=.05)							2.082
Standard Deviation							1.203
CV							8.95

Weed Control in Celery – Muck Farm

Project Code: WC 113-04-01 **Location: Muck Farm B15**

Personnel: Bernard H. Zandstra, Michael Particka
Crop: Celery **Variety: Duchess**
Planting Method: Transplant **Planting Date: 6/22/04**
Spacing: 8 IN **Row Spacing: 36 IN, 2 rows/plot**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 5.33 ft wide x 16.67 ft long

Soil Type: Houghton Muck **OM: 78%** **pH: 6.8**
Sand: 1% **Silt: 19%** **Clay: 2%** **CEC: N/A**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
POT	7/1/04	3:30 pm	86/69	°F	Dry	2 W	37	10% Cloudy	N
PO1	7/28/04	10:00 am	69/64	°F	Damp	5 NW	64	Clear	N

Crop and Weed Information at Application

Date	Crop or Weed	Height or Diameter	Number of Leaves	Density
7/1	Celery	4-6 in		
7/1	COLQ = Common lambsquarters			
7/1	COPU = Common purslane	0.25-0.75 in		Many
7/1	LATH = Ladysthumb	0.5-3 in		Moderate
7/1	MAYC = Marsh yellowcress	0.5-1.5 in		Moderate
7/1	RRPW = Redroot pigweed	0.25 in		
7/28	Celery	8-12 in		
7/28	COLQ = Common lambsquarters	2-6 in		Few
7/28	COPU = Common purslane	2-4 in		Moderate
7/28	LATH = Ladysthumb	4-8 in		Few
7/28	MAYC = Marsh yellowcress	2-8 in		Few
7/28	RRPW = Redroot pigweed	2-6 in		Few

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.
3. Harvested 10 plants from each of 2 rows; 20 total plants

Weed Control in Celery – Muck Farm

Dept. of Horticulture, MSU

Trial ID: WC 113-04-01 Study Director:
Location: Muck Farm Investigator: Dr. Bernard Zandstra

Description						CELERY	LACG	YENS	COLQ	COPU
Rating Date						7/20/04	7/20/04	7/20/04	7/20/04	7/20/04
Rating Data Type						RATING	RATING	RATING	RATING	RATING
Rating Unit										
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
1	prometryn	4	L	1	lb ai/a	POT	2.0	9.3	5.3	10.0	9.7
	prometryn	4	L	1	lb ai/a	PO1					
2	s-metolachlor	7.62	EC	1.9	lb ai/a	POT	2.0	10.0	5.7	9.7	9.3
	prometryn	4	L	1	lb ai/a	PO1					
3	s-metolachlor	7.62	EC	1.9	lb ai/a	POT	1.3	10.0	4.7	9.3	7.7
	flumioxazin	51	WDG	0.032	lb ai/a	PO1					
4	flumioxazin	51	WDG	0.064	lb ai/a	POT	2.3	7.7	5.3	10.0	9.0
	prometryn	4	L	2	lb ai/a	PO1					
5	s-metolachlor	7.62	EC	1.9	lb ai/a	POT	2.0	9.3	6.0	9.7	8.7
	linuron	50	DF	1	lb ai/a	PO1					
6	sulfentrazone	75	DF	0.1	lb ai/a	POT	3.0	7.0	8.0	10.0	7.7
	prometryn	4	L	2	lb ai/a	PO1					
7	s-metolachlor	7.62	EC	1.9	lb ai/a	POT	1.7	10.0	8.0	8.0	7.7
	sulfentrazone	75	DF	0.1	lb ai/a	PO1					
8	dimethenamid-p	6	EC	0.98	lb ai/a	POT	1.3	10.0	7.7	9.7	9.3
	prometryn	4	L	1	lb ai/a	PO1					
	COC		L	1	% v/v	PO1					
9	dimethenamid-p	6	EC	0.98	lb ai/a	POT	1.7	10.0	5.0	10.0	9.0
	linuron	50	DF	1	lb ai/a	PO1					
	COC		L	1	% v/v	PO1					
10	s-metolachlor	7.62	EC	1.9	lb ai/a	POT	1.7	10.0	5.3	6.0	7.7
	V10137	1	EC	0.25	lb ai/a	PO1					
	prometryn	4	L	1	lb ai/a	PO1					
11	s-metolachlor	7.62	EC	1.9	lb ai/a	POT	1.0	9.0	6.7	8.0	7.3
	V10137	1	EC	0.25	lb ai/a	PO1					
	prometryn	4	L	1	lb ai/a	PO1					
	COC		L	1	% v/v	PO1					
12	s-metolachlor	7.62	EC	1.9	lb ai/a	POT	1.3	10.0	5.0	9.0	7.7
	V10137	1	EC	0.25	lb ai/a	PO1					
	prometryn	4	L	1	lb ai/a	PO1					
	NIS		L	0.25	% v/v	PO1					
13	prometryn	4	L	1	lb ai/a	POT	1.0	10.0	5.0	10.0	9.3
	prometryn	4	L	1	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	COC		L	1	% v/v	PO1					
14	untreated					POT	1.0	1.0	1.0	1.0	1.0
	prometryn	4	L	1	lb ai/a	PO1					
LSD (P=.05)							0.98	2.46	4.37	1.98	1.03
Standard Deviation							0.59	1.46	2.60	1.18	0.61
CV							35.11	16.61	46.31	13.75	7.73

Weed Control in Celery – Muck Farm

Dept. of Horticulture, MSU

Description						LATH	MAYC	RRPW	CELERY	YENS
Rating Date						7/20/04	7/20/04	7/20/04	8/4/04	8/4/04
Rating Data Type						RATING	RATING	RATING	RATING	RATING
Rating Unit										
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
1	prometryn	4	L	1	lb ai/a	POT	8.0	10.0	10.0	1.3	7.3
	prometryn	4	L	1	lb ai/a	PO1					
2	s-metolachlor	7.62	EC	1.9	lb ai/a	POT	6.3	8.3	10.0	1.3	7.3
	prometryn	4	L	1	lb ai/a	PO1					
3	s-metolachlor	7.62	EC	1.9	lb ai/a	POT	6.0	7.0	9.3	2.0	7.7
	flumioxazin	51	WDG	0.032	lb ai/a	PO1					
4	flumioxazin	51	WDG	0.064	lb ai/a	POT	6.7	8.7	10.0	1.0	7.7
	prometryn	4	L	2	lb ai/a	PO1					
5	s-metolachlor	7.62	EC	1.9	lb ai/a	POT	3.0	5.3	10.0	1.0	9.0
	linuron	50	DF	1	lb ai/a	PO1					
6	sulfentrazone	75	DF	0.1	lb ai/a	POT	8.0	5.7	10.0	1.0	9.3
	prometryn	4	L	2	lb ai/a	PO1					
7	s-metolachlor	7.62	EC	1.9	lb ai/a	POT	2.3	5.0	9.7	2.0	8.7
	sulfentrazone	75	DF	0.1	lb ai/a	PO1					
8	dimethenamid-p	6	EC	0.98	lb ai/a	POT	6.3	6.0	10.0	1.0	9.0
	prometryn	4	L	1	lb ai/a	PO1					
	COC		L	1	% v/v	PO1					
9	dimethenamid-p	6	EC	0.98	lb ai/a	POT	5.0	3.7	10.0	1.0	9.3
	linuron	50	DF	1	lb ai/a	PO1					
	COC		L	1	% v/v	PO1					
10	s-metolachlor	7.62	EC	1.9	lb ai/a	POT	4.7	5.7	9.3	1.0	8.3
	V10137	1	EC	0.25	lb ai/a	PO1					
	prometryn	4	L	1	lb ai/a	PO1					
11	s-metolachlor	7.62	EC	1.9	lb ai/a	POT	3.7	5.7	9.0	1.0	9.0
	V10137	1	EC	0.25	lb ai/a	PO1					
	prometryn	4	L	1	lb ai/a	PO1					
	COC		L	1	% v/v	PO1					
12	s-metolachlor	7.62	EC	1.9	lb ai/a	POT	3.3	5.3	9.3	1.0	9.0
	V10137	1	EC	0.25	lb ai/a	PO1					
	prometryn	4	L	1	lb ai/a	PO1					
	NIS		L	0.25	% v/v	PO1					
13	prometryn	4	L	1	lb ai/a	POT	8.7	10.0	10.0	1.0	7.3
	prometryn	4	L	1	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	COC		L	1	% v/v	PO1					
14	untreated					POT	1.0	1.0	1.0	1.0	6.0
	prometryn	4	L	1	lb ai/a	PO1					
LSD (P=.05)							2.75	2.44	1.10	0.37	1.50
Standard Deviation							1.64	1.46	0.66	0.22	0.90
CV							31.45	23.35	7.19	18.68	10.9

Weed Control in Celery – Muck Farm

Dept. of Horticulture, MSU

Description							COPU	LATH	MAYC	RRPW	CELERY
Rating Date							8/4/04	8/4/04	8/4/04	8/4/04	9/22/04
Rating Data Type							RATING	RATING	RATING	RATING	YIELD
Rating Unit											KG/20PLT
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
1	prometryn	4	L	1	lb ai/a	POT	10.0	7.3	10.0	10.0	26.98
	prometryn	4	L	1	lb ai/a	PO1					
2	s-metolachlor	7.62	EC	1.9	lb ai/a	POT	10.0	7.0	9.7	10.0	26.06
	prometryn	4	L	1	lb ai/a	PO1					
3	s-metolachlor	7.62	EC	1.9	lb ai/a	POT	9.0	6.0	6.7	10.0	22.22
	flumioxazin	51	WDG	0.032	lb ai/a	PO1					
4	flumioxazin	51	WDG	0.064	lb ai/a	POT	9.7	8.7	9.7	10.0	27.60
	prometryn	4	L	2	lb ai/a	PO1					
5	s-metolachlor	7.62	EC	1.9	lb ai/a	POT	9.7	9.0	9.7	10.0	24.02
	linuron	50	DF	1	lb ai/a	PO1					
6	sulfentrazone	75	DF	0.1	lb ai/a	POT	8.7	8.3	8.7	10.0	24.50
	prometryn	4	L	2	lb ai/a	PO1					
7	s-metolachlor	7.62	EC	1.9	lb ai/a	POT	9.3	7.3	5.7	10.0	25.31
	sulfentrazone	75	DF	0.1	lb ai/a	PO1					
8	dimethenamid-p	6	EC	0.98	lb ai/a	POT	9.3	8.7	9.0	10.0	26.02
	prometryn	4	L	1	lb ai/a	PO1					
	COC		L	1	% v/v	PO1					
9	dimethenamid-p	6	EC	0.98	lb ai/a	POT	9.7	9.3	9.0	10.0	25.46
	linuron	50	DF	1	lb ai/a	PO1					
	COC		L	1	% v/v	PO1					
10	s-metolachlor	7.62	EC	1.9	lb ai/a	POT	9.7	7.3	9.0	10.0	29.01
	V10137	1	EC	0.25	lb ai/a	PO1					
	prometryn	4	L	1	lb ai/a	PO1					
11	s-metolachlor	7.62	EC	1.9	lb ai/a	POT	9.7	8.3	9.0	10.0	25.20
	V10137	1	EC	0.25	lb ai/a	PO1					
	prometryn	4	L	1	lb ai/a	PO1					
	COC		L	1	% v/v	PO1					
12	s-metolachlor	7.62	EC	1.9	lb ai/a	POT	9.0	7.3	9.7	10.0	25.93
	V10137	1	EC	0.25	lb ai/a	PO1					
	prometryn	4	L	1	lb ai/a	PO1					
	NIS		L	0.25	% v/v	PO1					
13	prometryn	4	L	1	lb ai/a	POT	10.0	8.7	10.0	10.0	26.44
	prometryn	4	L	1	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	COC		L	1	% v/v	PO1					
14	untreated					POT	5.0	5.0	5.7	5.7	25.53
	prometryn	4	L	1	lb ai/a	PO1					
LSD (P=.05)							1.09	1.52	1.11	0.26	4.061
Standard Deviation							0.65	0.91	0.66	0.15	2.419
CV							7.08	11.71	7.6	1.59	9.4

Weed Control in Celery - Hamilton

Project Code: WC 113-04-03 **Location: Eding Farm, Hudsonville**

Personnel: Bernard H. Zandstra, Michael Particka
Crop: Celery **Variety: Duchess**
Planting Method: Transplant **Planting Date: 6/4/04**
Spacing: 6 IN **Row Spacing: 24 IN, 2 rows/plot**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 3.33 ft wide x 20 ft long

Soil Type: Houghton Muck **OM: 43%** **pH: 6.6**
Sand: 36% **Silt: 7%** **Clay: 14%** **CEC: N/A**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
POT	6/10/04	11:00 am	62/70	°F	Damp	1 SW	84	100% Cloudy	N
PO1	7/16/04	10:00 am	76/70	°F	Dry	3 SW	79	10% Cloudy	N

Crop and Weed Information at Application

Date	Crop or Weed	Height or Diameter	Number of Leaves	Density
7/16	Celery			
7/16	BLDO = Broadleaf dock			
7/16	COLQ = Common lambsquarters			
7/16	COPU = Common purslane			
7/16	LATH = Ladysthumb			
7/16	WHCA = White campion			

Notes and Comments

1. Sprays applied with 2 nozzle shielded boom FF11002, 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.
3. The entire plot was sprayed with Dual Magnum before the experiment was established.
4. Harvested 10 plants from each row.

Weed Control in Celery - Hamilton

Dept. of Horticulture, MSU
Trial ID: WC 113-04-03 Study Director:
Location: Eding Farms Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	CELERY 7/16/04 RATING	BLDO 7/16/04 RATING	COLQ 7/16/04 RATING	LATH 7/16/04 RATING	WHCA 7/16/04 RATING
1	s-metolachlor	7.62	EC	1.24	lb ai/a	POT	1.7	9.7	10.0	10.0	10.0
	prometryn	4	L	1	lb ai/a	POT					
	prometryn	4	L	1	lb ai/a	PO1					
2	s-metolachlor	7.62	EC	1.24	lb ai/a	POT	1.7	9.0	10.0	10.0	10.0
	prometryn	4	L	2	lb ai/a	POT					
	prometryn	4	L	2	lb ai/a	PO1					
3	s-metolachlor	7.62	EC	1.24	lb ai/a	POT	1.3	4.3	9.3	7.3	5.7
	prometryn	4	L	2	lb ai/a	PO1					
4	s-metolachlor	7.62	EC	1.24	lb ai/a	POT	1.7	1.7	5.3	5.7	2.3
	prometryn	4	L	1	lb ai/a	PO1					
	linuron	50	DF	0.5	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	COC		L	1	% v/v	PO1					
5	s-metolachlor	7.62	EC	1.24	lb ai/a	POT	1.3	4.7	8.7	6.7	5.0
	linuron	50	DF	1	lb ai/a	PO1					
6	s-metolachlor	7.62	EC	1.24	lb ai/a	POT	2.3	10.0	10.0	10.0	10.0
	flumioxazin	51	WG	0.064	lb ai/a	POT					
	prometryn	4	L	2	lb ai/a	PO1					
7	s-metolachlor	7.62	EC	1.24	lb ai/a	POT	1.7	6.0	7.0	7.0	6.3
	flumioxazin	51	WG	0.032	lb ai/a	PO1					
8	s-metolachlor	7.62	EC	1.24	lb ai/a	POT	3.3	10.0	10.0	9.7	9.7
	sulfentrazone	75	DF	0.2	lb ai/a	POT					
	prometryn	4	L	2	lb ai/a	PO1					
9	s-metolachlor	7.62	EC	1.24	lb ai/a	POT	1.3	2.0	4.0	6.0	1.3
	sulfentrazone	75	DF	0.1	lb ai/a	PO1					
10	s-metolachlor	7.62	EC	1.24	lb ai/a	POT	2.7	2.3	6.7	5.3	2.0
	sulfentrazone	75	DF	0.2	lb ai/a	PO1					
11	s-metolachlor	7.62	EC	1.24	lb ai/a	POT	6.3	9.0	10.0	9.3	8.0
	dimethenamid-p	6	EC	0.98	lb ai/a	POT					
	prometryn	4	L	2	lb ai/a	PO1					
	COC		L	1	% v/v	PO1					
12	s-metolachlor	7.62	EC	1.24	lb ai/a	POT	5.0	9.0	9.3	9.0	8.0
	dimethenamid-p	6	EC	0.98	lb ai/a	POT					
	linuron	50	DF	1	lb ai/a	PO1					
	COC		L	1	% v/v	PO1					
13	s-metolachlor	7.62	EC	1.24	lb ai/a	POT	10.0	9.7	10.0	9.7	9.7
	V10146	3.3	F	0.2	lb ai/a	POT					
14	s-metolachlor	7.62	EC	1.24	lb ai/a	POT	1.0	2.3	9.0	6.3	4.3
	V10146	3.3	F	0.1	lb ai/a	PO1					
	NIS		L	0.25	% v/v	PO1					
15	s-metolachlor	7.62	EC	1.24	lb ai/a	POT	2.0	4.0	9.0	7.0	5.3
	V10137	1	EC	0.25	lb ai/a	PO1					
	prometryn	4	L	1	lb ai/a	PO1					
16	s-metolachlor	7.62	EC	1.24	lb ai/a	POT	1.7	5.3	7.7	6.0	6.0
	V10137	1	EC	0.25	lb ai/a	PO1					
	prometryn	4	L	1	lb ai/a	PO1					
	COC		L	1	% v/v	PO1					
17	s-metolachlor	7.62	EC	1.24	lb ai/a	POT	1.0	2.0	8.7	5.7	2.3
	V10137	1	EC	0.25	lb ai/a	PO1					
	prometryn	4	L	1	lb ai/a	PO1					
	NIS		L	0.25	% v/v	PO1					
18	s-metolachlor	7.62	EC	1.24	lb ai/a	POT	1.7	3.7	8.3	8.7	5.7
	untreated										
LSD (P=.05)							1.43	3.62	3.81	4.90	4.10
Standard Deviation							0.86	2.17	2.29	2.94	2.46
CV							32.43	37.38	26.91	37.94	39.68

Weed Control in Celery - Hamilton

Dept. of Horticulture, MSU

Description										
						CELERY	BLDO	COPU	LATH	WHCA
Rating Date						8/4/04	8/4/04	8/4/04	8/4/04	8/4/04
Rating Data Type						RATING	RATING	RATING	RATING	RATING
Rating Unit										
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
1	s-metolachlor	7.62	EC	1.24	lb ai/a	POT	2.7	10.0	10.0	10.0	10.0
	prometryn	4	L	1	lb ai/a	POT					
	prometryn	4	L	1	lb ai/a	PO1					
2	s-metolachlor	7.62	EC	1.24	lb ai/a	POT	1.7	10.0	10.0	10.0	10.0
	prometryn	4	L	2	lb ai/a	POT					
	prometryn	4	L	2	lb ai/a	PO1					
3	s-metolachlor	7.62	EC	1.24	lb ai/a	POT	2.3	10.0	10.0	10.0	9.3
	prometryn	4	L	2	lb ai/a	PO1					
4	s-metolachlor	7.62	EC	1.24	lb ai/a	POT	2.3	10.0	10.0	10.0	9.3
	prometryn	4	L	1	lb ai/a	PO1					
	linuron	50	DF	0.5	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	COC		L	1	% v/v	PO1					
5	s-metolachlor	7.62	EC	1.24	lb ai/a	POT	1.0	10.0	10.0	10.0	10.0
	linuron	50	DF	1	lb ai/a	PO1					
6	s-metolachlor	7.62	EC	1.24	lb ai/a	POT	1.7	10.0	10.0	10.0	10.0
	flumioxazin	51	WG	0.064	lb ai/a	POT					
	prometryn	4	L	2	lb ai/a	PO1					
7	s-metolachlor	7.62	EC	1.24	lb ai/a	POT	3.7	4.7	10.0	7.7	7.3
	flumioxazin	51	WG	0.032	lb ai/a	PO1					
8	s-metolachlor	7.62	EC	1.24	lb ai/a	POT	3.3	10.0	10.0	10.0	10.0
	sulfentrazone	75	DF	0.2	lb ai/a	POT					
	prometryn	4	L	2	lb ai/a	PO1					
9	s-metolachlor	7.62	EC	1.24	lb ai/a	POT	3.0	1.7	4.0	4.0	1.3
	sulfentrazone	75	DF	0.1	lb ai/a	PO1					
10	s-metolachlor	7.62	EC	1.24	lb ai/a	POT	4.7	3.7	7.0	3.7	2.0
	sulfentrazone	75	DF	0.2	lb ai/a	PO1					
11	s-metolachlor	7.62	EC	1.24	lb ai/a	POT	6.7	10.0	10.0	10.0	10.0
	dimethenamid-p	6	EC	0.98	lb ai/a	POT					
	prometryn	4	L	2	lb ai/a	PO1					
	COC		L	1	% v/v	PO1					
12	s-metolachlor	7.62	EC	1.24	lb ai/a	POT	4.7	10.0	10.0	10.0	10.0
	dimethenamid-p	6	EC	0.98	lb ai/a	POT					
	linuron	50	DF	1	lb ai/a	PO1					
	COC		L	1	% v/v	PO1					
13	s-metolachlor	7.62	EC	1.24	lb ai/a	POT	10.0	9.7	7.7	9.7	9.7
	V10146	3.3	F	0.2	lb ai/a	POT					
14	s-metolachlor	7.62	EC	1.24	lb ai/a	POT	8.0	1.0	5.7	3.7	4.7
	V10146	3.3	F	0.1	lb ai/a	PO1					
	NIS		L	0.25	% v/v	PO1					
15	s-metolachlor	7.62	EC	1.24	lb ai/a	POT	3.3	9.0	9.3	9.0	9.0
	V10137	1	EC	0.25	lb ai/a	PO1					
	prometryn	4	L	1	lb ai/a	PO1					
16	s-metolachlor	7.62	EC	1.24	lb ai/a	POT	3.0	10.0	10.0	9.7	9.3
	V10137	1	EC	0.25	lb ai/a	PO1					
	prometryn	4	L	1	lb ai/a	PO1					
	COC		L	1	% v/v	PO1					
17	s-metolachlor	7.62	EC	1.24	lb ai/a	POT	3.0	7.7	10.0	10.0	10.0
	V10137	1	EC	0.25	lb ai/a	PO1					
	prometryn	4	L	1	lb ai/a	PO1					
	NIS		L	0.25	% v/v	PO1					
18	s-metolachlor	7.62	EC	1.24	lb ai/a	POT	2.3	10.0	10.0	10.0	10.0
	untreated										
LSD (P=.05)							1.85	2.88	3.44	2.98	2.79
Standard Deviation							1.11	1.73	2.07	1.79	1.67
CV							29.62	21.13	22.72	20.46	19.83

Weed Control in Celery - Hamilton

Dept. of Horticulture, MSU

Description							CELERY	CELERY
Rating Date							8/24/04	8/24/04
Rating Data Type							HARVEST	YIELD
Rating Unit							PLANTS	KG/10FT
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage		
1	s-metolachlor	7.62	EC	1.24	lb ai/a	POT	20.0	20.20
	prometryn	4	L	1	lb ai/a	POT		
	prometryn	4	L	1	lb ai/a	PO1		
2	s-metolachlor	7.62	EC	1.24	lb ai/a	POT	20.0	20.39
	prometryn	4	L	2	lb ai/a	POT		
	prometryn	4	L	2	lb ai/a	PO1		
3	s-metolachlor	7.62	EC	1.24	lb ai/a	POT	20.0	19.61
	prometryn	4	L	2	lb ai/a	PO1		
4	s-metolachlor	7.62	EC	1.24	lb ai/a	POT	20.0	20.71
	prometryn	4	L	1	lb ai/a	PO1		
	linuron	50	DF	0.5	lb ai/a	PO1		
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1		
	COC		L	1	% v/v	PO1		
5	s-metolachlor	7.62	EC	1.24	lb ai/a	POT	20.0	21.44
	linuron	50	DF	1	lb ai/a	PO1		
6	s-metolachlor	7.62	EC	1.24	lb ai/a	POT	19.7	20.71
	flumioxazin	51	WG	0.064	lb ai/a	POT		
	prometryn	4	L	2	lb ai/a	PO1		
7	s-metolachlor	7.62	EC	1.24	lb ai/a	POT	20.0	22.02
	flumioxazin	51	WG	0.032	lb ai/a	PO1		
8	s-metolachlor	7.62	EC	1.24	lb ai/a	POT	20.0	19.64
	sulfentrazone	75	DF	0.2	lb ai/a	POT		
	prometryn	4	L	2	lb ai/a	PO1		
9	s-metolachlor	7.62	EC	1.24	lb ai/a	POT	19.7	22.71
	sulfentrazone	75	DF	0.1	lb ai/a	PO1		
10	s-metolachlor	7.62	EC	1.24	lb ai/a	POT	20.0	22.25
	sulfentrazone	75	DF	0.2	lb ai/a	PO1		
11	s-metolachlor	7.62	EC	1.24	lb ai/a	POT	20.0	8.91
	dimethenamid-p	6	EC	0.98	lb ai/a	POT		
	prometryn	4	L	2	lb ai/a	PO1		
	COC		L	1	% v/v	PO1		
12	s-metolachlor	7.62	EC	1.24	lb ai/a	POT	20.0	14.35
	dimethenamid-p	6	EC	0.98	lb ai/a	POT		
	linuron	50	DF	1	lb ai/a	PO1		
	COC		L	1	% v/v	PO1		
13	s-metolachlor	7.62	EC	1.24	lb ai/a	POT	0.0	0.00
	V10146	3.3	F	0.2	lb ai/a	POT		
14	s-metolachlor	7.62	EC	1.24	lb ai/a	POT	0.0	0.00
	V10146	3.3	F	0.1	lb ai/a	PO1		
	NIS		L	0.25	% v/v	PO1		
15	s-metolachlor	7.62	EC	1.24	lb ai/a	POT	20.0	19.98
	V10137	1	EC	0.25	lb ai/a	PO1		
	prometryn	4	L	1	lb ai/a	PO1		
16	s-metolachlor	7.62	EC	1.24	lb ai/a	POT	20.0	20.15
	V10137	1	EC	0.25	lb ai/a	PO1		
	prometryn	4	L	1	lb ai/a	PO1		
	COC		L	1	% v/v	PO1		
17	s-metolachlor	7.62	EC	1.24	lb ai/a	POT	20.0	22.25
	V10137	1	EC	0.25	lb ai/a	PO1		
	prometryn	4	L	1	lb ai/a	PO1		
	NIS		L	0.25	% v/v	PO1		
18	s-metolachlor	7.62	EC	1.24	lb ai/a	POT	20.0	21.76
	untreated							
LSD (P=.05)							0.34	3.288
Standard Deviation							0.20	1.969
CV							1.14	11.18

Weed Control in Celery - Hudsonville

Project Code: WC 113-04-02 **Location: Schreur Farm, Hudsonville**

Personnel: Bernard H. Zandstra, Michael Particka
Crop: Celery **Variety: Duchess**
Planting Method: Transplant **Planting Date: 5/12/04**
Spacing: 6 IN **Row Spacing: 24 IN, 2 rows/plot**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 4 ft wide x 30 ft long

Soil Type: Carlisle Muck **OM: 53%** **pH: 6.8**
Sand: 25% **Silt: 14%** **Clay: 8%** **CEC:**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
POT	5/25/04	2:00 pm	67/59	°F	Wet	2 SW	63	70% Cloudy	N
PO1	6/29/04	2:00 pm	74/70	°F	Dry	8 W	49	Clear	N

Crop and Weed Information at Application

Date	Crop or Weed	Height or Diameter	Number of Leaves	Density
6/29	Celery	12-14 in		
6/29	COPU = Common purslane	1-3 in	6-12	
6/29	HAGA = Hairy galinsoga			
6/29	MAYC = Marsh yellowcress	1-7 in		
6/29	SHPU = Shepherdspurse	2-12 in		

Notes and Comments
1. Sprays applied with 2 nozzle shielded boom FF11002, 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.
3. Plots were 2 rows wide.
4. Harvested 10 plants from each row.

Weed Control in Celery - Hudsonville

Dept. of Horticulture, MSU

Trial ID: WC 113-04-02 Study Director:

Location: Schreur Farm Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	CELERY 6/10/04 RATING	CELERY 6/29/04 RATING	COPU 6/29/04 RATING	MAYC 6/29/04 RATING	SHPU 6/29/04 RATING
1	prometryn	4	L	1	lb ai/a	POT	1.0	1.0	10.0	8.0	10.0
	prometryn	4	L	1	lb ai/a	PO1					
2	prometryn	4	L	2	lb ai/a	POT	1.3	1.3	9.3	9.0	9.7
	prometryn	4	L	2	lb ai/a	PO1					
3	linuron	50	DF	1	lb ai/a	POT	1.3	1.3	10.0	8.7	10.0
	linuron	50	DF	1	lb ai/a	PO1					
4	s-metolachlor	7.62	EC	1.9	lb ai/a	POT	1.7	1.7	10.0	9.3	10.0
	prometryn	4	L	1	lb ai/a	PO1					
5	dimethenamid-p	6	EC	0.98	lb ai/a	POT	1.0	1.3	9.7	9.0	10.0
	prometryn	4	L	1	lb ai/a	PO1					
6	prometryn	4	L	1	lb ai/a	POT	1.3	1.0	10.0	8.3	10.0
	flumioxazin	51	WDG	0.047	lb ai/a	PO1					
7	prometryn	4	L	1	lb ai/a	POT	1.3	1.7	9.3	8.3	10.0
	sulfentrazone	75	DF	0.14	lb ai/a	PO1					
8	prometryn	4	L	1	lb ai/a	POT	1.7	1.3	10.0	9.0	10.0
	V10146	3.3	F	0.1	lb ai/a	PO1					
9	V10146	3.3	F	0.05	lb ai/a	POT	6.0	8.7	8.3	7.7	9.7
	prometryn	4	L	1	lb ai/a	PO1					
10	V10146	3.3	F	0.1	lb ai/a	POT	6.0	9.3	9.3	8.3	10.0
11	weeded control						1.0	1.0	1.0	1.0	1.0
LSD (P=.05)							1.05	1.14	0.61	1.30	0.40
Standard Deviation							0.62	0.67	0.36	0.76	0.23
CV							28.61	24.75	4.09	9.66	2.56

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	CELERY 7/16/04 RATING	MAYC 7/16/04 RATING	HAGA 7/16/04 RATING	CELERY 8/2/04 YIELD KG/20PLT
1	prometryn	4	L	1	lb ai/a	POT	1.3	8.0	7.0	30.20
	prometryn	4	L	1	lb ai/a	PO1				
2	prometryn	4	L	2	lb ai/a	POT	1.3	9.7	10.0	28.12
	prometryn	4	L	2	lb ai/a	PO1				
3	linuron	50	DF	1	lb ai/a	POT	1.0	9.0	9.3	28.54
	linuron	50	DF	1	lb ai/a	PO1				
4	s-metolachlor	7.62	EC	1.9	lb ai/a	POT	1.3	9.0	9.7	27.81
	prometryn	4	L	1	lb ai/a	PO1				
5	dimethenamid-p	6	EC	0.98	lb ai/a	POT	1.0	8.3	8.7	28.76
	prometryn	4	L	1	lb ai/a	PO1				
6	prometryn	4	L	1	lb ai/a	POT	2.3	4.3	4.7	25.99
	flumioxazin	51	WDG	0.047	lb ai/a	PO1				
7	prometryn	4	L	1	lb ai/a	POT	3.3	5.7	6.7	24.62
	sulfentrazone	75	DF	0.14	lb ai/a	PO1				
8	prometryn	4	L	1	lb ai/a	POT	5.7	6.3	9.3	1.30
	V10146	3.3	F	0.1	lb ai/a	PO1				
9	V10146	3.3	F	0.05	lb ai/a	POT	10.0	9.3	10.0	0.00
	prometryn	4	L	1	lb ai/a	PO1				
10	V10146	3.3	F	0.1	lb ai/a	POT	10.0	9.3	10.0	0.12
11	weeded control						1.0	1.0	1.0	30.39
LSD (P=.05)							0.74	3.00	3.82	4.818
Standard Deviation							0.43	1.76	2.24	2.829
CV							12.44	24.2	28.56	13.78

Weed Control in Collard, Kale, Kohlrabi, Mustard, & Turnip Greens - HTRC

Project Code: WC 114-04-01 **Location: HTRC Block 129**

Personnel: Bernard H. Zandstra, Michael Particka
Crop: See notes **Variety: See notes**
Planting Method: Seeded **Planting Date: 5/7/04**
Spacing: 3 IN **Row Spacing: 14 IN**
Tillage Type: Conventional **Study Design: RCBD** **Replications: 3**
Plot Size: 8 ft wide x 30 ft long

Soil Type: Capac Loam **OM: 1.9%** **pH: 7.6**
Sand: 56% **Silt: 26%** **Clay: 18%** **CEC: 10.5**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PPI	5/7/04	10:00 am	54/55	°F	Dry	7 NE	41	Clear	N
PRE	5/7/04	3:00 pm	60/60	°F	Dry	10 NE	20	Clear	N
PO1	6/8/04	10:00 am	79/72	°F	Dry	6 SW	69	Clear	N

Crop and Weed Information at Application

Date	Crop or Weed	Height or Diameter	Number of Leaves	Density
6/8	COLL = Collard	3-4 in	4	
6/8	Kale	2-3 in	2-3	
6/8	KOHL = Kohlrabi	3-5 in	4-5	
6/8	MUST = Mustard	3-4 in	4-5	
6/8	TURN = Turnip	4-6 in	5-7	
6/8	GRFT = Green foxtail	2-4 in	2-3	few
6/8	COLQ = Common lambsquarters	1-3 in	2-6	moderate
6/8	EBNS = Eastern black nightshade	1-2 in	2-6	moderate
6/8	LATH = Ladysthumb	1-3 in	4-5	moderate
6/8	RRPW = Redroot pigweed	2-4 in	4-6	few

Notes and Comments

1. Sprays applied with 5-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.
3. Planted 1 row of Collard, Kale, Kohlrabi, Mustard, and Turnip Greens per plot.
4. Crops and varieties: Collard – Vates, Kale – Vates, Kohlrabi – Early White Vienna, Mustard – Green Curled, and Turnip Greens – Purple Top White Globe.

Weed Control in Collard, Kale, Kohlrabi, Mustard, & Turnip Greens - HTRC

Dept. of Horticulture, MSU

Trial ID: WC 114-04-01 Study Director:
Location: HTRC Block 129 Investigator: Dr. Bernard Zandstra

Description						COLL	KALE	KOHL	MUST	TURN	GRFT
Rating Date						6/7/04	6/7/04	6/7/04	6/7/04	6/7/04	6/7/04
Rating Data Type						RATING	RATING	RATING	RATING	RATING	RATING
Rating Unit											
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
1	trifluralin	4	EC	1	lb ai/a	PPI	3.0	4.7	3.3	1.7	2.3	10.0
2	napropramide	50	DF	2	lb ai/a	PRE	3.0	4.3	3.7	5.3	1.7	10.0
3	s-metolachlor	7.62	EC	1.3	lb ai/a	PRE	3.7	7.0	6.0	6.7	2.0	10.0
4	dimethenamid-p	6	EC	0.98	lb ai/a	PRE	9.7	10.0	10.0	9.7	8.3	10.0
5	flufenacet	60	DF	0.6	lb ai/a	PRE	9.3	10.0	10.0	9.3	9.3	10.0
6	clomazone	3	ME	0.25	lb ai/a	PRE	2.3	4.0	2.7	4.0	4.3	10.0
7	sulfentrazone	75	DF	0.14	lb ai/a	PRE	9.3	9.7	9.3	9.3	9.3	10.0
8	ethalfluralin	3	EC	1.13	lb ai/a	PRE	4.3	5.3	5.3	8.7	4.3	10.0
9	ethalfluralin	3	EC	0.75	lb ai/a	PRE	2.0	5.7	5.3	6.7	4.3	10.0
	clomazone	3	ME	0.25	lb ai/a	PRE						
10	trifluralin	4	EC	1	lb ai/a	PPI	3.3	2.3	3.3	4.0	2.3	10.0
	clopyralid	3	EC	0.125	lb ai/a	PO1						
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1						
	NIS		L	0.25	% v/v	PO1						
11	trifluralin	4	EC	1	lb ai/a	PPI	4.7	5.0	4.0	3.3	2.7	9.0
	sulfentrazone	75	DF	0.066	lb ai/a	PO1						
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1						
	NIS		L	0.25	% v/v	PO1						
12	untreated						1.0	1.3	1.0	1.3	1.0	1.0
LSD (P=.05)							3.10	3.07	2.58	1.77	2.17	0.85
Standard Deviation							1.83	1.81	1.53	1.05	1.28	0.50
CV							39.48	31.37	28.59	17.97	29.59	5.45

Description						EBNS	COLL	KALE	KOHL	MUST
Rating Date						6/7/04	6/16/04	6/16/04	6/16/04	6/16/04
Rating Data Type						RATING	RATING	RATING	RATING	RATING
Rating Unit										
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
1	trifluralin	4	EC	1	lb ai/a	PPI	9.3	1.7	2.7	1.7	1.3
2	napropramide	50	DF	2	lb ai/a	PRE	6.7	1.0	1.3	2.0	2.3
3	s-metolachlor	7.62	EC	1.3	lb ai/a	PRE	10.0	1.0	3.7	3.0	3.0
4	dimethenamid-p	6	EC	0.98	lb ai/a	PRE	10.0	8.0	10.0	8.3	9.7
5	flufenacet	60	DF	0.6	lb ai/a	PRE	10.0	7.7	10.0	9.0	8.3
6	clomazone	3	ME	0.25	lb ai/a	PRE	10.0	1.3	1.3	2.0	2.0
7	sulfentrazone	75	DF	0.14	lb ai/a	PRE	10.0	7.3	6.3	5.7	5.7
8	ethalfluralin	3	EC	1.13	lb ai/a	PRE	10.0	1.7	2.3	2.7	9.3
9	ethalfluralin	3	EC	0.75	lb ai/a	PRE	10.0	1.0	3.0	2.7	6.0
	clomazone	3	ME	0.25	lb ai/a	PRE					
10	trifluralin	4	EC	1	lb ai/a	PPI	8.3	2.3	1.0	2.0	1.7
	clopyralid	3	EC	0.125	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.25	% v/v	PO1					
11	trifluralin	4	EC	1	lb ai/a	PPI	7.7	2.3	2.3	2.7	2.0
	sulfentrazone	75	DF	0.066	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.25	% v/v	PO1					
12	untreated						1.0	1.0	1.0	2.3	2.0
LSD (P=.05)							1.84	2.47	2.62	2.59	2.27
Standard Deviation							1.09	1.46	1.54	1.53	1.34
CV							12.67	48.25	41.19	41.73	30.19

Weed Control in Collard, Kale, Kohlrabi, Mustard, & Turnip Greens - HTRC

Dept. of Horticulture, MSU

Description						TURN	EBNS	RRPW	MUST	TURN
Rating Date						6/16/04	6/16/04	6/16/04	6/21/04	6/21/04
Rating Data Type						RATING	RATING	RATING	YIELD	YIELD
Rating Unit									KG/20FT	KG/20FT
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
1	trifluralin	4	EC	1	lb ai/a	PPI	3.0	6.3	10.0	3.56	2.02
2	napropramide	50	DF	2	lb ai/a	PRE	1.7	4.0	10.0	1.74	4.27
3	s-metolachlor	7.62	EC	1.3	lb ai/a	PRE	1.3	10.0	10.0	2.28	4.47
4	dimethenamid-p	6	EC	0.98	lb ai/a	PRE	5.0	10.0	10.0		2.61
5	flufenacet	60	DF	0.6	lb ai/a	PRE	7.7	10.0	10.0	2.39	2.42
6	clomazone	3	ME	0.25	lb ai/a	PRE	2.3	9.3	9.3	2.49	3.27
7	sulfentrazone	75	DF	0.14	lb ai/a	PRE	8.0	10.0	10.0	5.50	
8	ethalfluralin	3	EC	1.13	lb ai/a	PRE	3.3	8.3	10.0	3.18	3.70
9	ethalfluralin	3	EC	0.75	lb ai/a	PRE	2.7	10.0	10.0	3.18	2.51
	clomazone	3	ME	0.25	lb ai/a	PRE					
10	trifluralin	4	EC	1	lb ai/a	PPI	2.0	8.3	7.7	2.62	3.09
	clopyralid	3	EC	0.125	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.25	% v/v	PO1					
11	trifluralin	4	EC	1	lb ai/a	PPI	2.7	10.0	10.0	2.62	4.16
	sulfentrazone	75	DF	0.066	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.25	% v/v	PO1					
12	untreated						1.3	1.0	1.0	3.11	3.30
LSD (P=.05)							3.06	2.46	0.78	2.540	1.912
Standard Deviation							1.81	1.46	0.46	1.460	1.115
CV							52.89	17.95	5.12	49.19	34.26

Description						COLL	KALE	KOHL
Rating Date						7/2/04	7/20/04	7/20/04
Rating Data Type						YIELD	YIELD	YIELD
Rating Unit						KG/20FT	KG/20FT	KG/20FT
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage			
1	trifluralin	4	EC	1	lb ai/a	PPI	1.56	3.25	7.09
2	napropramide	50	DF	2	lb ai/a	PRE	2.47	2.74	6.18
3	s-metolachlor	7.62	EC	1.3	lb ai/a	PRE	1.96	3.02	6.24
4	dimethenamid-p	6	EC	0.98	lb ai/a	PRE	1.41	1.89	7.00
5	flufenacet	60	DF	0.6	lb ai/a	PRE	1.75	1.74	5.65
6	clomazone	3	ME	0.25	lb ai/a	PRE	2.13	1.74	5.69
7	sulfentrazone	75	DF	0.14	lb ai/a	PRE	1.90	6.49	10.95
8	ethalfluralin	3	EC	1.13	lb ai/a	PRE	1.95	4.38	6.85
9	ethalfluralin	3	EC	0.75	lb ai/a	PRE	2.64	2.37	6.73
	clomazone	3	ME	0.25	lb ai/a	PRE			
10	trifluralin	4	EC	1	lb ai/a	PPI	1.55	4.13	6.15
	clopyralid	3	EC	0.125	lb ai/a	PO1			
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1			
	NIS		L	0.25	% v/v	PO1			
11	trifluralin	4	EC	1	lb ai/a	PPI	1.55	5.19	7.21
	sulfentrazone	75	DF	0.066	lb ai/a	PO1			
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1			
	NIS		L	0.25	% v/v	PO1			
12	untreated						1.70	1.01	1.97
LSD (P=.05)							1.447	1.951	3.229
Standard Deviation							0.847	1.146	1.901
CV							45.02	36.24	29.37

Weed Control in Sweet Corn – HTRC - 1

Project Code: WC 106-03-01 **Location: HTRC Block 15**

Personnel: Bernard H. Zandstra, Michael Particka
Crop: Sweet Corn **Variety: GSS 0966 & GSS 0977**
Planting Method: Seeded **Planting Date: 6/9/04**
Spacing: 8 IN **Row Spacing: 28 IN**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 8 ft wide x 30 ft long

Soil Type: Colwood-Brookston Loam **OM: 3.9%** **pH: 6.9**
Sand: 29% **Silt: 33%** **Clay: 38%** **CEC: 14.8**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	6/16/04	10:00 am	73/67	°F	Wet	4 SE	66	10% Cloudy	N
PO1	7/6/04	2:00 pm	83/73	°F	Dry	7 SW	55	10% Cloudy	N

Crop and Weed Information at Application

Date	Crop or Weed	Height or Diameter	Number of Leaves	Density
7/6	GSS 0966	6-14 in	4-8	
7/6	GSS 0977	6-14 in	4-8	
7/6	GRFT = Green foxtail	2-4 in		
7/6	COLQ = Common lambsquarters	2-4 in		
7/6	CORW = Common ragweed	1-4 in		
7/6	LATH = Ladysthumb	2-4 in		
7/6	RRPW = Redroot pigweed	2-4 in		

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.
3. One row of each cultivar per plot.
4. All mature ears were harvested in a single pass.

Weed Control in Sweet Corn – HTRC - 1

Dept. of Horticulture, MSU

Trial ID: WC 106-04-01 Study Director:

Location: HTRC Investigator: Dr. Bernard Zandstra

Description							GSS0966	GSS0977	GSS0966	GSS0977	GRFT
Rating Date							7/2/04	7/2/04	7/20/04	7/20/04	7/20/04
Rating Data Type							RATING	RATING	RATING	RATING	RATING
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
1	s-metolachlor	7.62	EC	1.3	lb ai/a	PRE	1.3	1.3	1.3	1.3	9.7
2	s-metolachlor II	7.64	EC	1.3	lb ai/a	PRE	1.3	1.3	1.3	1.3	9.3
3	dimethenamid-p	6	EC	0.98	lb ai/a	PRE	1.0	1.0	1.0	1.0	10.0
4	flufenacet	4	SC	0.6	lb ai/a	PRE	1.3	1.0	1.0	1.0	9.3
5	atrazine	4	L	1	lb ai/a	PRE	1.0	1.0	1.3	1.3	8.7
6	AXIOM	68	DF	0.64	lb ai/a	PRE	1.0	1.0	1.0	1.0	9.7
7	mesotrione	4	SC	0.094	lb ai/a	PRE	1.0	1.0	1.3	1.3	9.0
8	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	1.7	1.7	2.0	2.0	10.0
	fluroxypyr	1.5	L	0.125	lb ai/a	PO1					
9	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	1.7	1.3	2.3	2.3	9.7
	fluroxypyr	1.5	L	0.25	lb ai/a	PO1					
10	atrazine	4	L	0.5	lb ai/a	PRE	1.7	2.0	2.7	2.7	10.0
	foramsulfuron	35	WG	0.033	lb ai/a	PO1					
	MSO		L	0.94	% v/v	PO1					
	UAN		L	1.88	% v/v	PO1					
11	atrazine	4	L	0.5	lb ai/a	PRE	1.3	1.3	2.0	2.0	10.0
	flufenacet	4	SC	0.53	lb ai/a	PO1					
	foramsulfuron	35	WG	0.033	lb ai/a	PO1					
	MSO		L	0.94	% v/v	PO1					
	UAN		L	1.88	% v/v	PO1					
12	flufenacet	4	SC	0.3	lb ai/a	PRE	1.3	1.3	1.0	1.0	10.0
	foramsulfuron	35	WG	0.033	lb ai/a	PO1					
	MSO		L	0.94	% v/v	PO1					
	UAN		L	1.88	% v/v	PO1					
13	atrazine	4	L	0.5	lb ai/a	PRE	1.3	1.3	2.0	2.0	10.0
	foramsulfuron	35	WG	0.033	lb ai/a	PO1					
	DISTINCT	76.4	WG	0.095	lb ai/a	PO1					
	MSO		L	0.94	% v/v	PO1					
	UAN		L	1.88	% v/v	PO1					
14	atrazine	4	L	0.5	lb ai/a	PRE	1.7	1.7	1.7	1.7	10.0
	foramsulfuron	35	WG	0.033	lb ai/a	PO1					
	mesotrione	4	SC	0.094	lb ai/a	PO1					
	MSO		L	0.94	% v/v	PO1					
	UAN		L	1.88	% v/v	PO1					
15	atrazine	4	L	0.5	lb ai/a	PRE	1.3	1.3	1.7	1.7	9.7
	mesotrione	4	SC	0.094	lb ai/a	PO1					
	MSO		L	0.94	% v/v	PO1					
	UAN		L	1.88	% v/v	PO1					
16	atrazine	4	L	0.5	lb ai/a	PRE	1.0	1.0	1.7	1.7	8.0
	clopyralid	3	EC	0.125	lb ai/a	PO1					
	carfentrazone	2	EC	0.008	lb ai/a	PO1					
17	atrazine	4	L	0.5	lb ai/a	PRE	1.0	1.0	1.0	1.0	9.0
	halosulfuron	75	WG	0.023	lb ai/a	PO1					
	NIS		L	0.25	% v/v	PO1					
18	atrazine	4	L	0.5	lb ai/a	PRE	1.0	1.0	1.3	1.3	10.0
	rimsulfuron	25	DF	0.016	lb ai/a	PO1					
	NIS		L	0.25	% v/v	PO1					
19	atrazine	4	L	0.5	lb ai/a	PRE	1.7	1.3	1.7	1.7	10.0
	glufosinate	1.67	EC	0.26	lb ai/a	PO1					
20	weeded control						1.7	1.3	1.0	1.0	8.0
LSD (P=.05)							1.04	0.83	1.26	1.26	1.05
Standard Deviation							0.63	0.51	0.77	0.77	0.64
CV							47.77	39.89	50.51	50.51	6.72

Weed Control in Sweet Corn – HTRC - 1

Dept. of Horticulture, MSU

Description							COLQ	CORW	LATH	RRPW
Rating Date							7/20/04	7/20/04	7/20/04	7/20/04
Rating Data Type							RATING	RATING	RATING	RATING
Rating Unit										
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
1	s-metolachlor	7.62	EC	1.3	lb ai/a	PRE	7.7	9.3	7.7	10.0
2	s-metolachlor II	7.64	EC	1.3	lb ai/a	PRE	5.7	5.0	7.7	7.7
3	dimethenamid-p	6	EC	0.98	lb ai/a	PRE	7.7	10.0	7.7	10.0
4	flufenacet	4	SC	0.6	lb ai/a	PRE	9.0	10.0	9.3	9.7
5	atrazine	4	L	1	lb ai/a	PRE	10.0	10.0	10.0	10.0
6	AXIOM	68	DF	0.64	lb ai/a	PRE	9.3	10.0	10.0	10.0
7	mesotrione	4	SC	0.094	lb ai/a	PRE	9.3	10.0	9.3	10.0
8	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	8.7	10.0	7.7	10.0
	fluroxypyr	1.5	L	0.125	lb ai/a	PO1				
9	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	8.3	10.0	9.7	10.0
	fluroxypyr	1.5	L	0.25	lb ai/a	PO1				
10	atrazine	4	L	0.5	lb ai/a	PRE	10.0	10.0	10.0	10.0
	foramsulfuron	35	WG	0.033	lb ai/a	PO1				
	MSO		L	0.94	% v/v	PO1				
	UAN		L	1.88	% v/v	PO1				
11	atrazine	4	L	0.5	lb ai/a	PRE	10.0	10.0	10.0	10.0
	flufenacet	4	SC	0.53	lb ai/a	PO1				
	foramsulfuron	35	WG	0.033	lb ai/a	PO1				
	MSO		L	0.94	% v/v	PO1				
	UAN		L	1.88	% v/v	PO1				
12	flufenacet	4	SC	0.3	lb ai/a	PRE	10.0	10.0	10.0	10.0
	foramsulfuron	35	WG	0.033	lb ai/a	PO1				
	MSO		L	0.94	% v/v	PO1				
	UAN		L	1.88	% v/v	PO1				
13	atrazine	4	L	0.5	lb ai/a	PRE	10.0	10.0	10.0	10.0
	foramsulfuron	35	WG	0.033	lb ai/a	PO1				
	DISTINCT	76.4	WG	0.095	lb ai/a	PO1				
	MSO		L	0.94	% v/v	PO1				
	UAN		L	1.88	% v/v	PO1				
14	atrazine	4	L	0.5	lb ai/a	PRE	10.0	10.0	10.0	10.0
	foramsulfuron	35	WG	0.033	lb ai/a	PO1				
	mesotrione	4	SC	0.094	lb ai/a	PO1				
	MSO		L	0.94	% v/v	PO1				
	UAN		L	1.88	% v/v	PO1				
15	atrazine	4	L	0.5	lb ai/a	PRE	10.0	10.0	10.0	10.0
	mesotrione	4	SC	0.094	lb ai/a	PO1				
	MSO		L	0.94	% v/v	PO1				
	UAN		L	1.88	% v/v	PO1				
16	atrazine	4	L	0.5	lb ai/a	PRE	10.0	10.0	10.0	10.0
	clopyralid	3	EC	0.125	lb ai/a	PO1				
	carfentrazone	2	EC	0.008	lb ai/a	PO1				
17	atrazine	4	L	0.5	lb ai/a	PRE	9.3	10.0	10.0	10.0
	halosulfuron	75	WG	0.023	lb ai/a	PO1				
	NIS		L	0.25	% v/v	PO1				
18	atrazine	4	L	0.5	lb ai/a	PRE	10.0	10.0	10.0	10.0
	rimsulfuron	25	DF	0.016	lb ai/a	PO1				
	NIS		L	0.25	% v/v	PO1				
19	atrazine	4	L	0.5	lb ai/a	PRE	10.0	10.0	10.0	10.0
	glufosinate	1.67	EC	0.26	lb ai/a	PO1				
20	weeded control						4.3	7.7	3.7	5.3
LSD (P=.05)							2.48	1.68	1.70	2.08
Standard Deviation							1.51	1.02	1.03	1.26
CV							16.79	10.58	11.28	13.08

Weed Control in Sweet Corn – HTRC - 1

Dept. of Horticulture, MSU

Description						GSS 0966	GSS 0966	GSS 0977	GSS 0977
Rating Date						9/10/04	9/10/04	9/10/04	9/10/04
Rating Data Type						YIELD	YIELD	YIELD	YIELD
Rating Unit						COUNT	KG/PLOT	COUNT	KG/PLOT
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
1	s-metolachlor	7.62	EC	1.3	lb ai/a	PRE	63.3	16.59	65.7	16.20
2	s-metolachlor II	7.64	EC	1.3	lb ai/a	PRE	59.7	15.31	61.3	15.53
3	dimethenamid-p	6	EC	0.98	lb ai/a	PRE	67.0	17.62	62.3	16.56
4	flufenacet	4	SC	0.6	lb ai/a	PRE	49.7	13.22	55.3	14.41
5	atrazine	4	L	1	lb ai/a	PRE	59.0	15.66	61.7	15.64
6	AXIOM	68	DF	0.64	lb ai/a	PRE	51.0	13.37	56.3	14.65
7	mesotrione	4	SC	0.094	lb ai/a	PRE	70.0	19.65	60.0	15.67
8	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	77.3	19.72	62.7	16.09
	fluroxypyr	1.5	L	0.125	lb ai/a	PO1				
9	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	69.0	18.09	55.0	14.03
	fluroxypyr	1.5	L	0.25	lb ai/a	PO1				
10	atrazine	4	L	0.5	lb ai/a	PRE	65.0	17.06	47.3	11.46
	foramsulfuron	35	WG	0.033	lb ai/a	PO1				
	MSO		L	0.94	% v/v	PO1				
	UAN		L	1.88	% v/v	PO1				
11	atrazine	4	L	0.5	lb ai/a	PRE	64.3	17.24	62.0	16.16
	flufenacet	4	SC	0.53	lb ai/a	PO1				
	foramsulfuron	35	WG	0.033	lb ai/a	PO1				
	MSO		L	0.94	% v/v	PO1				
	UAN		L	1.88	% v/v	PO1				
12	flufenacet	4	SC	0.3	lb ai/a	PRE	70.7	19.16	62.0	17.08
	foramsulfuron	35	WG	0.033	lb ai/a	PO1				
	MSO		L	0.94	% v/v	PO1				
	UAN		L	1.88	% v/v	PO1				
13	atrazine	4	L	0.5	lb ai/a	PRE	60.0	14.51	65.3	15.72
	foramsulfuron	35	WG	0.033	lb ai/a	PO1				
	DISTINCT	76.4	WG	0.095	lb ai/a	PO1				
	MSO		L	0.94	% v/v	PO1				
	UAN		L	1.88	% v/v	PO1				
14	atrazine	4	L	0.5	lb ai/a	PRE	79.0	20.78	63.0	18.21
	foramsulfuron	35	WG	0.033	lb ai/a	PO1				
	mesotrione	4	SC	0.094	lb ai/a	PO1				
	MSO		L	0.94	% v/v	PO1				
	UAN		L	1.88	% v/v	PO1				
15	atrazine	4	L	0.5	lb ai/a	PRE	85.3	23.86	74.0	20.96
	mesotrione	4	SC	0.094	lb ai/a	PO1				
	MSO		L	0.94	% v/v	PO1				
	UAN		L	1.88	% v/v	PO1				
16	atrazine	4	L	0.5	lb ai/a	PRE	78.0	21.86	67.0	18.62
	clopyralid	3	EC	0.125	lb ai/a	PO1				
	carfentrazone	2	EC	0.008	lb ai/a	PO1				
17	atrazine	4	L	0.5	lb ai/a	PRE	52.0	14.00	52.7	14.03
	halosulfuron	75	WG	0.023	lb ai/a	PO1				
	NIS		L	0.25	% v/v	PO1				
18	atrazine	4	L	0.5	lb ai/a	PRE	69.7	19.60	57.7	16.22
	rimsulfuron	25	DF	0.016	lb ai/a	PO1				
	NIS		L	0.25	% v/v	PO1				
19	atrazine	4	L	0.5	lb ai/a	PRE	68.7	20.13	53.3	14.64
	glufosinate	1.67	EC	0.26	lb ai/a	PO1				
20	weeded control						56.7	15.30	44.3	11.78
LSD (P=.05)							18.66	5.573	21.30	6.189
Standard Deviation							11.31	3.377	12.91	3.751
CV							17.19	19.15	21.72	23.91

Weed Control in Sweet Corn – HTRC - 2

Project Code: WC 106-03-03 **Location: HTRC Block 170**

Personnel: Bernard H. Zandstra, Michael Particka
Crop: Sweet Corn **Variety: GSS 0966 & GSS 0977**
Planting Method: Seeded **Planting Date: 6/23/04**
Spacing: 8 IN **Row Spacing: 28 IN**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 8 ft wide x 30 ft long

Soil Type: Thetford Loamy Sand **OM: 2.2%** **pH: 7.3**
Sand: 55% **Silt: 19%** **Clay: 26%** **CEC: 8.7**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	6/23/04	6:00 pm	75/77	°F	Dry	3 NW	45	50% Cloudy	N
PO1	7/13/04	11:00 am	80/71	°F	Dry	2 SW	66	5% Cloudy	N

Crop and Weed Information at Application

Date	Crop or Weed	Height or Diameter	Number of Leaves	Density
	GSS 0966	6-8 in	3-4	
	GSS 0977	6-8 in	3-4	
	COLQ = Common lambsquarters	2-4 in		Few
	COPU = Common purslane	6 in		Many
	LATH = Ladysthumb	2-6 in		Few
	RRPW = Redroot pigweed	2-4 in		Few

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.
3. One row of each cultivar per plot.
4. All mature ears were harvested in a single pass.

Weed Control in Sweet Corn – HTRC - 2

Dept. of Horticulture, MSU

Trial ID: WC 106-04-03 Study Director:

Location: HTRC Block 170 Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	GSS0966 7/13/04 RATING	GSS0977 7/13/04 RATING	COLQ 7/13/04 RATING	COPU 7/13/04 RATING	RRPW 7/13/04 RATING
1	s-metolachlor	7.62	EC	1.3	lb ai/a	PRE	1.0	1.0	9.7	9.7	10.0
2	s-metolachlor II	7.64	EC	1.3	lb ai/a	PRE	1.0	1.0	10.0	9.3	10.0
3	dimethenamid-p	6	EC	0.98	lb ai/a	PRE	1.3	1.3	10.0	10.0	10.0
4	flufenacet	4	SC	0.6	lb ai/a	PRE	2.0	1.0	10.0	9.3	10.0
5	atrazine	4	L	1	lb ai/a	PRE	1.7	1.3	10.0	10.0	10.0
6	AXIOM	68	DF	0.64	lb ai/a	PRE	1.3	1.3	10.0	10.0	10.0
7	mesotrione	4	SC	0.094	lb ai/a	PRE	1.0	1.3	10.0	9.3	10.0
8	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	1.3	1.0	10.0	10.0	10.0
	fluroxypyr	1.5	L	0.125	lb ai/a	PO1					
9	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	1.3	1.0	10.0	9.7	10.0
	fluroxypyr	1.5	L	0.25	lb ai/a	PO1					
10	atrazine	4	L	0.5	lb ai/a	PRE	1.7	1.0	10.0	10.0	10.0
	foramsulfuron	35	WG	0.033	lb ai/a	PO1					
	MSO		L	0.94	% v/v	PO1					
	UAN		L	1.88	% v/v	PO1					
11	atrazine	4	L	0.5	lb ai/a	PRE	1.0	1.0	10.0	10.0	10.0
	flufenacet	4	SC	0.53	lb ai/a	PO1					
	foramsulfuron	35	WG	0.033	lb ai/a	PO1					
	MSO		L	0.94	% v/v	PO1					
	UAN		L	1.88	% v/v	PO1					
12	flufenacet	4	SC	0.3	lb ai/a	PRE	2.0	1.0	10.0	9.3	10.0
	foramsulfuron	35	WG	0.033	lb ai/a	PO1					
	MSO		L	0.94	% v/v	PO1					
	UAN		L	1.88	% v/v	PO1					
13	atrazine	4	L	0.5	lb ai/a	PRE	1.3	1.0	10.0	10.0	10.0
	foramsulfuron	35	WG	0.033	lb ai/a	PO1					
	DISTINCT	76.4	WG	0.095	lb ai/a	PO1					
	MSO		L	0.94	% v/v	PO1					
	UAN		L	1.88	% v/v	PO1					
14	atrazine	4	L	0.5	lb ai/a	PRE	1.0	1.0	10.0	10.0	10.0
	foramsulfuron	35	WG	0.033	lb ai/a	PO1					
	mesotrione	4	SC	0.094	lb ai/a	PO1					
	MSO		L	0.94	% v/v	PO1					
	UAN		L	1.88	% v/v	PO1					
15	atrazine	4	L	0.5	lb ai/a	PRE	1.3	1.0	10.0	10.0	10.0
	mesotrione	4	SC	0.094	lb ai/a	PO1					
	MSO		L	0.94	% v/v	PO1					
	UAN		L	1.88	% v/v	PO1					
16	atrazine	4	L	0.5	lb ai/a	PRE	2.0	1.7	10.0	10.0	10.0
	clopyralid	3	EC	0.125	lb ai/a	PO1					
	carfentrazone	2	EC	0.008	lb ai/a	PO1					
17	atrazine	4	L	0.5	lb ai/a	PRE	1.7	1.3	10.0	10.0	10.0
	halosulfuron	75	WG	0.023	lb ai/a	PO1					
	NIS		L	0.25	% v/v	PO1					
18	atrazine	4	L	0.5	lb ai/a	PRE	1.0	1.0	10.0	10.0	10.0
	rimsulfuron	25	DF	0.016	lb ai/a	PO1					
	NIS		L	0.25	% v/v	PO1					
19	atrazine	4	L	0.5	lb ai/a	PRE	1.3	1.0	10.0	10.0	10.0
	glufosinate	1.67	EC	0.26	lb ai/a	PO1					
20	weeded control						1.3	1.0	5.7	3.7	5.3
LSD (P=.05)							0.88	0.51	1.50	1.26	1.40
Standard Deviation							0.54	0.31	0.91	0.76	0.85
CV							38.72	27.44	9.28	8.02	8.67

Weed Control in Sweet Corn – HTRC - 2

Dept. of Horticulture, MSU

Description							GSS0966	GSS0977	COLQ	COPU
Rating Date							7/20/04	7/20/04	7/20/04	7/20/04
Rating Data Type							RATING	RATING	RATING	RATING
Rating Unit										
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
1	s-metolachlor	7.62	EC	1.3	lb ai/a	PRE	1.3	1.3	9.7	9.0
2	s-metolachlor II	7.64	EC	1.3	lb ai/a	PRE	1.0	1.0	9.7	8.0
3	dimethenamid-p	6	EC	0.98	lb ai/a	PRE	1.3	1.0	10.0	9.3
4	flufenacet	4	SC	0.6	lb ai/a	PRE	2.0	1.3	9.7	7.0
5	atrazine	4	L	1	lb ai/a	PRE	1.3	1.0	10.0	10.0
6	AXIOM	68	DF	0.64	lb ai/a	PRE	1.3	1.3	10.0	9.3
7	mesotrione	4	SC	0.094	lb ai/a	PRE	1.0	1.0	10.0	5.7
8	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	2.3	2.0	9.7	10.0
	fluroxypyr	1.5	L	0.125	lb ai/a	PO1				
9	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	2.0	1.7	10.0	10.0
	fluroxypyr	1.5	L	0.25	lb ai/a	PO1				
10	atrazine	4	L	0.5	lb ai/a	PRE	2.0	1.7	10.0	10.0
	foramsulfuron	35	WG	0.033	lb ai/a	PO1				
	MSO		L	0.94	% v/v	PO1				
	UAN		L	1.88	% v/v	PO1				
11	atrazine	4	L	0.5	lb ai/a	PRE	1.7	1.3	10.0	10.0
	flufenacet	4	SC	0.53	lb ai/a	PO1				
	foramsulfuron	35	WG	0.033	lb ai/a	PO1				
	MSO		L	0.94	% v/v	PO1				
	UAN		L	1.88	% v/v	PO1				
12	flufenacet	4	SC	0.3	lb ai/a	PRE	1.7	1.7	10.0	10.0
	foramsulfuron	35	WG	0.033	lb ai/a	PO1				
	MSO		L	0.94	% v/v	PO1				
	UAN		L	1.88	% v/v	PO1				
13	atrazine	4	L	0.5	lb ai/a	PRE	1.7	1.3	10.0	10.0
	foramsulfuron	35	WG	0.033	lb ai/a	PO1				
	DISTINCT	76.4	WG	0.095	lb ai/a	PO1				
	MSO		L	0.94	% v/v	PO1				
	UAN		L	1.88	% v/v	PO1				
14	atrazine	4	L	0.5	lb ai/a	PRE	1.7	1.7	10.0	10.0
	foramsulfuron	35	WG	0.033	lb ai/a	PO1				
	mesotrione	4	SC	0.094	lb ai/a	PO1				
	MSO		L	0.94	% v/v	PO1				
	UAN		L	1.88	% v/v	PO1				
15	atrazine	4	L	0.5	lb ai/a	PRE	2.7	2.7	10.0	10.0
	mesotrione	4	SC	0.094	lb ai/a	PO1				
	MSO		L	0.94	% v/v	PO1				
	UAN		L	1.88	% v/v	PO1				
16	atrazine	4	L	0.5	lb ai/a	PRE	2.7	1.7	10.0	10.0
	clopyralid	3	EC	0.125	lb ai/a	PO1				
	carfentrazone	2	EC	0.008	lb ai/a	PO1				
17	atrazine	4	L	0.5	lb ai/a	PRE	2.0	1.7	10.0	10.0
	halosulfuron	75	WG	0.023	lb ai/a	PO1				
	NIS		L	0.25	% v/v	PO1				
18	atrazine	4	L	0.5	lb ai/a	PRE	1.7	1.3	10.0	10.0
	rimsulfuron	25	DF	0.016	lb ai/a	PO1				
	NIS		L	0.25	% v/v	PO1				
19	atrazine	4	L	0.5	lb ai/a	PRE	1.0	1.0	10.0	10.0
	glufosinate	1.67	EC	0.26	lb ai/a	PO1				
20	weeded control						1.0	1.0	1.0	1.0
LSD (P=.05)							1.08	0.86	0.39	1.27
Standard Deviation							0.66	0.52	0.24	0.77
CV							39.38	36.56	2.5	8.56

Weed Control in Sweet Corn – HTRC - 2

Dept. of Horticulture, MSU

Description						GSS0966	GSS0966	GSS0977	GSS0977
Rating Date						9/24/04	9/24/04	9/24/04	9/24/04
Rating Data Type						YIELD	YIELD	YIELD	YIELD
Rating Unit						EAR/PLOT	KG/PLOT	EAR/PLOT	KG/PLOT
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
1	s-metolachlor	7.62	EC	1.3	lb ai/a	PRE	47.3	13.85	61.0	18.27
2	s-metolachlor II	7.64	EC	1.3	lb ai/a	PRE	52.0	15.67	66.7	20.31
3	dimethenamid-p	6	EC	0.98	lb ai/a	PRE	56.0	16.77	65.7	19.93
4	flufenacet	4	SC	0.6	lb ai/a	PRE	40.7	11.97	65.0	19.08
5	atrazine	4	L	1	lb ai/a	PRE	51.0	15.16	71.0	20.89
6	AXIOM	68	DF	0.64	lb ai/a	PRE	55.0	16.22	61.0	18.49
7	mesotrione	4	SC	0.094	lb ai/a	PRE	51.7	15.07	55.3	15.97
8	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	54.0	15.59	69.3	19.71
	fluroxypyr	1.5	L	0.125	lb ai/a	PO1				
9	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	46.3	12.76	68.7	18.77
	fluroxypyr	1.5	L	0.25	lb ai/a	PO1				
10	atrazine	4	L	0.5	lb ai/a	PRE	55.0	16.71	77.3	23.42
	foramsulfuron	35	WG	0.033	lb ai/a	PO1				
	MSO		L	0.94	% v/v	PO1				
	UAN		L	1.88	% v/v	PO1				
11	atrazine	4	L	0.5	lb ai/a	PRE	53.7	16.11	69.3	20.33
	flufenacet	4	SC	0.53	lb ai/a	PO1				
	foramsulfuron	35	WG	0.033	lb ai/a	PO1				
	MSO		L	0.94	% v/v	PO1				
	UAN		L	1.88	% v/v	PO1				
12	flufenacet	4	SC	0.3	lb ai/a	PRE	56.3	16.91	73.7	22.90
	foramsulfuron	35	WG	0.033	lb ai/a	PO1				
	MSO		L	0.94	% v/v	PO1				
	UAN		L	1.88	% v/v	PO1				
13	atrazine	4	L	0.5	lb ai/a	PRE	47.3	13.93	69.0	19.20
	foramsulfuron	35	WG	0.033	lb ai/a	PO1				
	DISTINCT	76.4	WG	0.095	lb ai/a	PO1				
	MSO		L	0.94	% v/v	PO1				
	UAN		L	1.88	% v/v	PO1				
14	atrazine	4	L	0.5	lb ai/a	PRE	58.0	18.05	66.7	20.82
	foramsulfuron	35	WG	0.033	lb ai/a	PO1				
	mesotrione	4	SC	0.094	lb ai/a	PO1				
	MSO		L	0.94	% v/v	PO1				
	UAN		L	1.88	% v/v	PO1				
15	atrazine	4	L	0.5	lb ai/a	PRE	56.3	17.39	60.7	19.17
	mesotrione	4	SC	0.094	lb ai/a	PO1				
	MSO		L	0.94	% v/v	PO1				
	UAN		L	1.88	% v/v	PO1				
16	atrazine	4	L	0.5	lb ai/a	PRE	45.0	12.99	61.3	17.07
	clopyralid	3	EC	0.125	lb ai/a	PO1				
	carfentrazone	2	EC	0.008	lb ai/a	PO1				
17	atrazine	4	L	0.5	lb ai/a	PRE	41.0	11.60	54.7	15.35
	halosulfuron	75	WG	0.023	lb ai/a	PO1				
	NIS		L	0.25	% v/v	PO1				
18	atrazine	4	L	0.5	lb ai/a	PRE	52.0	15.90	72.3	21.99
	rimsulfuron	25	DF	0.016	lb ai/a	PO1				
	NIS		L	0.25	% v/v	PO1				
19	atrazine	4	L	0.5	lb ai/a	PRE	55.0	16.71	62.3	18.90
	glufosinate	1.67	EC	0.26	lb ai/a	PO1				
20	weeded control						29.7	8.05	36.7	9.57
LSD (P=.05)							15.31	5.159	15.90	5.815
Standard Deviation							9.28	3.126	9.64	3.524
CV							18.5	21.02	14.97	18.54

Sweet Corn Tolerance of Mesotrione (Callisto) - HTRC

Project Code: WC 106-04-02 **Location: HTRC Sandhill**

Personnel: Bernard H. Zandstra, Michael Particka
Crop: Sweet Corn **Variety: See notes**
Planting Method: Seeded **Planting Date: 6/16/04**
Spacing: 8 IN **Row Spacing: 28 IN**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 16 ft wide x 40 ft long

Soil Type: Riddles Sandy Loam **OM: 1.0%** **pH: 8.1**
Sand: 83% **Silt: 6%** **Clay: 8%** **CEC: 13.7**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	6/16/04	2:00 pm	75/75	°F	Moist	2 SE	77	100% Cloudy	N
PO1	7/8/04	2:30 pm	64/70	°F	Dry	6 W	64	90% Cloudy	N

Crop and Weed Information at Application

Date	Crop or Weed	Height or Diameter	Number of Leaves	Density
7/8	Bonus	4-6 in		
7/8	Camas	4-6 in		
7/8	GH 2547	5-8 in		
7/8	Jubilee	4-8 in		
7/8	Jubilee Plus	4-6 in		
7/8	Primetime	6-8 in		
7/8	Serendipity	6-8 in		
7/8	Tahoe	6-8 in		
7/8	Sorghum	4-6 in		

Notes and Comments

1. Sprays applied with 16 nozzle boom FF8002, 20 gpa, 30 psi, 3.2 mph, CO_2 tractor mounted sprayer.
2. Crop and weed injury ratings on scale of 1-10: 1 = no injury, 10 = complete kill.
3. Sweet corn varieties: Bonus, Camas, GH 2547, Jubilee, Jubilee Plus, Primetime, Serendipity, Tahoe, and Sorghum.
3. Cultivars were planted in 28 inch north/south rows; herbicides were applied across (east/west) corn rows.
4. Spray PO1 when sweet corn is 5-8 inches tall.
5. Harvested 16 ft of each row per plot.

Sweet Corn Tolerance of Mesotrione (Callisto) - HTRC

Dept. of Horticulture, MSU

Trial ID: WC 106-04-02 Study Director:
Location: HTRC, Sandhill Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	BONUS 6/30/04 RATING	CAMAS 6/30/04 RATING	GH 2547 6/30/04 RATING	JUBILEE 6/30/04 RATING
1	s-metolachlor II	7.64	EC	1.6	lb ai/a	PRE	1.0	2.0	1.0	1.0
	atrazine	4	L	1	lb ai/a	PRE				
2	LUMAX	3.948	EC	2.46	lb ai/a	PRE	1.7	3.3	1.0	2.3
3	LUMAX	3.948	EC	4.94	lb ai/a	PRE	2.3	5.0	3.3	1.7
4	s-metolachlor II	7.64	EC	1.6	lb ai/a	PRE	3.7	4.0	1.0	1.0
	atrazine	4	L	1	lb ai/a	PRE				
	mesotrione	4	SC	0.094	lb ai/a	PO1				
	atrazine	4	L	0.25	lb ai/a	PO1				
	COC		L	1	% v/v	PO1				
5	s-metolachlor II	7.64	EC	1.6	lb ai/a	PRE	3.3	5.3	1.0	2.7
	atrazine	4	L	1	lb ai/a	PRE				
	mesotrione	4	SC	0.188	lb ai/a	PO1				
	atrazine	4	L	0.5	lb ai/a	PO1				
	COC		L	1	% v/v	PO1				
6	s-metolachlor II	7.64	EC	1.6	lb ai/a	PRE	1.0	2.0	1.7	2.7
	fluroxypyr	1.5	L	0.125	lb ai/a	PO1				
7	s-metolachlor II	7.64	EC	1.6	lb ai/a	PRE	1.0	4.3	1.7	1.7
	fluroxypyr	1.5	L	0.25	lb ai/a	PO1				
LSD (P=.05)							3.49	3.77	3.02	1.57
Standard Deviation							1.96	2.12	1.69	0.88
CV							98.0	57.11	111.23	47.49

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	JUBILEEPLS 6/30/04 RATING	PRIMTIME 6/30/04 RATING	SERENDPTY 6/30/04 RATING	TAHOE 6/30/04 RATING
1	s-metolachlor II	7.64	EC	1.6	lb ai/a	PRE	2.7	1.7	2.0	1.3
	atrazine	4	L	1	lb ai/a	PRE				
2	LUMAX	3.948	EC	2.46	lb ai/a	PRE	1.3	1.3	1.3	1.7
3	LUMAX	3.948	EC	4.94	lb ai/a	PRE	1.3	2.0	1.7	2.7
4	s-metolachlor II	7.64	EC	1.6	lb ai/a	PRE	2.0	1.0	3.0	1.0
	atrazine	4	L	1	lb ai/a	PRE				
	mesotrione	4	SC	0.094	lb ai/a	PO1				
	atrazine	4	L	0.25	lb ai/a	PO1				
	COC		L	1	% v/v	PO1				
5	s-metolachlor II	7.64	EC	1.6	lb ai/a	PRE	1.7	1.3	1.7	2.3
	atrazine	4	L	1	lb ai/a	PRE				
	mesotrione	4	SC	0.188	lb ai/a	PO1				
	atrazine	4	L	0.5	lb ai/a	PO1				
	COC		L	1	% v/v	PO1				
6	s-metolachlor II	7.64	EC	1.6	lb ai/a	PRE	2.3	1.0	1.7	2.0
	fluroxypyr	1.5	L	0.125	lb ai/a	PO1				
7	s-metolachlor II	7.64	EC	1.6	lb ai/a	PRE	1.3	1.0	1.3	1.3
	fluroxypyr	1.5	L	0.25	lb ai/a	PO1				
LSD (P=.05)							1.54	1.22	2.06	2.04
Standard Deviation							0.87	0.68	1.16	1.15
CV							47.99	51.32	64.0	65.15

Sweet Corn Tolerance of Mesotrione (Callisto) - HTRC

Dept. of Horticulture, MSU

Description							SORGHUM BONUS	CAMAS	GH 2547
Rating Date							6/30/04 7/15/04	7/15/04	7/15/04
Rating Data Type							RATING RATING	RATING	RATING
Rating Unit									
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage			
1	s-metolachlor II	7.64	EC	1.6	lb ai/a	PRE	1.7 1.3	2.0	1.7
	atrazine	4	L	1	lb ai/a	PRE			
2	LUMAX	3.948	EC	2.46	lb ai/a	PRE	3.3 1.7	2.0	1.3
3	LUMAX	3.948	EC	4.94	lb ai/a	PRE	7.7 1.3	3.0	4.7
4	s-metolachlor II	7.64	EC	1.6	lb ai/a	PRE	1.0 3.3	2.0	1.3
	atrazine	4	L	1	lb ai/a	PRE			
	mesotrione	4	SC	0.094	lb ai/a	PO1			
	atrazine	4	L	0.25	lb ai/a	PO1			
	COC		L	1	% v/v	PO1			
5	s-metolachlor II	7.64	EC	1.6	lb ai/a	PRE	1.0 4.0	3.7	2.0
	atrazine	4	L	1	lb ai/a	PRE			
	mesotrione	4	SC	0.188	lb ai/a	PO1			
	atrazine	4	L	0.5	lb ai/a	PO1			
	COC		L	1	% v/v	PO1			
6	s-metolachlor II	7.64	EC	1.6	lb ai/a	PRE	1.0 1.0	1.7	1.3
	fluroxypyr	1.5	L	0.125	lb ai/a	PO1			
7	s-metolachlor II	7.64	EC	1.6	lb ai/a	PRE	1.3 1.7	2.3	1.7
	fluroxypyr	1.5	L	0.25	lb ai/a	PO1			
LSD (P=.05)							0.79 3.11	1.90	3.34
Standard Deviation							0.45 1.75	1.07	1.88
CV							18.34 85.37	44.74	93.86

Description							JUBILEE JUBILEEPLS	PRIMTIME	SERENDPTY
Rating Date							7/15/04 7/15/04	7/15/04	7/15/04
Rating Data Type							RATING RATING	RATING	RATING
Rating Unit									
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage			
1	s-metolachlor II	7.64	EC	1.6	lb ai/a	PRE	1.3 2.3	1.7	2.0
	atrazine	4	L	1	lb ai/a	PRE			
2	LUMAX	3.948	EC	2.46	lb ai/a	PRE	2.0 2.0	1.3	1.7
3	LUMAX	3.948	EC	4.94	lb ai/a	PRE	1.3 1.7	1.3	2.0
4	s-metolachlor II	7.64	EC	1.6	lb ai/a	PRE	1.3 1.3	1.0	2.3
	atrazine	4	L	1	lb ai/a	PRE			
	mesotrione	4	SC	0.094	lb ai/a	PO1			
	atrazine	4	L	0.25	lb ai/a	PO1			
	COC		L	1	% v/v	PO1			
5	s-metolachlor II	7.64	EC	1.6	lb ai/a	PRE	2.3 3.0	2.0	2.0
	atrazine	4	L	1	lb ai/a	PRE			
	mesotrione	4	SC	0.188	lb ai/a	PO1			
	atrazine	4	L	0.5	lb ai/a	PO1			
	COC		L	1	% v/v	PO1			
6	s-metolachlor II	7.64	EC	1.6	lb ai/a	PRE	2.0 2.3	1.3	1.3
	fluroxypyr	1.5	L	0.125	lb ai/a	PO1			
7	s-metolachlor II	7.64	EC	1.6	lb ai/a	PRE	2.0 2.3	2.3	2.3
	fluroxypyr	1.5	L	0.25	lb ai/a	PO1			
LSD (P=.05)							1.26 0.90	1.05	1.03
Standard Deviation							0.71 0.50	0.59	0.58
CV							40.13 23.52	37.61	29.57

Sweet Corn Tolerance of Mesotrione (Callisto) - HTRC

Dept. of Horticulture, MSU

Description							TAHOE	SORGHUM	BONUS	BONUS
Rating Date							7/15/04	7/15/04	9/16/04	9/16/04
Rating Data Type							RATING	RATING	YIELD	YIELD
Rating Unit									COUNT	KG/16FT
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
1	s-metolachlor II	7.64	EC	1.6	lb ai/a	PRE	1.3	1.7	29.3	7.83
	atrazine	4	L	1	lb ai/a	PRE				
2	LUMAX	3.948	EC	2.46	lb ai/a	PRE	1.0	1.7	29.3	7.71
3	LUMAX	3.948	EC	4.94	lb ai/a	PRE	1.7	8.3	30.0	7.57
4	s-metolachlor II	7.64	EC	1.6	lb ai/a	PRE	1.3	8.0	24.0	6.05
	atrazine	4	L	1	lb ai/a	PRE				
	mesotrione	4	SC	0.094	lb ai/a	PO1				
	atrazine	4	L	0.25	lb ai/a	PO1				
	COC		L	1	% v/v	PO1				
5	s-metolachlor II	7.64	EC	1.6	lb ai/a	PRE	2.3	9.0	23.7	5.93
	atrazine	4	L	1	lb ai/a	PRE				
	mesotrione	4	SC	0.188	lb ai/a	PO1				
	atrazine	4	L	0.5	lb ai/a	PO1				
	COC		L	1	% v/v	PO1				
6	s-metolachlor II	7.64	EC	1.6	lb ai/a	PRE	1.7	1.0	28.0	6.85
	fluroxypyr	1.5	L	0.125	lb ai/a	PO1				
7	s-metolachlor II	7.64	EC	1.6	lb ai/a	PRE	2.0	2.3	33.7	8.25
	fluroxypyr	1.5	L	0.25	lb ai/a	PO1				
LSD (P=.05)							1.14	1.46	8.53	2.202
Standard Deviation							0.64	0.82	4.79	1.238
CV							39.68	17.97	16.94	17.26

Description							CAMAS	CAMAS	GH 2547	GH 2547
Rating Date							9/16/04	9/16/04	9/16/04	9/16/04
Rating Data Type							YIELD	YIELD	YIELD	YIELD
Rating Unit							COUNT	KG/16FT	COUNT	KG/16FT
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
1	s-metolachlor II	7.64	EC	1.6	lb ai/a	PRE	19.0	3.75	19.7	5.91
	atrazine	4	L	1	lb ai/a	PRE				
2	LUMAX	3.948	EC	2.46	lb ai/a	PRE	13.7	3.10	21.0	6.64
3	LUMAX	3.948	EC	4.94	lb ai/a	PRE	12.7	3.29	21.0	6.38
4	s-metolachlor II	7.64	EC	1.6	lb ai/a	PRE	13.3	2.84	22.3	6.88
	atrazine	4	L	1	lb ai/a	PRE				
	mesotrione	4	SC	0.094	lb ai/a	PO1				
	atrazine	4	L	0.25	lb ai/a	PO1				
	COC		L	1	% v/v	PO1				
5	s-metolachlor II	7.64	EC	1.6	lb ai/a	PRE	15.7	4.15	21.0	6.49
	atrazine	4	L	1	lb ai/a	PRE				
	mesotrione	4	SC	0.188	lb ai/a	PO1				
	atrazine	4	L	0.5	lb ai/a	PO1				
	COC		L	1	% v/v	PO1				
6	s-metolachlor II	7.64	EC	1.6	lb ai/a	PRE	17.0	3.29	20.0	5.71
	fluroxypyr	1.5	L	0.125	lb ai/a	PO1				
7	s-metolachlor II	7.64	EC	1.6	lb ai/a	PRE	12.0	2.66	17.7	5.31
	fluroxypyr	1.5	L	0.25	lb ai/a	PO1				
LSD (P=.05)							6.76	1.961	6.48	2.105
Standard Deviation							3.80	1.102	3.64	1.183
CV							25.73	33.43	17.88	19.12

Sweet Corn Tolerance of Mesotrione (Callisto) - HTRC

Dept. of Horticulture, MSU

Description							JUBILEE	JUBILEE	JUBILEEPLS	JUBILEEPLS
Rating Date							9/13/04	9/13/04	9/16/04	9/16/04
Rating Data Type							YIELD	YIELD	YIELD	YIELD
Rating Unit							COUNT	KG/16FT	COUNT	KG/16FT
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
1	s-metolachlor II	7.64	EC	1.6	lb ai/a	PRE	26.7	6.44	14.0	3.15
	atrazine	4	L	1	lb ai/a	PRE				
2	LUMAX	3.948	EC	2.46	lb ai/a	PRE	25.0	5.73	20.3	5.21
3	LUMAX	3.948	EC	4.94	lb ai/a	PRE	28.3	6.82	19.7	5.12
4	s-metolachlor II	7.64	EC	1.6	lb ai/a	PRE	31.3	7.21	19.0	4.48
	atrazine	4	L	1	lb ai/a	PRE				
	mesotrione	4	SC	0.094	lb ai/a	PO1				
	atrazine	4	L	0.25	lb ai/a	PO1				
	COC		L	1	% v/v	PO1				
5	s-metolachlor II	7.64	EC	1.6	lb ai/a	PRE	24.3	5.69	18.3	4.42
	atrazine	4	L	1	lb ai/a	PRE				
	mesotrione	4	SC	0.188	lb ai/a	PO1				
	atrazine	4	L	0.5	lb ai/a	PO1				
	COC		L	1	% v/v	PO1				
6	s-metolachlor II	7.64	EC	1.6	lb ai/a	PRE	24.0	5.56	17.7	4.23
	fluroxypyr	1.5	L	0.125	lb ai/a	PO1				
7	s-metolachlor II	7.64	EC	1.6	lb ai/a	PRE	28.3	6.42	16.7	3.80
	fluroxypyr	1.5	L	0.25	lb ai/a	PO1				
LSD (P=.05)							5.71	1.285	5.61	1.460
Standard Deviation							3.21	0.722	3.16	0.821
CV							11.95	11.53	17.58	18.89

Description							PRIMTIME	PRIMTIME	SERENDPTY	SERENDPTY
Rating Date							9/13/04	9/13/04	9/16/04	9/16/04
Rating Data Type							YIELD	YIELD	YIELD	YIELD
Rating Unit							COUNT	KG/16FT	COUNT	KG/16FT
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
1	s-metolachlor II	7.64	EC	1.6	lb ai/a	PRE	22.0	4.98	20.7	4.74
	atrazine	4	L	1	lb ai/a	PRE				
2	LUMAX	3.948	EC	2.46	lb ai/a	PRE	26.7	6.35	20.7	5.42
3	LUMAX	3.948	EC	4.94	lb ai/a	PRE	25.3	5.88	23.3	5.89
4	s-metolachlor II	7.64	EC	1.6	lb ai/a	PRE	26.3	6.22	22.7	5.83
	atrazine	4	L	1	lb ai/a	PRE				
	mesotrione	4	SC	0.094	lb ai/a	PO1				
	atrazine	4	L	0.25	lb ai/a	PO1				
	COC		L	1	% v/v	PO1				
5	s-metolachlor II	7.64	EC	1.6	lb ai/a	PRE	23.7	5.71	20.0	5.07
	atrazine	4	L	1	lb ai/a	PRE				
	mesotrione	4	SC	0.188	lb ai/a	PO1				
	atrazine	4	L	0.5	lb ai/a	PO1				
	COC		L	1	% v/v	PO1				
6	s-metolachlor II	7.64	EC	1.6	lb ai/a	PRE	26.0	5.79	21.3	5.97
	fluroxypyr	1.5	L	0.125	lb ai/a	PO1				
7	s-metolachlor II	7.64	EC	1.6	lb ai/a	PRE	26.3	5.84	22.7	5.75
	fluroxypyr	1.5	L	0.25	lb ai/a	PO1				
LSD (P=.05)							5.30	1.367	5.89	1.810
Standard Deviation							2.98	0.769	3.31	1.018
CV							11.84	13.2	15.3	18.42

Sweet Corn Tolerance of Mesotrione (Callisto) - HTRC

Dept. of Horticulture, MSU

Description						TAHOE	TAHOE	SORGHUM	SORGHUM
Rating Date						9/14/04	9/14/04	10/6/04	10/6/04
Rating Data Type						YIELD	YIELD	YLD STALK	YLD STALK
Rating Unit						COUNT	KG/16FT	COUNT	KG/16FT
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
1	s-metolachlor II	7.64	EC	1.6	lb ai/a	PRE	23.7	5.38	51.3	14.03
	atrazine	4	L	1	lb ai/a	PRE				
2	LUMAX	3.948	EC	2.46	lb ai/a	PRE	26.3	6.38	47.0	13.55
3	LUMAX	3.948	EC	4.94	lb ai/a	PRE	34.0	8.37	33.0	9.12
4	s-metolachlor II	7.64	EC	1.6	lb ai/a	PRE	35.7	9.17	50.0	11.68
	atrazine	4	L	1	lb ai/a	PRE				
	mesotrione	4	SC	0.094	lb ai/a	PO1				
	atrazine	4	L	0.25	lb ai/a	PO1				
	COC		L	1	% v/v	PO1				
5	s-metolachlor II	7.64	EC	1.6	lb ai/a	PRE	33.7	8.65	27.3	5.53
	atrazine	4	L	1	lb ai/a	PRE				
	mesotrione	4	SC	0.188	lb ai/a	PO1				
	atrazine	4	L	0.5	lb ai/a	PO1				
	COC		L	1	% v/v	PO1				
6	s-metolachlor II	7.64	EC	1.6	lb ai/a	PRE	24.0	5.36	51.3	17.40
	fluroxypyr	1.5	L	0.125	lb ai/a	PO1				
7	s-metolachlor II	7.64	EC	1.6	lb ai/a	PRE	25.3	5.49	45.0	14.23
	fluroxypyr	1.5	L	0.25	lb ai/a	PO1				
LSD (P=.05)							8.24	1.709	20.68	7.818
Standard Deviation							4.63	0.961	11.63	4.394
CV							16.0	13.78	26.68	35.96

Weed Control in Cucumber, Pumpkin and Squash - HTRC

Project Code: WC 108-04-01 **Location: HTRC Block 137 & 143**

Personnel: Bernard H. Zandstra, Michael Particka
Crop: See notes **Variety: See notes**
Planting Method: Seeded **Planting Date: 6-4-04**
Spacing: See notes **Row Spacing: 14 IN**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 30 ft wide x 40 ft long

Soil Type: Capac Loam **OM: 2.3%** **pH: 6.4**
Sand: 52% **Silt: 29%** **Clay: 19%** **CEC: 8.1**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	6/7/04	12:00 pm	80/73	°F	80/73	5 SW	57	5% Cloudy	N
PO1	6/28/04	3:30 pm	71/72	°F	71/72	4 W	50	40% Cloudy	N

Crop and Weed Information at Application

Date	Crop or Weed	Height or Diameter	Number of Leaves	Density
6/28	PUMP = Pumpkin	4-6 in	2-4	
6/28	CUKE = Cucumber	2-4 in	2-4	
6/28	Squash	2-4 in	2	
6/28	LACG = Large crabgrass	1-2 in		Few
6/28	COLQ = Common lambsquarters	0.25-1 in	cot-4	Moderate
6/28	COPU = Common purslane		cot-4	Many
6/28	EBNS = Eastern black nightshade	0.25-0.75 in	cot-4	Moderate
6/28	LATH = Ladysthumb	0.5-2 in	cot-4	Few
6/28	RRPW = Redroot pigweed	0.25-0.75 in	cot-4	
6/28	SHPU = Shepherdspurse			

Notes and Comments

1. Sprays applied with 16 nozzle boom FF8002, 20 gpa, 30 psi, 3.2 mph, CO_2 tractor mounted sprayer.
2. Crop and weed injury ratings on scale of 1-10: 1 = no injury, 10 = complete kill.
3. Crops and Varieties: Cucumber – Vlaspik, Pumpkin – Howden, Squash – Golden Hubbard
4. Planted pumpkin in left row with 6 IN spacing, squash in right row with 6 IN spacing, cucumber in center 3 rows with 3 IN spacing.
5. Spray center 16 ft of plot with tractor; area between plots cultivated until covered with vines.
6. Harvested all fruit in 40 ft plot.

Weed Control in Cucumber, Pumpkin and Squash - HTRC

Dept. of Horticulture, MSU

Trial ID: WC 108-04-01 Study Director:
Location: HTRC Investigator: Dr. Bernard Zandstra

Description							CUKE	PUMP	SQUASH	GRFT	COLQ
Rating Date							6/28/04	6/28/04	6/28/04	6/28/04	6/28/04
Rating Data Type							RATING	RATING	RATING	RATING	RATING
Rating Unit											
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
1	ethalfluralin	3	EC	0.75	lb ai/a	PRE	2.3	1.0	2.0	8.0	8.3
2	ethalfluralin	3	EC	1.13	lb ai/a	PRE	1.7	1.7	2.3	9.7	9.3
3	ethalfluralin	3	EC	0.75	lb ai/a	PRE	2.3	1.3	2.0	10.0	10.0
	clomazone	3	ME	0.25	lb ai/a	PRE					
4	clomazone	3	ME	0.25	lb ai/a	PRE	2.0	1.0	2.0	10.0	10.0
5	ethalfluralin	3	EC	0.75	lb ai/a	PRE	2.3	3.0	4.7	10.0	10.0
	halosulfuron	75	WG	0.023	lb ai/a	PRE					
6	clomazone	3	ME	0.25	lb ai/a	PRE	2.0	2.0	3.7	10.0	10.0
	halosulfuron	75	WG	0.023	lb ai/a	PRE					
7	STRATEGY	2.1	SE	0.79	lb ai/a	PRE	2.0	2.0	2.3	10.0	10.0
8	STRATEGY	2.1	SE	1.05	lb ai/a	PRE	2.3	1.0	4.0	10.0	10.0
9	ethalfluralin	3	EC	0.75	lb ai/a	PRE	2.0	1.7	3.3	10.0	9.3
	halosulfuron	75	WG	0.023	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.25	% v/v	PO1					
10	V10146	3.3	F	0.1	lb ai/a	PRE	2.7	3.3	4.0	10.0	10.0
11	sulfentrazone	75	DF	0.141	lb ai/a	PRE	8.3	4.7	3.0	10.0	10.0
12	halosulfuron	75	WG	0.023	lb ai/a	PO1	1.3	1.0	2.3	1.0	1.0
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.25	% v/v	PO1					
13	V10146	3.3	F	0.1	lb ai/a	PO1	1.3	1.3	2.3	1.0	1.0
14	sulfentrazone	75	DF	0.141	lb ai/a	PO1	1.0	1.0	2.0	1.0	1.0
15	weeded control						1.7	1.7	2.0	1.0	1.0
LSD (P=.05)							1.02	1.15	2.29	0.78	0.99
Standard Deviation							0.61	0.69	1.37	0.47	0.59
CV							25.82	37.35	48.92	6.26	8.02

Weed Control in Cucumber, Pumpkin and Squash - HTRC

Dept. of Horticulture, MSU

Description							COPU	EBNS	SHPU	CUKE	PUMP
Rating Date							6/28/04	6/28/04	6/28/04	7/6/04	7/6/04
Rating Data Type							RATING	RATING	RATING	RATING	RATING
Rating Unit											
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
1	ethalfluralin	3	EC	0.75	lb ai/a	PRE	8.0	8.7	7.7	1.3	1.0
2	ethalfluralin	3	EC	1.13	lb ai/a	PRE	9.7	8.7	8.7	1.7	1.3
3	ethalfluralin	3	EC	0.75	lb ai/a	PRE	10.0	9.7	10.0	1.7	1.0
	clomazone	3	ME	0.25	lb ai/a	PRE					
4	clomazone	3	ME	0.25	lb ai/a	PRE	10.0	10.0	10.0	1.3	1.3
5	ethalfluralin	3	EC	0.75	lb ai/a	PRE	10.0	6.7	10.0	2.0	3.0
	halosulfuron	75	WG	0.023	lb ai/a	PRE					
6	clomazone	3	ME	0.25	lb ai/a	PRE	10.0	9.3	10.0	2.0	3.0
	halosulfuron	75	WG	0.023	lb ai/a	PRE					
7	STRATEGY	2.1	SE	0.79	lb ai/a	PRE	10.0	10.0	10.0	1.7	1.3
8	STRATEGY	2.1	SE	1.05	lb ai/a	PRE	10.0	10.0	10.0	3.0	1.0
9	ethalfluralin	3	EC	0.75	lb ai/a	PRE	9.7	2.7	7.3	3.0	3.3
	halosulfuron	75	WG	0.023	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.25	% v/v	PO1					
10	V10146	3.3	F	0.1	lb ai/a	PRE	10.0	4.0	10.0	2.3	3.0
11	sulfentrazone	75	DF	0.141	lb ai/a	PRE	10.0	10.0	10.0	8.3	4.0
12	halosulfuron	75	WG	0.023	lb ai/a	PO1	1.0	1.0	1.0	2.3	3.0
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.25	% v/v	PO1					
13	V10146	3.3	F	0.1	lb ai/a	PO1	1.0	1.0	1.0	2.7	1.7
14	sulfentrazone	75	DF	0.141	lb ai/a	PO1	1.0	1.0	1.0	8.3	4.7
15	weeded control						1.0	1.0	1.0	1.0	1.0
LSD (P=.05)							0.55	2.93	2.39	1.00	1.18
Standard Deviation							0.33	1.75	1.43	0.60	0.71
CV							4.43	28.04	19.95	20.96	31.45

Weed Control in Cucumber, Pumpkin and Squash - HTRC

Dept. of Horticulture, MSU

Description							SQUASH	GRFT	COLQ	COPU	EBNS	RRPW
Rating Date							7/6/04	7/6/04	7/6/04	7/6/04	7/6/04	7/6/04
Rating Data Type							RATING	RATING	RATING	RATING	RATING	RATING
Rating Unit												
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage						
1	ethalfluralin	3	EC	0.75	lb ai/a	PRE	1.0	5.0	7.3	6.7	6.3	7.3
2	ethalfluralin	3	EC	1.13	lb ai/a	PRE	1.3	10.0	7.0	7.7	4.3	6.0
3	ethalfluralin	3	EC	0.75	lb ai/a	PRE	1.0	10.0	10.0	10.0	8.0	8.7
	clomazone	3	ME	0.25	lb ai/a	PRE						
4	clomazone	3	ME	0.25	lb ai/a	PRE	1.0	10.0	10.0	10.0	6.3	7.3
5	ethalfluralin	3	EC	0.75	lb ai/a	PRE	4.0	10.0	10.0	10.0	4.0	10.0
	halosulfuron	75	WG	0.023	lb ai/a	PRE						
6	clomazone	3	ME	0.25	lb ai/a	PRE	3.0	10.0	10.0	10.0	7.7	10.0
	halosulfuron	75	WG	0.023	lb ai/a	PRE						
7	STRATEGY	2.1	SE	0.79	lb ai/a	PRE	1.3	10.0	10.0	10.0	7.3	9.0
8	STRATEGY	2.1	SE	1.05	lb ai/a	PRE	3.7	10.0	10.0	10.0	9.3	9.0
9	ethalfluralin	3	EC	0.75	lb ai/a	PRE	4.3	10.0	7.0	9.0	3.3	10.0
	halosulfuron	75	WG	0.023	lb ai/a	PO1						
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1						
	NIS		L	0.25	% v/v	PO1						
10	V10146	3.3	F	0.1	lb ai/a	PRE	4.7	9.3	10.0	10.0	2.7	10.0
11	sulfentrazone	75	DF	0.141	lb ai/a	PRE	1.0	9.3	10.0	9.3	9.7	9.7
12	halosulfuron	75	WG	0.023	lb ai/a	PO1	3.0	7.7	5.3	1.0	1.0	10.0
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1						
	NIS		L	0.25	% v/v	PO1						
13	V10146	3.3	F	0.1	lb ai/a	PO1	2.3	7.0	1.3	5.0	1.0	10.0
14	sulfentrazone	75	DF	0.141	lb ai/a	PO1	3.7	6.3	9.7	4.7	10.0	10.0
15	weeded control						1.0	8.7	7.7	7.0	6.0	6.7
LSD (P=.05)							2.00	3.98	2.92	1.99	3.13	1.78
Standard Deviation							1.20	2.38	1.75	1.19	1.87	1.06
CV							49.4	26.78	20.9	14.84	32.23	11.94

Weed Control in Cucumber, Pumpkin and Squash - HTRC

Dept. of Horticulture, MSU

Description							SHPU	CUKE	CUKE 1'S	CUKE 2'S
Rating Date							7/6/04	7/28/04	7/28/04	7/28/04
Rating Data Type							RATING	YIELD	NO. 1 SIZE	NO. 2 SIZE
Rating Unit								KG/PLOT	KG	KG
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
1	ethalfluralin	3	EC	0.75	lb ai/a	PRE	6.3	21.09	1.199	3.899
2	ethalfluralin	3	EC	1.13	lb ai/a	PRE	5.3	20.39	1.171	4.012
3	ethalfluralin	3	EC	0.75	lb ai/a	PRE	10.0	21.68	1.517	4.314
	clomazone	3	ME	0.25	lb ai/a	PRE				
4	clomazone	3	ME	0.25	lb ai/a	PRE	10.0	19.62	1.122	3.620
5	ethalfluralin	3	EC	0.75	lb ai/a	PRE	10.0	27.77	1.174	4.433
	halosulfuron	75	WG	0.023	lb ai/a	PRE				
6	clomazone	3	ME	0.25	lb ai/a	PRE	10.0	30.13	1.572	5.046
	halosulfuron	75	WG	0.023	lb ai/a	PRE				
7	STRATEGY	2.1	SE	0.79	lb ai/a	PRE	10.0	17.93	1.300	4.405
8	STRATEGY	2.1	SE	1.05	lb ai/a	PRE	10.0	23.36	0.980	3.786
9	ethalfluralin	3	EC	0.75	lb ai/a	PRE	10.0	22.83	0.962	4.307
	halosulfuron	75	WG	0.023	lb ai/a	PO1				
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1				
	NIS		L	0.25	% v/v	PO1				
10	V10146	3.3	F	0.1	lb ai/a	PRE	10.0	25.87	1.595	4.664
11	sulfentrazone	75	DF	0.141	lb ai/a	PRE	10.0	0.31	0.051	0.080
12	halosulfuron	75	WG	0.023	lb ai/a	PO1	10.0	17.23	1.129	3.377
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1				
	NIS		L	0.25	% v/v	PO1				
13	V10146	3.3	F	0.1	lb ai/a	PO1	10.0	11.73	1.028	3.494
14	sulfentrazone	75	DF	0.141	lb ai/a	PO1	6.7	2.33	0.306	0.691
15	weeded control						8.3	16.89	1.099	3.099
LSD (P=.05)							3.06	8.445	0.4400	1.8220
Standard Deviation							1.83	5.050	0.2631	1.0896
CV							20.09	27.14	24.36	30.71

Weed Control in Cucumber, Pumpkin and Squash - HTRC

Dept. of Horticulture, MSU

Description							CUKE 3'S	CUKE OS	GRN PUMP	GRN PUMP
Rating Date							7/28/04	7/28/04	10/1/04	10/1/04
Rating Data Type							NO. 3 SIZE	OVER SIZE	YIELD	YIELD
Rating Unit							KG	KG	NUMBER	KG
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
1	ethalfluralin	3	EC	0.75	lb ai/a	PRE	9.508	2.283	3.7	17.93
2	ethalfluralin	3	EC	1.13	lb ai/a	PRE	11.407	3.334	2.7	9.68
3	ethalfluralin	3	EC	0.75	lb ai/a	PRE	12.282	3.217	2.0	10.79
	clomazone	3	ME	0.25	lb ai/a	PRE				
4	clomazone	3	ME	0.25	lb ai/a	PRE	10.893	3.510	4.3	15.13
5	ethalfluralin	3	EC	0.75	lb ai/a	PRE	16.297	5.346	3.3	12.61
	halosulfuron	75	WG	0.023	lb ai/a	PRE				
6	clomazone	3	ME	0.25	lb ai/a	PRE	16.211	6.520	5.0	17.46
	halosulfuron	75	WG	0.023	lb ai/a	PRE				
7	STRATEGY	2.1	SE	0.79	lb ai/a	PRE	11.943	3.589	3.7	17.26
8	STRATEGY	2.1	SE	1.05	lb ai/a	PRE	13.150	4.936	2.7	7.38
9	ethalfluralin	3	EC	0.75	lb ai/a	PRE	13.206	3.817	3.3	22.19
	halosulfuron	75	WG	0.023	lb ai/a	PO1				
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1				
	NIS		L	0.25	% v/v	PO1				
10	V10146	3.3	F	0.1	lb ai/a	PRE	14.305	4.686	3.0	9.83
11	sulfentrazone	75	DF	0.141	lb ai/a	PRE	0.154	0.000	7.3	29.39
12	halosulfuron	75	WG	0.023	lb ai/a	PO1	9.358	2.923	6.3	34.05
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1				
	NIS		L	0.25	% v/v	PO1				
13	V10146	3.3	F	0.1	lb ai/a	PO1	6.139	0.665	3.3	8.91
14	sulfentrazone	75	DF	0.141	lb ai/a	PO1	0.948	0.303	7.7	36.34
15	weeded control						9.249	3.121	3.7	16.46
LSD (P=.05)							4.9653	2.3553	3.55	17.312
Standard Deviation							2.9694	1.4085	2.12	10.353
CV							28.73	43.79	51.3	58.51

Weed Control in Cucumber, Pumpkin and Squash - HTRC

Dept. of Horticulture, MSU

Description							ORN PUMP	ORN PUMP	SQUASH	SQUASH
Rating Date							10/1/04	10/1/04	10/1/04	10/1/04
Rating Data Type							YIELD	YIELD	YIELD	YIELD
Rating Unit							NUMBER	KG	NUMBER	KG
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
1	ethalfluralin	3	EC	0.75	lb ai/a	PRE	21.7	125.29	15.7	20.75
2	ethalfluralin	3	EC	1.13	lb ai/a	PRE	23.0	123.45	14.7	19.58
3	ethalfluralin	3	EC	0.75	lb ai/a	PRE	20.7	130.45	26.3	36.15
	clomazone	3	ME	0.25	lb ai/a	PRE				
4	clomazone	3	ME	0.25	lb ai/a	PRE	26.3	155.21	27.0	43.33
5	ethalfluralin	3	EC	0.75	lb ai/a	PRE	18.0	94.41	12.7	18.43
	halosulfuron	75	WG	0.023	lb ai/a	PRE				
6	clomazone	3	ME	0.25	lb ai/a	PRE	19.3	99.79	26.3	35.87
	halosulfuron	75	WG	0.023	lb ai/a	PRE				
7	STRATEGY	2.1	SE	0.79	lb ai/a	PRE	23.3	173.72	24.0	39.34
8	STRATEGY	2.1	SE	1.05	lb ai/a	PRE	31.3	185.44	20.7	32.86
9	ethalfluralin	3	EC	0.75	lb ai/a	PRE	19.7	129.31	13.0	23.75
	halosulfuron	75	WG	0.023	lb ai/a	PO1				
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1				
	NIS		L	0.25	% v/v	PO1				
10	V10146	3.3	F	0.1	lb ai/a	PRE	13.3	64.29	6.0	9.17
11	sulfentrazone	75	DF	0.141	lb ai/a	PRE	23.3	113.48	35.3	59.10
12	halosulfuron	75	WG	0.023	lb ai/a	PO1	13.7	100.90	13.7	25.57
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1				
	NIS		L	0.25	% v/v	PO1				
13	V10146	3.3	F	0.1	lb ai/a	PO1	26.0	154.26	10.3	13.77
14	sulfentrazone	75	DF	0.141	lb ai/a	PO1	19.3	120.55	20.3	30.09
15	weeded control						19.0	115.40	11.7	19.09
LSD (P=.05)							8.58	56.019	11.45	20.786
Standard Deviation							5.13	33.500	6.85	12.430
CV							24.2	26.64	36.98	43.68

Preemergence Weed Control in Squash with s-metolachlor – HTRC

Project Code: WC 108-04-02 **Location: HTRC, Block 65**

Personnel: Bernard H. Zandstra, Michael Particka
Crop: Squash **Variety: Waltham Butternut**
Planting Method: Seeded **Planting Date: 6/4/04**
Spacing: 3 in **Row Spacing: 28 in, 2 rows/plot**
Tillage Type: **Study Design: RCB** **Replications: 4**
Plot Size: 10 ft wide x 30 ft long

Soil Type: Capac Loam **OM: 2.2%** **pH: 6.6**
Sand: 42% **Silt: 26%** **Clay: 32%** **CEC: 11.3**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	6/4	11:00 am	67/60	°F	Dry	6 E	30	Clear	N
PO1	6/16	5:00 pm	75/73	°F	Damp	2 SE	86	100% Cloudy	N

Crop and Weed Information at Application

Date	Crop or Weed	Height or Diameter	Number of Leaves	Density
6/16	Squash			
6/16	COLQ = Common lambsquarters			
6/16	COPU = Common purslane			
6/16	CORW = Common ragweed			
6/16	LATH = Ladysthumb			
6/16	RRPW = Redroot pigweed			

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.

Preemergence Weed Control in Squash with s-metolachlor – HTRC

Dept. of Horticulture, MSU

Trial ID: WC 108-04-02 Study Director:
Location: HTRC Block 65 Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	SQUASH 6/14/04 STAND RATING	SQUASH 6/14/04 SIZE RATING	SQUASH 6/25/04 STAND RATING	SQUASH 6/25/04 VIGOR RATING	SQUASH 7/9/04 VIGOR RATING
1	untreated						4.3	1.0	3.5	1.3	2.0
2	s-metolachlor II	7.64	EC	0.63	lb ai/a	PRE	6.5	3.3	5.0	2.5	2.5
3	s-metolachlor II	7.64	EC	1.26	lb ai/a	PRE	6.0	2.8	4.8	2.8	3.0
4	s-metolachlor II	7.64	EC	0.63	lb ai/a	EPO	5.8	1.8	5.0	3.5	3.8
5	s-metolachlor II	7.64	EC	1.26	lb ai/a	EPO	6.0	2.0	5.0	4.5	2.5
6	STRATEGY	2.1	SE	1.05	lb ai/a	PRE	3.8	2.0	3.3	1.8	1.8
LSD (P=.05)							2.90	1.24	1.73	1.30	2.07
Standard Deviation							1.92	0.82	1.15	0.86	1.37
CV							35.77	38.66	25.93	31.8	53.2

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	COLQ 7/9/04 RATING	COPU 7/9/04 RATING	CORW 7/9/04 RATING	LATH 7/9/04 RATING	RRPW 7/9/04 RATING
1	untreated						2.0	2.5	1.0	1.0	2.3
2	s-metolachlor II	7.64	EC	0.63	lb ai/a	PRE	4.0	5.0	1.0	4.8	5.5
3	s-metolachlor II	7.64	EC	1.26	lb ai/a	PRE	7.5	9.0	2.0	7.5	7.5
4	s-metolachlor II	7.64	EC	0.63	lb ai/a	EPO	4.0	2.8	3.0	3.0	5.8
5	s-metolachlor II	7.64	EC	1.26	lb ai/a	EPO	4.5	3.0	4.5	5.8	7.5
6	STRATEGY	2.1	SE	1.05	lb ai/a	PRE	10.0	10.0	4.8	9.8	7.8
LSD (P=.05)							2.43	2.48	2.84	2.17	2.67
Standard Deviation							1.61	1.65	1.88	1.44	1.77
CV							30.23	30.62	69.6	27.22	29.34

Preemergence Weed Control in Squash with s-metolachlor – HTRC

Dept. of Horticulture, MSU

Description							SQUASH	SQUASH	COLQ	COPU	CORW
Rating Date							7/19/04	7/19/04	7/19/04	7/19/04	7/19/04
Rating Data Type							STAND	VIGOR	RATING	RATING	RATING
Rating Unit							RATING	RATING			
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
1	untreated						1.0	1.0	1.0	1.0	1.0
2	s-metolachlor II	7.64	EC	0.63	lb ai/a	PRE	3.3	1.8	6.8	4.3	2.0
3	s-metolachlor II	7.64	EC	1.26	lb ai/a	PRE	3.3	2.0	7.5	6.3	3.0
4	s-metolachlor II	7.64	EC	0.63	lb ai/a	EPO	4.3	4.3	7.0	3.3	4.3
5	s-metolachlor II	7.64	EC	1.26	lb ai/a	EPO	1.8	2.3	5.0	3.0	5.0
6	STRATEGY	2.1	SE	1.05	lb ai/a	PRE	1.8	1.5	10.0	9.5	6.5
LSD (P=.05)							2.38	1.91	3.84	2.47	2.77
Standard Deviation							1.58	1.27	2.55	1.64	1.84
CV							62.04	59.68	41.09	36.16	50.68

Description							LATH	RRPW	SQUASH	SQUASH	SQUASH
Rating Date							7/19/04	7/19/04	7/28/04	10/4/04	10/4/04
Rating Data Type							RATING	RATING	STAND	YIELD	YIELD
Rating Unit									RATING	COUNT	KG/PLOT
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
1	untreated						1.0	1.0	6.3	47.0	77.90
2	s-metolachlor II	7.64	EC	0.63	lb ai/a	PRE	3.0	5.5	6.5	49.5	72.93
3	s-metolachlor II	7.64	EC	1.26	lb ai/a	PRE	4.8	5.8	5.8	47.3	80.70
4	s-metolachlor II	7.64	EC	0.63	lb ai/a	EPO	3.8	7.0	6.8	45.3	76.06
5	s-metolachlor II	7.64	EC	1.26	lb ai/a	EPO	4.0	4.5	6.0	52.3	79.86
6	STRATEGY	2.1	SE	1.05	lb ai/a	PRE	9.0	8.0	4.0	55.0	101.34
LSD (P=.05)							2.01	3.34	3.09	8.97	19.795
Standard Deviation							1.33	2.22	2.05	5.95	13.137
CV							31.37	41.87	34.92	12.06	16.13

Use of Cover Crops to Enhance Weed Suppression in Pickling Cucumber

Mathieu Ngouajio

Location: HTRC, East Lansing, MI
Planting date (cover crops): 8/25/03
Method planting: Broadcast and incorporated
Cover crop biomass evaluation: 10/1/03 and 5/06/04 for vetch
Incorporation date (Cover crops): 5/04
Soil sampling date:
Soil Prep: Disk
Soil type: Hillsdale sandy loam (Coarse-loamy, mixed, mesic Typic Hapludalfs) 1.1% OM 6.9 pH
Planting Date (Onion): 6/15/04
Cucumber Variety: Vlaspik

Plot size: 15 ft wide by 40 ft long (5 rows: 14 inches between and 3.1 inches within)

Study: RCBD Replications: 4
Weed evaluation date: 5/6/04
Cover crop rates (lbs/A):

Sorghum sudangrass	60
Rye	70
Hairy vetch	35

Harvest: 8/03/04

Note:
1. Evaluation prior to cover crop kill

Trt No.	Treatment Name	Cover crop killing method	Cover Crop Biomass g/m2	Weed Density g/m2 (grasses)	Weed Density g/m2 (Broadleaves)	Weed Biomass g/m2 (total)
1	Control	Mechanical	0	1	107	127.1
2	Control	Glyphosate	0	0	90	104.0
3	Rye	Mechanical	3759.6	0	12	1.4
4	Rye	Glyphosate	3833.2	0	3	2.3
5	Sudangrass	Mechanical	303.8	2	59	60.2
6	Sudangrass	Glyphosate	303.8	2	72	58.4
7	Hairy vetch	Mechanical	750.4	0	3	1.1
8	Hairy vetch	Glyphosate	596.4	0	14	23.5
	LSD (P=0.05)	-	668.73	2.69	64.47	51.057
	Standard deviation	-	454.7	1.83	43.8	34.7
	cv	-	38.1	93	97.4	73.4

Weed Control in Chicory, Coriander, Dill, Fennel, Parsley - HTRC

Project Code: WC 117-04-01 **Location: HTRC Block 126**

Personnel: Bernard H. Zandstra, Michael Particka
Crop: See notes **Variety: See notes**
Planting Method: seeded **Planting Date:**
Spacing: 3 IN **Row Spacing: 14 IN**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 8 ft wide x 30 ft long

Soil Type: Colwood-Brookston Loam **OM: 3.1%** **pH: 7.6**
Sand: 44% **Silt: 26%** **Clay: 30%** **CEC: 11.4**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	7/6/04	4:00 pm	85/76	°F	Dry	8 SW	50	10% Cloudy	N

Crop and Weed Information at Application

Date	Crop or Weed	Height or Diameter	Number of Leaves	Density

Notes and Comments

1. Sprays applied with 5 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.
3. Crops and varieties: Chicory – Dandie; Coriander (Cilantro)- Santo; Dill – Bouquet; Fennel – Rudy; Parsley – Forest Green.
4. Dill and parsley were not harvested because of poor stand.

Weed Control in Chicory, Coriander, Dill, Fennel, Parsley - HTRC

Dept. of Horticulture, MSU

Trial ID: WC 117-04-01 Study Director:
Location: HTRC Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	CHICORY 8/20/04 RATING	CORIANDER 8/20/04 RATING	DILL 8/20/04 RATING	FENNEL 8/20/04 RATING	PARSLEY 8/20/04 RATING
1	napropramide	50	DF	2	lb ai/a	PRE	4.3	2.7	7.0	3.3	9.0
2	trifluralin	4	EC	1	lb ai/a	PRE	1.0	1.3	1.3	1.0	8.0
3	linuron	50	DF	0.5	lb ai/a	PRE	10.0	1.3	2.7	1.0	2.0
4	prometryn	4	L	1	lb ai/a	PRE	9.7	1.0	1.7	1.3	1.7
5	flufenacet	60	DF	0.5	lb ai/a	PRE	6.0	3.0	5.0	2.0	6.0
6	dimethenamid-p	6	EC	0.5	lb ai/a	PRE	7.3	8.3	10.0	9.7	10.0
7	s-metolachlor	7.62	EC	0.75	lb ai/a	PRE	4.3	2.3	8.3	3.3	5.7
8	sulfentrazone	75	DF	0.1	lb ai/a	PRE	10.0	10.0	10.0	4.7	10.0
9	flumioxazin	51	WDG	0.032	lb ai/a	PRE	9.7	9.7	10.0	10.0	7.3
10	untreated						1.3	1.3	1.3	1.7	4.3
LSD (P=.05)							4.64	1.68	2.83	2.15	3.80
Standard Deviation							2.70	0.98	1.65	1.25	2.22
CV							42.46	23.89	28.74	32.94	34.64

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	CHICORY 9/17/04 YIELD KG/PLOT	CORIANDER 9/17/04 YIELD KG/PLOT	FENNEL 10/1/04 YIELD KG/PLOT
1	napropramide	50	DF	2	lb ai/a	PRE	1.03	1.53	1.67
2	trifluralin	4	EC	1	lb ai/a	PRE	3.95	2.50	5.83
3	linuron	50	DF	0.5	lb ai/a	PRE	0.01	3.96	9.29
4	prometryn	4	L	1	lb ai/a	PRE	0.02	5.55	7.17
5	flufenacet	60	DF	0.5	lb ai/a	PRE	1.66	2.73	6.96
6	dimethenamid-p	6	EC	0.5	lb ai/a	PRE	0.64	0.50	0.14
7	s-metolachlor	7.62	EC	0.75	lb ai/a	PRE	2.13	2.67	3.81
8	sulfentrazone	75	DF	0.1	lb ai/a	PRE	0.00	0.09	4.83
9	flumioxazin	51	WDG	0.032	lb ai/a	PRE	0.26	0.34	0.10
10	untreated						1.51	3.15	2.00
LSD (P=.05)							2.365	2.342	1.986
Standard Deviation							1.379	1.365	1.158
CV							123.05	59.3	27.69

Weed Control in Lettuce – Imlay City

Project Code: WC 116-04-01 **Location: Van Dyk Farm**

Personnel: Bernard H. Zandstra, Michael Particka
Crop: Lettuce **Variety: Romaine Sun Devil**
Planting Method: Seeded **Planting Date: 7/24/04**
Spacing: 12 in **Row Spacing: 24 in, 2 rows/plot**
Tillage Type: **Study Design: RCB** **Replications: 3**
Plot Size: 3.33 ft wide x 20 ft long

Soil Type: Muck **OM: 67%** **pH: 6.5**
Sand: 10% **Silt: 20%** **Clay: 3%** **CEC: N/A**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	7/26/04	4:00 pm	72/69	°F	Dry	7 NE	46	30% Cloudy	N
PO1	8/9/04	11:30 am	74/66	°F	Dry	7 SW	60	20% Cloudy	N

Crop and Weed Information at Application

Date	Crop or Weed	Height or Diameter	Number of Leaves	Density
8/9	Lettuce	1-2 in	2-3	
8/9	COPU = Common purslane	0.25-0.75 in	cot-4	many
8/9	RRPW = Redroot pigweed	0.25-0.75 in	cot-2	few

Notes and Comments
1. Sprays applied with 2 nozzle boom FF11002, 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.

Weed Control in Lettuce – Imlay City

Dept. of Horticulture, MSU

Trial ID: WC 116-04-01 Study Director:
Location: Van Dyke Farms Investigator: Dr. Bernard Zandstra

Description							LETTUCE	COPU	RRPW	LETTUCE	LETTUCE
Rating Date							8/9/04	8/9/04	8/9/04	8/20/04	8/20/04
Rating Data Type							RATING	RATING	RATING	VIGOR	STAND
Rating Unit										RATING	RATING
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
1	pronamide	50	WP	4	lb ai/a	PRE	1.0	9.3	9.7	1.3	1.7
2	imazamox	1	AS	0.032	lb ai/a	PRE	7.3	7.3	10.0	8.3	2.3
3	imazethapyr	2	EC	0.047	lb ai/a	PRE	7.3	7.7	10.0	8.0	2.0
4	sulfentrazone	75	DF	0.141	lb ai/a	PRE	5.0	9.3	10.0	2.0	2.0
5	V10146	3.3	F	0.1	lb ai/a	PRE	6.3	9.3	10.0	3.3	4.0
6	imazamox	1	AS	0.016	lb ai/a	PO1	1.0	1.0	1.0	1.0	2.0
7	imazethapyr	2	EC	0.047	lb ai/a	PO1	1.0	1.0	1.0	2.3	3.3
8	V10146	3.3	F	0.1	lb ai/a	PO1	1.0	1.0	1.0	2.3	2.7
LSD (P=.05)							0.81	0.97	0.36	1.02	1.40
Standard Deviation							0.46	0.56	0.20	0.58	0.80
CV							12.34	9.68	3.1	16.26	31.92

Description							COPU	LETTUCE	LETTUCE	LETTUCE
Rating Date							8/20/04	9/27/04	9/27/04	9/27/04
Rating Data Type							RATING	COUNT	PLT HARV	KG YIELD
Rating Unit								LIVE PLT	10FT/2RW	10FT/2RW
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
1	pronamide	50	WP	4	lb ai/a	PRE	9.7	25.0	15.0	20.31
2	imazamox	1	AS	0.032	lb ai/a	PRE	7.0	1.0	1.0	0.17
3	imazethapyr	2	EC	0.047	lb ai/a	PRE	8.7	5.3	3.7	0.66
4	sulfentrazone	75	DF	0.141	lb ai/a	PRE	9.3	24.3	16.7	19.71
5	V10146	3.3	F	0.1	lb ai/a	PRE	8.3	19.0	15.3	18.30
6	imazamox	1	AS	0.016	lb ai/a	PO1	1.0	23.0	17.7	22.28
7	imazethapyr	2	EC	0.047	lb ai/a	PO1	1.0	29.3	18.3	21.79
8	V10146	3.3	F	0.1	lb ai/a	PO1	1.0	21.0	14.3	16.83
LSD (P=.05)							1.60	5.95	5.03	6.124
Standard Deviation							0.91	3.40	2.87	3.497
CV							15.88	18.37	22.5	23.3

Weed Control in Mint – St. Johns

Project Code: WC 121-04-01 **Location: Tom Irrer Farm**

Personnel: Bernard H. Zandstra, Michael Particka
Crop: Mint **Variety: Native Spearmint**
Planting Method: Seeded **Planting Date: 3/2/99**
Spacing: Solid **Row Spacing: Meadow Mint**
Tillage Type: **Study Design: RCB** **Replications: 3**
Plot Size: 15 ft wide x 120 ft long

Soil Type: Gilford Sandy Loam **OM: 3.1%** **pH: 7.4**
Sand: 51% **Silt: 24%** **Clay: 25%** **CEC: 14.7**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	3/31/04	11:00 am	55/42	°F	Damp	5 SW	50	Clear	N

Crop and Weed Information at Application

Date	Crop or Weed	Height or Diameter	Number of Leaves	Density
6/18	Mint			
6/18	GRFT = Green foxtail			
6/18	FIPA = Field pansy			
6/18	FIPC = Field pennycress			
6/18	MATA = Marestail (horseweed)			
6/18	MECW = Mouseear chickweed			
6/18	RRPW = Redroot pigweed			

Notes and Comments
1. Sprays applied with 15ft boom FF8002, 22 gpa, 22 psi, 2.27 mph, tractor mounted sprayer.
2. Crop and weed injury ratings on scale of 1-10: 1 = no injury, 10 = complete kill.

Weed Control in Mint – St. Johns

Dept. of Horticulture, MSU

Trial ID: WC 121-04-01 Study Director:
Location: Investigator: Dr. Bernard Zandstra

Description							MINT	GRFT	FIPA	FIPC	MATA
Rating Date							6/18/04	6/18/04	6/18/04	6/18/04	6/18/04
Rating Data Type							RATING	RATING	RATING	RATING	RATING
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Unit	Growth Stage					
1	sulfentrazone	4	L	0.094	lb ai/a	PRE	3.0	7.0	7.7	4.7	4.7
2	sulfentrazone	4	L	0.188	lb ai/a	PRE	4.0	7.0	1.3	10.0	7.7
3	sulfentrazone	4	L	0.094	lb ai/a	PRE	2.0	10.0	4.0	10.0	10.0
	terbacil	80	WP	0.8	lb ai/a	PRE					
4	clomazone	3	ME	0.25	lb ai/a	PRE	2.3	10.0	1.7	10.0	7.0
5	clomazone	3	ME	0.5	lb ai/a	PRE	2.0	10.0	2.3	10.0	7.0
6	clomazone	3	ME	0.25	lb ai/a	PRE	2.7	10.0	4.7	10.0	10.0
	terbacil	80	WP	0.8	lb ai/a	PRE					
	sulfentrazone	4	L	0.094	lb ai/a	PRE					
7	flumioxazin	51	WG	0.125	lb ai/a	PRE	4.3	10.0	10.0	10.0	10.0
	NIS		L	0.25	% v/v	PRE					
8	flumioxazin	51	WG	0.125	lb ai/a	PRE	2.0	10.0	9.0	10.0	10.0
	paraquat	3	L	0.56	lb ai/a	PRE					
9	oxyfluorfen	2	L	0.375	lb ai/a	PRE	2.0	10.0	9.7	10.0	10.0
	paraquat	3	L	0.56	lb ai/a	PRE					
	terbacil	80	WP	0.4	lb ai/a	PRE					
10	sulfentrazone	4	L	0.188	lb ai/a	PRE	1.7	10.0	6.0	10.0	9.0
	terbacil	80	WP	0.4	lb ai/a	PRE					
11	flumioxazin	51	WG	0.064	lb ai/a	PRE	2.7	10.0	5.0	10.0	10.0
	terbacil	80	WP	0.8	lb ai/a	PRE					
12	clomazone	3	ME	0.375	lb ai/a	PRE	5.7	10.0	10.0	10.0	10.0
	sulfentrazone	4	L	0.094	lb ai/a	PRE					
	flumioxazin	51	WG	0.064	lb ai/a	PRE					
	oxyfluorfen	2	L	0.25	lb ai/a	PRE					
LSD (P=.05)							2.86	2.96	4.64	2.31	3.62
Standard Deviation							1.69	1.75	2.74	1.36	2.13
CV							58.96	18.42	46.11	14.28	24.32

Weed Control in Mint – St. Johns

Dept. of Horticulture, MSU

Description							MECW	RRPW
Rating Date							6/18/04	6/18/04
Rating Data Type							RATING	RATING
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage		
1	sulfentrazone	4	L	0.094	lb ai/a	PRE	4.3	7.7
2	sulfentrazone	4	L	0.188	lb ai/a	PRE	7.0	10.0
3	sulfentrazone	4	L	0.094	lb ai/a	PRE	10.0	9.7
	terbacil	80	WP	0.8	lb ai/a	PRE		
4	clomazone	3	ME	0.25	lb ai/a	PRE	9.3	7.7
5	clomazone	3	ME	0.5	lb ai/a	PRE	10.0	7.0
6	clomazone	3	ME	0.25	lb ai/a	PRE	10.0	10.0
	terbacil	80	WP	0.8	lb ai/a	PRE		
	sulfentrazone	4	L	0.094	lb ai/a	PRE		
7	flumioxazin	51	WG	0.125	lb ai/a	PRE	10.0	10.0
	NIS		L	0.25	% v/v	PRE		
8	flumioxazin	51	WG	0.125	lb ai/a	PRE	10.0	10.0
	paraquat	3	L	0.56	lb ai/a	PRE		
9	oxyfluorfen	2	L	0.375	lb ai/a	PRE	10.0	10.0
	paraquat	3	L	0.56	lb ai/a	PRE		
	terbacil	80	WP	0.4	lb ai/a	PRE		
10	sulfentrazone	4	L	0.188	lb ai/a	PRE	10.0	10.0
	terbacil	80	WP	0.4	lb ai/a	PRE		
11	flumioxazin	51	WG	0.064	lb ai/a	PRE	10.0	10.0
	terbacil	80	WP	0.8	lb ai/a	PRE		
12	clomazone	3	ME	0.375	lb ai/a	PRE	10.0	10.0
	sulfentrazone	4	L	0.094	lb ai/a	PRE		
	flumioxazin	51	WG	0.064	lb ai/a	PRE		
	oxyfluorfen	2	L	0.25	lb ai/a	PRE		
LSD (P=.05)							3.40	3.46
Standard Deviation							2.01	2.04
CV							21.74	21.89

Postemergence Weed Control in Onion - Grant

Project Code: WC 112-04-04 **Location: Brinks Farm**

Personnel: Bernard H. Zandstra, Michael Particka
Crop: Onion **Variety: Genesis**
Planting Method: Seeded **Planting Date: 4/20/04**
Spacing: 2 IN **Row Spacing: See notes**
Tillage Type: **Study Design: RCB** **Replications: 3**
Plot Size: 6 ft wide x 30ft long

Soil Type: Mantisco Muck **OM: 26.7%** **pH: 7.7**
Sand: 25% **Silt: 39%** **Clay: 36%** **CEC: 29.8**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PO1	6/3/04	2:00 pm	72/70	°F	Wet	4 NE	43	Clear	N
PO2	6/26/04	10:00 am	68/60	°F	Damp	6 W	62	10% Cloudy	N
PO3	7/19/04	11:00 am	74/71	°F	Damp	3 SW	64	30% Cloudy	N

Crop and Weed Information at Application

Date	Crop or Weed	Height or Diameter	Number of Leaves	Density
6/3	Onion	4-5 in	2	
6/29	Onion	12-18 in	4-6	
6/29	LACG = Large crabgrass			
6/29	COGR = Common groundsel	1-4 in		few
6/29	COLQ = Common lambsquarters	2-4 in		few
6/29	PRSP = Prostrate spurge			
6/29	RRPW = Redroot pigweed	3-6 in		few
6/29	SHPU = Shepherd's purse			
7/19	Onion	14-18 in	6-8	
7/19	LACG = Large crabgrass			
7/19	COGR = Common groundsel	10-12 in		many
7/19	COLQ = Common lambsquarters	3-5 in	6-10	few
7/19	PRSP = Prostrate spurge			
7/19	RRPW = Redroot pigweed	4-12 in	15-20	moderate
7/19	SHPU = Shepherd's purse			

Notes and Comments
1. Sprays applied with 2 nozzle boom FF11002, 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.
3. Two rows were 10 inches apart and two row groupings were 34 inches apart.
4. Harvested 15ft from each plot.

Postemergence Weed Control in Onion - Grant

Dept. of Horticulture, MSU

Trial ID: WC 112-04-04 Study Director:
Location: Brinks Farm, 120& Oak Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	ONION 6/29/04 RATING	COGR 6/29/04 RATING	COLQ 6/29/04 RATING	RRPW 6/29/04 RATING	ONION 7/14/04 RATING
1	oxyfluorfen	2	L	0.063	lb ai/a	PO1,2	2.0	9.3	9.7	8.3	2.0
	clethodim	2	EC	0.125	lb ai/a	PO1,2					
	NIS		L	0.5	% v/v	PO1,2					
2	oxyfluorfen	2	L	0.125	lb ai/a	PO1,2	1.3	9.7	10.0	7.3	1.3
	clethodim	2	EC	0.125	lb ai/a	PO1,2					
	NIS		L	0.5	% v/v	PO1,2					
3	flumioxazin	51	WDG	0.064	lb ai/a	PO1	2.3	9.7	10.0	9.7	2.0
4	flumioxazin	51	WDG	0.064	lb ai/a	PO1	3.0	10.0	10.0	10.0	1.7
	clethodim	2	EC	0.125	lb ai/a	PO1					
5	flumioxazin	51	WDG	0.064	lb ai/a	PO1,2	2.0	9.7	10.0	10.0	1.7
	clethodim	2	EC	0.125	lb ai/a	PO1,2					
6	oxyfluorfen	2	L	0.063	lb ai/a	PO1	2.0	9.7	10.0	10.0	2.0
	clethodim	2	EC	0.125	lb ai/a	PO1,2					
	flumioxazin	51	WDG	0.064	lb ai/a	PO2					
7	oxyfluorfen	2	L	0.032	lb ai/a	PO1,2	1.3	9.7	9.7	9.3	1.7
	flumioxazin	51	WDG	0.016	lb ai/a	PO1,2					
	clethodim	2	EC	0.125	lb ai/a	PO1,2					
8	oxyfluorfen	2	L	0.032	lb ai/a	PO1,2	2.0	10.0	9.7	9.7	1.7
	clethodim	2	EC	0.125	lb ai/a	PO1,2,3					
	flumioxazin	51	WDG	0.032	lb ai/a	PO2,3					
9	oxyfluorfen	2	L	0.032	lb ai/a	PO1,2	1.3	10.0	9.7	9.0	1.3
	fluroxypyr	1.5	L	0.063	lb ai/a	PO1,2					
	clethodim	2	EC	0.125	lb ai/a	PO1,2					
10	oxyfluorfen	2	L	0.032	lb ai/a	PO1,2	1.7	9.7	7.3	9.0	1.3
	fluroxypyr	1.5	L	0.125	lb ai/a	PO1,2					
	clethodim	2	EC	0.125	lb ai/a	PO1,2					
11	bromoxynil	4	EC	0.2	lb ai/a	PO1,2	1.7	10.0	9.3	8.7	1.7
	clethodim	2	EC	0.125	lb ai/a	PO1,2					
12	oxyfluorfen	2	L	0.032	lb ai/a	PO1,2	1.3	10.0	9.7	8.3	1.3
	clopyralid	3	EC	0.125	lb ai/a	PO1,2					
	clethodim	2	EC	0.125	lb ai/a	PO1,2					
13	sulfentrazone	75	DF	0.1	lb ai/a	PO1,3	2.0	9.3	10.0	9.3	1.3
	clethodim	2	EC	0.125	lb ai/a	PO1,3					
14	oxyfluorfen	2	L	0.032	lb ai/a	PO1,2	2.0	9.7	10.0	10.0	2.3
	ethofumesate	4	SC	2	lb ai/a	PO1,2					
	clethodim	2	EC	0.125	lb ai/a	PO1,2					
	NIS		L	0.5	% v/v	PO1,2					
15	V10146	3.3	F	0.1	lb ai/a	PO1	7.0	10.0	10.0	9.0	6.7
	NIS		L	0.25	% v/v	PO1					
16	HANDWEEDED CHK						1.3	6.7	3.7	1.7	1.0
LSD (P=.05)							1.10	2.00	1.75	2.24	1.03
Standard Deviation							0.66	1.20	1.05	1.34	0.62
CV							30.73	12.53	11.29	15.4	31.78

Postemergence Weed Control in Onion - Grant

Dept. of Horticulture, MSU

Description							LACG	COGR	COLQ	PRSP	RRPW
Rating Date							7/14/04	7/14/04	7/14/04	7/14/04	7/14/04
Rating Data Type							RATING	RATING	RATING	RATING	RATING
Rating Unit											
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
1	oxyfluorfen	2	L	0.063	lb ai/a	PO1,2	10.0	8.3	5.7	9.0	7.3
	clethodim	2	EC	0.125	lb ai/a	PO1,2					
	NIS		L	0.5	% v/v	PO1,2					
2	oxyfluorfen	2	L	0.125	lb ai/a	PO1,2	10.0	9.7	9.3	9.3	10.0
	clethodim	2	EC	0.125	lb ai/a	PO1,2					
	NIS		L	0.5	% v/v	PO1,2					
3	flumioxazin	51	WDG	0.064	lb ai/a	PO1	9.3	6.0	8.3	7.7	8.0
4	flumioxazin	51	WDG	0.064	lb ai/a	PO1	9.7	8.7	8.0	10.0	8.0
	clethodim	2	EC	0.125	lb ai/a	PO1					
5	flumioxazin	51	WDG	0.064	lb ai/a	PO1,2	10.0	9.0	10.0	10.0	10.0
	clethodim	2	EC	0.125	lb ai/a	PO1,2					
6	oxyfluorfen	2	L	0.063	lb ai/a	PO1	10.0	9.0	10.0	10.0	10.0
	clethodim	2	EC	0.125	lb ai/a	PO1,2					
	flumioxazin	51	WDG	0.064	lb ai/a	PO2					
7	oxyfluorfen	2	L	0.032	lb ai/a	PO1,2	10.0	9.3	9.7	10.0	9.3
	flumioxazin	51	WDG	0.016	lb ai/a	PO1,2					
	clethodim	2	EC	0.125	lb ai/a	PO1,2					
8	oxyfluorfen	2	L	0.032	lb ai/a	PO1,2	10.0	10.0	10.0	10.0	10.0
	clethodim	2	EC	0.125	lb ai/a	PO1,2,3					
	flumioxazin	51	WDG	0.032	lb ai/a	PO2,3					
9	oxyfluorfen	2	L	0.032	lb ai/a	PO1,2	10.0	9.3	4.7	10.0	8.7
	fluroxypyr	1.5	L	0.063	lb ai/a	PO1,2					
	clethodim	2	EC	0.125	lb ai/a	PO1,2					
10	oxyfluorfen	2	L	0.032	lb ai/a	PO1,2	10.0	10.0	6.3	10.0	9.0
	fluroxypyr	1.5	L	0.125	lb ai/a	PO1,2					
	clethodim	2	EC	0.125	lb ai/a	PO1,2					
11	bromoxynil	4	EC	0.2	lb ai/a	PO1,2	10.0	9.3	8.3	6.3	5.7
	clethodim	2	EC	0.125	lb ai/a	PO1,2					
12	oxyfluorfen	2	L	0.032	lb ai/a	PO1,2	10.0	10.0	7.3	7.3	5.3
	clopyralid	3	EC	0.125	lb ai/a	PO1,2					
	clethodim	2	EC	0.125	lb ai/a	PO1,2					
13	sulfentrazone	75	DF	0.1	lb ai/a	PO1,3	10.0	5.7	7.7	8.7	3.0
	clethodim	2	EC	0.125	lb ai/a	PO1,3					
14	oxyfluorfen	2	L	0.032	lb ai/a	PO1,2	10.0	7.7	10.0	10.0	10.0
	ethofumesate	4	SC	2	lb ai/a	PO1,2					
	clethodim	2	EC	0.125	lb ai/a	PO1,2					
	NIS		L	0.5	% v/v	PO1,2					
15	V10146	3.3	F	0.1	lb ai/a	PO1	10.0	10.0	3.0	7.7	9.3
	NIS		L	0.25	% v/v	PO1					
16	HANDWEEDED CHK						7.7	6.0	5.3	5.7	4.3
LSD (P=.05)							1.72	3.88	2.75	3.64	3.06
Standard Deviation							1.03	2.33	1.65	2.18	1.84
CV							10.52	27.01	21.34	24.65	22.97

Postemergence Weed Control in Onion - Grant

Dept. of Horticulture, MSU

Description						SHPU	ONION	ONION
Rating Date						7/14/04	7/27/04	9/8/04
Rating Data Type						RATING	RATING	YLD/15FT
Rating Unit								KG/PLOT
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage			
1	oxyfluorfen	2	L	0.063	lb ai/a	PO1,2	9.7	1.0	46.98
	clethodim	2	EC	0.125	lb ai/a	PO1,2			
	NIS		L	0.5	% v/v	PO1,2			
2	oxyfluorfen	2	L	0.125	lb ai/a	PO1,2	9.7	1.0	51.24
	clethodim	2	EC	0.125	lb ai/a	PO1,2			
	NIS		L	0.5	% v/v	PO1,2			
3	flumioxazin	51	WDG	0.064	lb ai/a	PO1	6.0	2.3	44.87
4	flumioxazin	51	WDG	0.064	lb ai/a	PO1	8.7	1.3	49.43
	clethodim	2	EC	0.125	lb ai/a	PO1			
5	flumioxazin	51	WDG	0.064	lb ai/a	PO1,2	9.0	1.0	48.26
	clethodim	2	EC	0.125	lb ai/a	PO1,2			
6	oxyfluorfen	2	L	0.063	lb ai/a	PO1	9.7	2.3	47.63
	clethodim	2	EC	0.125	lb ai/a	PO1,2			
	flumioxazin	51	WDG	0.064	lb ai/a	PO2			
7	oxyfluorfen	2	L	0.032	lb ai/a	PO1,2	7.0	1.3	50.97
	flumioxazin	51	WDG	0.016	lb ai/a	PO1,2			
	clethodim	2	EC	0.125	lb ai/a	PO1,2			
8	oxyfluorfen	2	L	0.032	lb ai/a	PO1,2	10.0	4.7	39.43
	clethodim	2	EC	0.125	lb ai/a	PO1,2,3			
	flumioxazin	51	WDG	0.032	lb ai/a	PO2,3			
9	oxyfluorfen	2	L	0.032	lb ai/a	PO1,2	9.3	2.0	48.97
	fluroxypyr	1.5	L	0.063	lb ai/a	PO1,2			
	clethodim	2	EC	0.125	lb ai/a	PO1,2			
10	oxyfluorfen	2	L	0.032	lb ai/a	PO1,2	10.0	1.7	50.64
	fluroxypyr	1.5	L	0.125	lb ai/a	PO1,2			
	clethodim	2	EC	0.125	lb ai/a	PO1,2			
11	bromoxynil	4	EC	0.2	lb ai/a	PO1,2	9.0	1.7	47.82
	clethodim	2	EC	0.125	lb ai/a	PO1,2			
12	oxyfluorfen	2	L	0.032	lb ai/a	PO1,2	10.0	1.3	47.81
	clopyralid	3	EC	0.125	lb ai/a	PO1,2			
	clethodim	2	EC	0.125	lb ai/a	PO1,2			
13	sulfentrazone	75	DF	0.1	lb ai/a	PO1,3	4.0	3.0	45.97
	clethodim	2	EC	0.125	lb ai/a	PO1,3			
14	oxyfluorfen	2	L	0.032	lb ai/a	PO1,2	10.0	2.0	46.34
	ethofumesate	4	SC	2	lb ai/a	PO1,2			
	clethodim	2	EC	0.125	lb ai/a	PO1,2			
	NIS		L	0.5	% v/v	PO1,2			
15	V10146	3.3	F	0.1	lb ai/a	PO1	10.0	6.3	15.17
	NIS		L	0.25	% v/v	PO1			
16	HANDWEEDED CHK						6.7	1.3	52.55
LSD (P=.05)							2.79	1.06	6.540
Standard Deviation							1.67	0.64	3.922
CV							19.27	29.63	8.55

Weed Control in Onion - Hudsonville

Project Code: WC 112-04-03 **Location: Schreur Farm**

Personnel: Bernard H. Zandstra, Michael Particka
Crop: Onion **Variety: Genesis**
Planting Method: Seeded **Planting Date: 4/12/04**
Spacing: 1 in **Row Spacing: 14 in, 3 rows/plot**
Tillage Type: **Study Design: RCB** **Replications: 3**
Plot Size: 3.33 ft wide x 30 ft long

Soil Type: Carlisle Muck **OM: 55%** **pH: 5.7**
Sand: 15% **Silt: 20%** **Clay: 10%** **CEC: N/A**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PO1	6/10/04	1:00 pm	63/72	°F	Damp	7 NE	82	100% Cloudy	N
PO2	7/16/04	11:30 pm	81/75	°F	Dry	5 SW	58	10% Cloudy	N

Crop and Weed Information at Application

Date	Crop or Weed	Height or Diameter	Number of Leaves	Density
6/10	Onion	8-10 in	2-3	

Notes and Comments
1. Sprays applied with 2 nozzle boom FF11002, 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.
3. Very little weed pressure in field.

Weed Control in Onion - Hudsonville

Dept. of Horticulture, MSU

Trial ID: WC 112-04-03 Study Director:
Location: Schreur Farm Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	ONION 6/29/04 RATING	ONION 7/16/04 RATING	ONION 8/4/04 RATING	ONION 8/18/04 YIELD KG/30FT
1	pendimethalin	3.3	EC	2	lb ai/a	PO1,2	1.0	1.0	1.3	58.43
	oxyfluorfen	2	L	0.063	lb ai/a	PO1,2				
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1,2				
	NIS		L	0.25	% v/v	PO1,2				
2	s-metolachlor	7.62	EC	1.7	lb ai/a	PO1,2	2.3	1.7	1.7	55.03
	oxyfluorfen	2	L	0.063	lb ai/a	PO1,2				
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1,2				
	NIS		L	0.25	% v/v	PO1,2				
3	pendimethalin	3.3	EC	2	lb ai/a	PO1,2	1.3	1.7	1.7	44.60
	s-metolachlor	7.62	EC	1.7	lb ai/a	PO1,2				
	oxyfluorfen	2	L	0.063	lb ai/a	PO1,2				
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1,2				
	NIS		L	0.25	% v/v	PO1,2				
4	PROWL 3.8	3.8	EC	2	lb ai/a	PO1,2	1.3	1.3	1.3	54.76
	oxyfluorfen	2	L	0.063	lb ai/a	PO1,2				
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1,2				
	NIS		L	0.25	% v/v	PO1,2				
5	flumioxazin	51	WDG	0.047	lb ai/a	PO1,2	1.7	1.7	3.0	42.11
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1,2				
6	pendimethalin	3.3	EC	2	lb ai/a	PO1,2	2.7	1.7	4.7	25.94
	flumioxazin	51	WDG	0.047	lb ai/a	PO1,2				
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1,2				
7	pendimethalin	3.3	EC	2	lb ai/a	PO1,2	1.7	1.3	1.7	48.81
	ethofumesate	4	SC	1	lb ai/a	PO1,2				
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1,2				
	NIS		L	0.25	% v/v	PO1,2				
8	pendimethalin	3.3	EC	2	lb ai/a	PO1,2	1.3	1.3	1.3	56.34
	fluroxypyr	1.5	L	0.063	lb ai/a	PO1,2				
	oxyfluorfen	2	L	0.031	lb ai/a	PO1,2				
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1,2				
	NIS		L	0.25	% v/v	PO1,2				
9	pendimethalin	3.3	EC	2	lb ai/a	PO1,2	2.0	2.0	3.3	34.25
	sulfentrazone	75	DF	0.14	lb ai/a	PO1,2				
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1,2				
10	pendimethalin	3.3	EC	2	lb ai/a	PO1,2	8.3	7.3	7.7	7.35
	V10146	3.3	F	0.1	lb ai/a	PO1,2				
11	dimethenamid-p	6	EC	0.98	lb ai/a	PO1,2	2.7	2.7	2.0	46.17
	oxyfluorfen	2	L	0.031	lb ai/a	PO1,2				
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1,2				
	NIS		L	0.25	% v/v	PO1,2				
12	untreated					PO1,2	1.0	1.3	1.3	56.86
LSD (P=.05)							1.40	1.33	1.59	12.955
Standard Deviation							0.82	0.78	0.94	7.650
CV							36.18	37.6	36.44	17.3

Biofumigants for weed suppression in onion

Mathieu Ngouajio

Location: MSU Muck Farm, Laingsburg, MI

Planting date (cover crops): 8/26/03
Method planting: Broadcast and incorporated
Cover crop biomass evaluation: 10/13/03
Incorporation date (Cover crops): 10/13/03
Soil sampling date: 4/16/04
Soil Prep: Disk
Soil type: Houghton Muck OM: 77% pH: 6.6
Planting Date (Onion): 4/20/04
Onion Variety: Hamlet

Plot size: 15 ft wide by 25 ft long
Study: RCBD Replications: 4

Weed evaluation date: 6/28/04

Cover crop rates (lbs/A):

Sorghum sudangrass	60
Oilseed radish	25
Oriental mustard	12
Yellow mustard	20
Brown Mustard	20

Note:

1. Weed evaluation was conducted about 2-3 weeks after plots were flooded (heavy rainfall)
2. Onion was affected by the flooding and therefore not grown to harvest.
3. There was more chickweed in the cover crop plots than in the bare soil plots.

Trt No.	Treatment Name	Cover Crop Biomass g/m2	Weed Biomass g/m2 (Biofumigants Incorporated)	Weed Biomass g/m2 (Biofumigants Not Incorporated)	Weed Biomass g/m2 Average
1	Control (Bare soil)	0	142.95	127.60	135.28
2	Sorghum sudangrass	150.2	135.75	115.25	125.50
3	Oilseed radish	603.3	141.35	106.30	123.83
4	Oriental mustard	470.0	163.10	83.35	123.23
5	Yellow mustard	572.6	154.95	77.30	116.13
6	Brown Mustard	495.3	101.00	63.70	82.35
	LSD (P=0.05)	140.7	63.24	75.232	51.331
	Standard deviation	93.3	41.95	49.91	34.05
	Cv	24.4	30.00	52.2	28.93

Eastern Black Nightshade Control in Transplanted Tomato - HTRC

Project Code: WC 101-04-02 **Location: HTRC Block 87 & 88**

Personnel: Vijai Pandian, Bernard H. Zandstra, Michael Particka
Crop: Tomato **Variety: Pik-Rite**
Planting Method: Transplant **Planting Date: 6/8/04**
Spacing: 24 IN **Row Spacing: 36 IN**
Tillage Type: Conventional **Study Design: RCB** **Replications: 4**
Plot Size: 8 ft wide x 25 ft long

Soil Type: Marlette Fine Sandy Loam **OM: 2.5%** **pH: 6.3**
Sand: 58% **Silt: 25%** **Clay: 17%** **CEC: 4.4**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRT	6/7/04	2:30 pm	83/80	°F	Damp	7 SW	44	20% Cloudy	N
POT	6/8/04	1:30 pm	93/86	°F	Dry	3 W	41	10% Cloudy	N
PO1	7/1/04	9:00 am	73/70	°F	Dry	2 W	64	Clear	N
PO-DIR	7/1/04	9:00 am	73/70	°F	Dry	2 W	64	Clear	N

Crop and Weed Information at Application

Date	Crop or Weed	Height or Diameter	Number of Leaves	Density
6/7	Tomato	10 in		
6/8	Tomato	10 in		
7/1	Tomato	14 in		
7/1	GIFT = Giant foxtail	2 in		
7/1	COPU = Common purslane	1 in		
7/1	COLQ = Common lambsquarters	2 in		
7/1	EBNS = Eastern black nightshade	2 in		
7/1	LATH = Ladysthumb	2 in		
7/1	RRPW = Redroot pigweed	2 in		
7/1	WIRA = Wild radish	2 in		

Notes and Comments

1. Sprays applied with 4 nozzle boom FF8002 (PO-DIR applied with 2 nozzle shielded boom FF11002), 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.
3. Planted 2 rows of tomato per plot.

Eastern Black Nightshade Control in Transplanted Tomato - HTRC

Dept. of Horticulture, MSU

Trial ID: WC 101-04-02 Study Director:
Location: HRTC, Block 87 N Investigator: Dr. Bernard Zandstra

Description							TOMATO GIFT	COLQ	COPU	EBNS
Rating Date							7/9/04 7/9/04	7/9/04	7/9/04	7/9/04
Rating Data Type							RATING RATING	RATING	RATING	RATING
Rating Unit										
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
1	untreated						1.0	1.0	1.0	1.0	1.0
2	weeded control						1.0	10.0	10.0	10.0	10.0
3	metribuzin	75	DF	0.25	lb ai/a	PRT	1.0	2.3	10.0	1.0	1.0
4	sulfentrazone	75	DF	0.3	lb ai/a	PRT	3.3	8.5	10.0	9.3	10.0
5	oxyfluorfen	2	L	0.25	lb ai/a	PRT	1.3	5.0	4.8	10.0	10.0
6	flumioxazin	51	WDG	0.047	lb ai/a	PRT	1.3	5.0	9.8	9.3	9.5
7	sulfosulfuron	75	WG	0.031	lb ai/a	PRT	1.0	8.8	10.0	9.8	7.8
8	dimethenamid-p	6	EC	0.98	lb ai/a	POT	1.0	10.0	6.3	10.0	10.0
9	s-metolachlor	7.62	EC	1.6	lb ai/a	POT	1.0	10.0	4.0	9.3	10.0
10	sulfosulfuron	75	WG	0.031	lb ai/a	POT	1.0	3.8	10.0	10.0	9.0
11	rimsulfuron	25	DF	0.031	lb ai/a	POT	1.0	9.0	10.0	10.0	1.0
12	trifloxysulfuron	75	WG	0.009	lb ai/a	PO1	1.0	3.0	9.5	7.8	1.0
	NIS		L	0.25	% v/v	PO1					
13	metribuzin	75	DF	0.25	lb ai/a	PO1	1.0	3.3	10.0	10.0	1.0
14	rimsulfuron	25	DF	0.031	lb ai/a	PO1	1.0	3.8	7.8	10.0	1.0
	NIS		L	0.5	% v/v	PO1					
15	rimsulfuron	25	DF	0.031	lb ai/a	PO1	3.3	3.8	1.0	5.5	3.3
16	sulfosulfuron	75	WG	0.031	lb ai/a	PO1	1.0	2.5	1.5	9.0	2.0
	NIS		L	0.5	% v/v	PO1					
17	halosulfuron	75	WG	0.031	lb ai/a	PO1	1.0	1.0	1.0	1.0	1.0
	NIS		L	0.5	% v/v	PO1					
18	sulfentrazone	75	DF	0.1	lb ai/a	PO1	2.5	1.0	10.0	10.0	8.8
	NIS		L	0.5	% v/v	PO1					
19	sulfentrazone	75	DF	0.2	lb ai/a	PO1	3.5	3.3	10.0	10.0	10.0
	NIS		L	0.5	% v/v	PO1					
20	sulfentrazone	75	DF	0.1	lb ai/a	PO1	2.0	1.0	8.5	7.8	9.5
21	sulfentrazone	75	DF	0.2	lb ai/a	PO1	3.0	1.0	10.0	6.3	10.0
22	flumioxazin	51	WDG	0.047	lb ai/a	PO-DIR	4.5	4.0	10.0	10.0	10.0
	NIS		L	0.5	% v/v	PO-DIR					
23	carfentrazone	2	EC	0.16	lb ai/a	PO-DIR	7.0	3.3	10.0	10.0	10.0
	NIS		L	0.5	% v/v	PO-DIR					
LSD (P=.05)							1.51	3.53	2.53	2.91	1.54
Standard Deviation							1.07	2.49	1.79	2.06	1.09
CV							55.35	55.16	23.5	25.39	17.12

Eastern Black Nightshade Control in Transplanted Tomato - HTRC

Dept. of Horticulture, MSU

Description						LATH	RRPW	WIRA	TOMATO	GIFT
Rating Date						7/9/04	7/9/04	7/9/04	7/16/04	7/16/04
Rating Data Type						RATING	RATING	RATING	RATING	RATING
Rating Unit										
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
1	untreated						1.0	1.0	1.0	1.0	1.0
2	weeded control						10.0	10.0	10.0	1.0	9.5
3	metribuzin	75	DF	0.25	lb ai/a	PRT	10.0	1.0	9.0	1.0	2.5
4	sulfentrazone	75	DF	0.3	lb ai/a	PRT	10.0	9.5	3.3	2.5	7.3
5	oxyfluorfen	2	L	0.25	lb ai/a	PRT	10.0	10.0	2.3	1.0	4.0
6	flumioxazin	51	WDG	0.047	lb ai/a	PRT	8.5	9.5	8.8	1.0	3.5
7	sulfosulfuron	75	WG	0.031	lb ai/a	PRT	10.0	10.0	9.3	1.0	7.5
8	dimethenamid-p	6	EC	0.98	lb ai/a	POT	10.0	10.0	3.8	1.0	10.0
9	s-metolachlor	7.62	EC	1.6	lb ai/a	POT	9.5	9.5	4.0	1.0	9.8
10	sulfosulfuron	75	WG	0.031	lb ai/a	POT	10.0	10.0	9.3	1.0	3.0
11	rimsulfuron	25	DF	0.031	lb ai/a	POT	10.0	10.0	10.0	1.0	8.8
12	trifloxysulfuron	75	WG	0.009	lb ai/a	PO1	10.0	9.5	8.5	1.0	2.3
	NIS		L	0.25	% v/v	PO1					
13	metribuzin	75	DF	0.25	lb ai/a	PO1	10.0	10.0	9.0	1.0	3.3
14	rimsulfuron	25	DF	0.031	lb ai/a	PO1	9.3	10.0	10.0	1.0	3.3
	NIS		L	0.5	% v/v	P01					
15	rimsulfuron	25	DF	0.031	lb ai/a	PO1	10.0	10.0	9.5	2.8	3.0
16	sulfosulfuron	75	WG	0.031	lb ai/a	PO1	9.3	9.5	8.0	1.0	1.8
	NIS		L	0.5	% v/v	PO1					
17	halosulfuron	75	WG	0.031	lb ai/a	PO1	10.0	10.0	9.3	1.0	1.0
	NIS		L	0.5	% v/v	PO1					
18	sulfentrazone	75	DF	0.1	lb ai/a	P01	9.3	10.0	4.0	1.8	1.0
	NIS		L	0.5	% v/v	P01					
19	sulfentrazone	75	DF	0.2	lb ai/a	P01	7.8	10.0	4.8	2.5	3.3
	NIS		L	0.5	% v/v	PO1					
20	sulfentrazone	75	DF	0.1	lb ai/a	PO1	10.0	10.0	2.3	1.3	1.0
21	sulfentrazone	75	DF	0.2	lb ai/a	PO1	10.0	10.0	1.5	2.3	1.0
22	flumioxazin	51	WDG	0.047	lb ai/a	PO-DIR	9.8	10.0	7.3	3.5	3.0
	NIS		L	0.5	% v/v	PO-DIR					
23	carfentrazone	2	EC	0.16	lb ai/a	PO-DIR	10.0	10.0	8.0	6.5	3.3
	NIS		L	0.5	% v/v	PO-DIR					
LSD (P=.05)							1.76	0.61	3.25	1.25	3.52
Standard Deviation							1.25	0.43	2.30	0.89	2.49
CV							13.37	4.77	34.71	53.57	61.11

Eastern Black Nightshade Control in Transplanted Tomato - HTRC

Dept. of Horticulture, MSU

Description							COLQ	COPU	EBNS	LATH	RRPW
Rating Date							7/16/04	7/16/04	7/16/04	7/16/04	7/16/04
Rating Data Type							RATING	RATING	RATING	RATING	RATING
Rating Unit											
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
1	untreated						1.0	1.0	1.0	1.0	1.0
2	weeded control						9.0	9.5	9.5	9.0	9.8
3	metribuzin	75	DF	0.25	lb ai/a	PRT	9.5	1.0	1.0	9.5	1.0
4	sulfentrazone	75	DF	0.3	lb ai/a	PRT	9.5	8.3	7.8	9.3	8.8
5	oxyfluorfen	2	L	0.25	lb ai/a	PRT	3.3	9.8	8.8	10.0	9.5
6	flumioxazin	51	WDG	0.047	lb ai/a	PRT	9.3	8.0	7.8	7.3	9.0
7	sulfosulfuron	75	WG	0.031	lb ai/a	PRT	10.0	9.8	6.0	9.5	9.5
8	dimethenamid-p	6	EC	0.98	lb ai/a	POT	5.3	10.0	10.0	9.5	7.3
9	s-metolachlor	7.62	EC	1.6	lb ai/a	POT	3.5	8.8	9.3	8.8	8.5
10	sulfosulfuron	75	WG	0.031	lb ai/a	POT	9.3	10.0	6.3	9.0	9.5
11	rimsulfuron	25	DF	0.031	lb ai/a	POT	10.0	9.3	1.0	9.3	9.8
12	trifloxysulfuron	75	WG	0.009	lb ai/a	PO1	9.0	7.5	1.0	9.3	8.5
	NIS		L	0.25	% v/v	PO1					
13	metribuzin	75	DF	0.25	lb ai/a	PO1	9.5	10.0	1.0	10.0	10.0
14	rimsulfuron	25	DF	0.031	lb ai/a	PO1	7.8	9.5	1.0	7.8	9.3
	NIS		L	0.5	% v/v	PO1					
15	rimsulfuron	25	DF	0.031	lb ai/a	PO1	1.0	7.5	1.0	9.8	9.5
16	sulfosulfuron	75	WG	0.031	lb ai/a	PO1	1.0	8.5	1.0	8.5	10.0
	NIS		L	0.5	% v/v	PO1					
17	halosulfuron	75	WG	0.031	lb ai/a	PO1	1.0	1.0	1.0	9.5	8.3
	NIS		L	0.5	% v/v	PO1					
18	sulfentrazone	75	DF	0.1	lb ai/a	PO1	8.8	9.5	7.5	8.5	8.8
	NIS		L	0.5	% v/v	PO1					
19	sulfentrazone	75	DF	0.2	lb ai/a	PO1	9.5	10.0	8.0	7.5	9.0
	NIS		L	0.5	% v/v	PO1					
20	sulfentrazone	75	DF	0.1	lb ai/a	PO1	7.3	7.5	7.8	9.5	9.0
21	sulfentrazone	75	DF	0.2	lb ai/a	PO1	10.0	5.5	8.8	9.5	8.5
22	flumioxazin	51	WDG	0.047	lb ai/a	PO-DIR	10.0	9.3	10.0	9.0	9.5
	NIS		L	0.5	% v/v	PO-DIR					
23	carfentrazone	2	EC	0.16	lb ai/a	PO-DIR	10.0	9.5	10.0	10.0	9.8
	NIS		L	0.5	% v/v	PO-DIR					
LSD (P=.05)							2.88	2.99	1.21	2.24	1.88
Standard Deviation							2.04	2.12	0.85	1.58	1.33
CV							28.52	26.96	15.54	18.12	15.81

Eastern Black Nightshade Control in Transplanted Tomato - HTRC

Dept. of Horticulture, MSU

Description							WIRA	TOMATO	GIFT	COLQ	EBNS
Rating Date							7/16/04	7/22/04	7/22/04	7/22/04	7/22/04
Rating Data Type							RATING	RATING	RATING	RATING	RATING
Rating Unit											
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
1	untreated						1.0	1.0	1.0	1.0	1.0
2	weeded control						9.3	1.0	10.0	10.0	10.0
3	metribuzin	75	DF	0.25	lb ai/a	PRT	8.0	1.8	1.0	9.8	1.0
4	sulfentrazone	75	DF	0.3	lb ai/a	PRT	2.3	4.5	10.0	5.5	9.3
5	oxyfluorfen	2	L	0.25	lb ai/a	PRT	1.3	1.8	10.0	1.0	2.3
6	flumioxazin	51	WDG	0.047	lb ai/a	PRT	8.0	1.3	10.0	10.0	10.0
7	sulfosulfuron	75	WG	0.031	lb ai/a	PRT	8.5	1.0	10.0	10.0	3.3
8	dimethenamid-p	6	EC	0.98	lb ai/a	POT	2.3	1.3	10.0	8.8	10.0
9	s-metolachlor	7.62	EC	1.6	lb ai/a	POT	3.3	1.5	10.0	7.3	10.0
10	sulfosulfuron	75	WG	0.031	lb ai/a	POT	8.0	1.0	7.8	10.0	7.8
11	rimsulfuron	25	DF	0.031	lb ai/a	POT	9.8	1.0	10.0	10.0	3.3
12	trifloxysulfuron	75	WG	0.009	lb ai/a	PO1	7.5	1.0	3.3	1.0	1.0
	NIS		L	0.25	% v/v	PO1					
13	metribuzin	75	DF	0.25	lb ai/a	PO1	8.5	1.0	1.0	1.0	1.0
14	rimsulfuron	25	DF	0.031	lb ai/a	PO1	10.0	1.3	1.0	2.3	1.0
	NIS		L	0.5	% v/v	P01					
15	rimsulfuron	25	DF	0.031	lb ai/a	PO1	8.5	1.3	3.3	1.0	1.0
16	sulfosulfuron	75	WG	0.031	lb ai/a	PO1	7.3	1.0	1.0	1.0	2.5
	NIS		L	0.5	% v/v	PO1					
17	halosulfuron	75	WG	0.031	lb ai/a	PO1	7.8	1.0	1.0	1.0	1.0
	NIS		L	0.5	% v/v	PO1					
18	sulfentrazone	75	DF	0.1	lb ai/a	P01	3.3	1.0	1.0	1.0	1.0
	NIS		L	0.5	% v/v	P01					
19	sulfentrazone	75	DF	0.2	lb ai/a	P01	3.8	1.0	1.0	1.0	1.0
	NIS		L	0.5	% v/v	PO1					
20	sulfentrazone	75	DF	0.1	lb ai/a	PO1	1.8	1.5	1.0	1.0	1.0
21	sulfentrazone	75	DF	0.2	lb ai/a	PO1	1.0	1.0	1.0	1.0	2.8
22	flumioxazin	51	WDG	0.047	lb ai/a	PO-DIR	5.8	1.5	1.0	1.0	1.0
	NIS		L	0.5	% v/v	PO-DIR					
23	carfentrazone	2	EC	0.16	lb ai/a	PO-DIR	6.5	1.0	1.0	1.0	1.0
	NIS		L	0.5	% v/v	PO-DIR					
LSD (P=.05)							3.23	0.85	2.24	2.21	2.63
Standard Deviation							2.28	0.60	1.58	1.56	1.86
CV							39.45	45.49	34.28	37.27	51.58

Eastern Black Nightshade Control in Transplanted Tomato - HTRC

Dept. of Horticulture, MSU

Description							RRPW	WIRA	TOMATO	TOMATO	TOMATO
Rating Date							7/22/04	7/22/04	8/30/04	9/7/04	9/14/04
Rating Data Type							RATING	RATING	YIELD	YIELD	YIELD
Rating Unit									KG/PLOT	KG/PLOT	KG/PLOT
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
1	untreated						1.0	2.8	1.98	8.26	23.79
2	weeded control						10.0	10.0	1.41	10.42	32.26
3	metribuzin	75	DF	0.25	lb ai/a	PRT	5.5	9.3	1.78	10.25	34.03
4	sulfentrazone	75	DF	0.3	lb ai/a	PRT	10.0	6.8	0.67	2.91	15.33
5	oxyfluorfen	2	L	0.25	lb ai/a	PRT	7.8	4.3	0.72	8.20	22.93
6	flumioxazin	51	WDG	0.047	lb ai/a	PRT	10.0	9.5	2.05	9.59	39.79
7	sulfosulfuron	75	WG	0.031	lb ai/a	PRT	10.0	9.0	2.25	5.43	38.40
8	dimethenamid-p	6	EC	0.98	lb ai/a	POT	10.0	4.3	2.41	7.89	34.05
9	s-metolachlor	7.62	EC	1.6	lb ai/a	POT	10.0	6.0	1.97	12.08	36.51
10	sulfosulfuron	75	WG	0.031	lb ai/a	POT	10.0	7.8	2.16	11.38	38.67
11	rimsulfuron	25	DF	0.031	lb ai/a	POT	10.0	7.8	3.77	10.93	40.84
12	trifloxysulfuron	75	WG	0.009	lb ai/a	PO1	1.0	3.8	0.15	2.22	16.11
	NIS		L	0.25	% v/v	PO1					
13	metribuzin	75	DF	0.25	lb ai/a	PO1	1.0	3.0	3.11	9.55	33.64
14	rimsulfuron	25	DF	0.031	lb ai/a	PO1	1.0	3.5	3.73	9.50	32.64
	NIS		L	0.5	% v/v	PO1					
15	rimsulfuron	25	DF	0.031	lb ai/a	PO1	1.0	4.0	2.66	9.32	26.92
16	sulfosulfuron	75	WG	0.031	lb ai/a	PO1	1.0	1.8	2.37	8.47	30.35
	NIS		L	0.5	% v/v	PO1					
17	halosulfuron	75	WG	0.031	lb ai/a	PO1	1.0	4.3	1.92	8.22	24.42
	NIS		L	0.5	% v/v	PO1					
18	sulfentrazone	75	DF	0.1	lb ai/a	PO1	1.0	2.5	0.91	5.48	19.10
	NIS		L	0.5	% v/v	PO1					
19	sulfentrazone	75	DF	0.2	lb ai/a	PO1	1.0	2.8	0.24	2.69	14.38
	NIS		L	0.5	% v/v	PO1					
20	sulfentrazone	75	DF	0.1	lb ai/a	PO1	1.0	3.0	1.71	5.65	16.97
21	sulfentrazone	75	DF	0.2	lb ai/a	PO1	1.0	2.3	0.80	4.26	14.95
22	flumioxazin	51	WDG	0.047	lb ai/a	PO-DIR	1.0	2.8	0.55	2.11	4.94
	NIS		L	0.5	% v/v	PO-DIR					
23	carfentrazone	2	EC	0.16	lb ai/a	PO-DIR	1.0	2.8	0.00	0.18	3.06
	NIS		L	0.5	% v/v	PO-DIR					
LSD (P=.05)							2.05	3.58	1.809	4.431	11.890
Standard Deviation							1.45	2.53	1.279	3.133	8.407
CV							31.43	51.36	74.94	43.69	32.55

Eastern Black Nightshade Control in Transplanted Tomato - HTRC

Dept. of Horticulture, MSU

Description							TOMATO	TOMATO	TOMATO
Rating Date							9/21/04	9/28/04	
Rating Data Type							YIELD	YIELD	TOT YIELD
Rating Unit							KG/PLOT	KG/PLOT	KG/PLOT
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage			
1	untreated						12.86	4.78	51.66
2	weeded control						25.93	14.73	84.74
3	metribuzin	75	DF	0.25	lb ai/a	PRT	26.95	13.05	86.04
4	sulfentrazone	75	DF	0.3	lb ai/a	PRT	14.41	11.69	45.00
5	oxyfluorfen	2	L	0.25	lb ai/a	PRT	20.24	10.92	63.00
6	flumioxazin	51	WDG	0.047	lb ai/a	PRT	35.20	21.56	108.18
7	sulfosulfuron	75	WG	0.031	lb ai/a	PRT	39.11	21.91	107.08
8	dimethenamid-p	6	EC	0.98	lb ai/a	POT	29.28	11.93	85.56
9	s-metolachlor	7.62	EC	1.6	lb ai/a	POT	30.05	17.41	98.01
10	sulfosulfuron	75	WG	0.031	lb ai/a	POT	36.46	31.08	119.75
11	rimsulfuron	25	DF	0.031	lb ai/a	POT	38.94	19.45	113.92
12	trifloxysulfuron	75	WG	0.009	lb ai/a	PO1	18.50	19.33	56.30
	NIS		L	0.25	% v/v	PO1			
13	metribuzin	75	DF	0.25	lb ai/a	PO1	29.94	13.49	89.72
14	rimsulfuron	25	DF	0.031	lb ai/a	PO1	23.13	18.47	87.46
	NIS		L	0.5	% v/v	P01			
15	rimsulfuron	25	DF	0.031	lb ai/a	PO1	22.17	10.71	71.77
16	sulfosulfuron	75	WG	0.031	lb ai/a	PO1	19.80	12.56	73.54
	NIS		L	0.5	% v/v	PO1			
17	halosulfuron	75	WG	0.031	lb ai/a	PO1	16.27	17.33	68.15
	NIS		L	0.5	% v/v	PO1			
18	sulfentrazone	75	DF	0.1	lb ai/a	P01	16.48	11.90	53.86
	NIS		L	0.5	% v/v	P01			
19	sulfentrazone	75	DF	0.2	lb ai/a	P01	13.53	11.56	42.39
	NIS		L	0.5	% v/v	PO1			
20	sulfentrazone	75	DF	0.1	lb ai/a	PO1	9.27	5.37	38.96
21	sulfentrazone	75	DF	0.2	lb ai/a	PO1	9.90	9.79	39.69
22	flumioxazin	51	WDG	0.047	lb ai/a	PO-DIR	5.11	6.47	19.17
	NIS		L	0.5	% v/v	PO-DIR			
23	carfentrazone	2	EC	0.16	lb ai/a	PO-DIR	3.92	3.95	11.10
	NIS		L	0.5	% v/v	PO-DIR			
LSD (P=.05)							10.283	8.721	28.615
Standard Deviation							7.271	6.167	20.234
CV							33.62	44.41	28.82

Weed Control in Pepper and Tomato

Project Code: WC 101-04-01 **Location: HTRC Block 123**

Personnel: Bernard H. Zandstra, Michael Particka
Crop: Bell Pepper, Tomato **Variety: Karma, Jackpot**
Planting Method: Transplant **Planting Date: 6-3-04**
Spacing: 18 IN **Row Spacing: 36 IN**
Tillage Type: **Study Design: RCB** **Replications: 3**
Plot Size: 8 ft wide x 35 ft long

Soil Type: Capac Loam **OM: 1.0%** **pH: 6.2**
Sand: 64% **Silt: 23%** **Clay: 13%** **CEC: 5.4**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PPI	6/3/04	9:00 am	62/60	°F	Damp	2 W	65	Clear	N
PRT	6/3/04	10:20 am	68/64	°F	Damp	2 W	58	Clear	N
POT	6/8/04	9:30 am	78/69	°F	Dry	3 SW	66	Clear	N
PO1	7/6/04	9:00 am	66/66	°F	Dry	7 SW	75	30% Cloudy	N

Crop and Weed Information at Application

Date	Crop or Weed	Height or Diameter	Number of Leaves	Density
7/6	Pepper	6-8 in		
7/6	Tomato	10-12 in		
7/6	GRFT = Green foxtail	1-3 in		
7/6	EBNS = Eastern black nightshade	0.5-1.5 in		
7/6	WIRA = Wild radish	2-14 in		

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.

Weed Control in Pepper and Tomato

Dept. of Horticulture, MSU

Trial ID: WC 101-04-01 Study Director:
Location: HTRC Block 122 Investigator: Dr. Bernard Zandstra

Description						PEPPER	TOMATO	GRFT	WIRA	PEPPER
Rating Date						6/21/04	6/21/04	6/21/04	6/21/04	7/13/04
Rating Data Type						RATING	RATING	RATING	RATING	PLANT
Rating Unit										COUNT
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
1	trifluralin	4	EC	1	lb ai/a	PPI	7.7	1.7	10.0	10.0	2.0
	metribuzin	75	DF	0.5	lb ai/a	PPI					
2	s-metolachlor	7.62	EC	0.95	lb ai/a	POT	2.3	1.0	10.0	7.7	15.0
3	s-metolachlor	7.62	EC	1.3	lb ai/a	POT	1.7	1.3	10.0	8.3	16.3
4	s-metolachlor II	7.64	EC	1.3	lb ai/a	POT	2.0	1.3	10.0	8.7	16.3
5	s-metolachlor	7.62	EC	1.6	lb ai/a	PRT	2.0	1.3	10.0	10.0	14.7
	halosulfuron	75	WG	0.031	lb ai/a	PRT					
6	flumioxazin	51	WDG	0.064	lb ai/a	PRT	3.0	6.0	10.0	10.0	13.3
7	sulfentrazone	75	DF	0.28	lb ai/a	PRT	4.0	3.3	10.0	9.3	6.0
8	sulfentrazone	75	DF	0.14	lb ai/a	POT	2.7	3.0	10.0	6.7	14.7
9	trifluralin	4	EC	1	lb ai/a	PPI	2.0	1.0	8.0	5.7	14.0
	rimsulfuron	25	DF	0.031	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.25	% v/v	PO1					
10	trifluralin	4	EC	1	lb ai/a	PPI	1.7	1.0	7.7	7.0	16.7
	halosulfuron	75	WG	0.023	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.25	% v/v	PO1					
11	trifluralin	4	EC	1	lb ai/a	PPI	1.0	1.0	9.0	5.7	16.0
	sulfentrazone	75	DF	0.188	lb ai/a	PO1					
12	trifluralin	4	EC	1	lb ai/a	PPI	1.7	1.0	6.7	5.3	14.7
	metribuzin	75	DF	0.25	lb ai/a	PO1					
	clethodim	2	EC	0.125	lb ai/a	PO1					
	NIS		L	0.25	% v/v	PO1					
13	clomazone	3	ME	0.5	lb ai/a	PRT	2.0	3.0	10.0	9.7	16.0
14	untreated						1.0	1.0	4.7	3.0	17.7
LSD (P=.05)							1.44	1.20	3.17	2.96	5.03
Standard Deviation							0.86	0.71	1.89	1.77	3.00
CV							34.61	36.93	20.95	23.09	21.7

Weed Control in Pepper and Tomato

Dept. of Horticulture, MSU

Description							TOMATO	PEPPER	TOMATO	EBNS	WIRA
Rating Date							7/13/04	7/13/04	7/13/04	7/13/04	7/13/04
Rating Data Type							PLANT	RATING	RATING	RATING	RATING
Rating Unit							COUNT				
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
1	trifluralin	4	EC	1	lb ai/a	PPI	15.0	8.3	1.0	4.7	10.0
	metribuzin	75	DF	0.5	lb ai/a	PPI					
2	s-metolachlor	7.62	EC	0.95	lb ai/a	POT	17.7	1.7	1.0	7.0	3.0
3	s-metolachlor	7.62	EC	1.3	lb ai/a	POT	17.7	1.7	1.3	10.0	5.3
4	s-metolachlor II	7.64	EC	1.3	lb ai/a	POT	17.0	1.3	1.3	10.0	1.7
5	s-metolachlor	7.62	EC	1.6	lb ai/a	PRT	16.0	3.3	2.0	10.0	10.0
	halosulfuron	75	WG	0.031	lb ai/a	PRT					
6	flumioxazin	51	WDG	0.064	lb ai/a	PRT	6.3	5.0	6.0	10.0	9.7
7	sulfentrazone	75	DF	0.28	lb ai/a	PRT	12.0	7.0	6.7	10.0	5.7
8	sulfentrazone	75	DF	0.14	lb ai/a	POT	17.0	3.7	4.3	10.0	3.0
9	trifluralin	4	EC	1	lb ai/a	PPI	16.7	2.7	1.0	7.0	9.3
	rimsulfuron	25	DF	0.031	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.25	% v/v	PO1					
10	trifluralin	4	EC	1	lb ai/a	PPI	17.7	1.3	1.0	7.0	9.0
	halosulfuron	75	WG	0.023	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.25	% v/v	PO1					
11	trifluralin	4	EC	1	lb ai/a	PPI	17.0	4.0	2.3	10.0	2.3
	sulfentrazone	75	DF	0.188	lb ai/a	PO1					
12	trifluralin	4	EC	1	lb ai/a	PPI	17.7	6.3	1.0	1.7	9.7
	metribuzin	75	DF	0.25	lb ai/a	PO1					
	clethodim	2	EC	0.125	lb ai/a	PO1					
	NIS		L	0.25	% v/v	PO1					
13	clomazone	3	ME	0.5	lb ai/a	PRT	17.7	2.7	3.7	9.3	5.3
14	untreated						16.7	1.0	1.0	5.3	5.7
LSD (P=.05)							2.65	2.72	2.04	4.36	3.82
Standard Deviation							1.58	1.62	1.22	2.60	2.28
CV							9.94	45.41	50.62	32.46	35.55

Weed Control in Pepper and Tomato

Dept. of Horticulture, MSU

Description						PEPPER	PEPPER	PEPPER	PEPPER	PEPPER
Rating Date						8/16/04	8/16/04	8/30/04	8/30/04	9/17/04
Rating Data Type						YIELD	YIELD	YIELD	YIELD	YIELD
Rating Unit						COUNT	KG/PLOT	COUNT	KG/PLOT	COUNT
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
1	trifluralin	4	EC	1	lb ai/a	PPI	1.3	0.22	2.7	0.43	3.3
	metribuzin	75	DF	0.5	lb ai/a	PPI					
2	s-metolachlor	7.62	EC	0.95	lb ai/a	POT	6.3	1.06	8.7	1.75	16.3
3	s-metolachlor	7.62	EC	1.3	lb ai/a	POT	7.7	1.38	7.7	1.39	17.0
4	s-metolachlor II	7.64	EC	1.3	lb ai/a	POT	7.0	1.10	8.0	1.38	13.0
5	s-metolachlor	7.62	EC	1.6	lb ai/a	PRT	3.7	0.65	4.0	0.81	5.7
	halosulfuron	75	WG	0.031	lb ai/a	PRT					
6	flumioxazin	51	WDG	0.064	lb ai/a	PRT	3.0	0.53	4.7	0.97	12.7
7	sulfentrazone	75	DF	0.28	lb ai/a	PRT	3.3	0.59	3.3	0.65	3.7
8	sulfentrazone	75	DF	0.14	lb ai/a	POT	2.3	0.40	6.3	1.20	9.7
9	trifluralin	4	EC	1	lb ai/a	PPI	1.0	0.17	1.3	0.28	7.7
	rimsulfuron	25	DF	0.031	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.25	% v/v	PO1					
10	trifluralin	4	EC	1	lb ai/a	PPI	8.0	1.36	12.3	2.23	16.0
	halosulfuron	75	WG	0.023	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.25	% v/v	PO1					
11	trifluralin	4	EC	1	lb ai/a	PPI	4.7	0.84	5.3	0.96	10.3
	sulfentrazone	75	DF	0.188	lb ai/a	PO1					
12	trifluralin	4	EC	1	lb ai/a	PPI	0.0	0.00	1.0	0.21	4.0
	metribuzin	75	DF	0.25	lb ai/a	PO1					
	clethodim	2	EC	0.125	lb ai/a	PO1					
	NIS		L	0.25	% v/v	PO1					
13	clomazone	3	ME	0.5	lb ai/a	PRT	11.0	2.02	18.3	3.55	27.0
14	untreated						11.0	2.06	13.7	2.92	18.7
LSD (P=.05)							6.13	1.108	7.01	1.463	8.71
Standard Deviation							3.65	0.660	4.18	0.872	5.19
CV							72.74	74.71	60.08	65.12	44.01

Weed Control in Pepper and Tomato

Dept. of Horticulture, MSU

Description							PEPPER	PEPPER	PEPPER	PEPPER	PEPPER
Rating Date							9/17/04	9/30/04	9/30/04		
Rating Data Type							YIELD	YIELD	YIELD	TOT YLD	TOT YLD
Rating Unit							KG/PLOT	COUNT	KG/PLOT	COUNT	KG/PLOT
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
1	trifluralin	4	EC	1	lb ai/a	PPI	0.57	1.0	0.14	8.3	1.36
	metribuzin	75	DF	0.5	lb ai/a	PPI					
2	s-metolachlor	7.62	EC	0.95	lb ai/a	POT	2.95	9.0	1.21	40.3	6.98
3	s-metolachlor	7.62	EC	1.3	lb ai/a	POT	2.83	11.0	1.29	43.3	6.89
4	s-metolachlor II	7.64	EC	1.3	lb ai/a	POT	2.22	5.7	0.69	33.7	5.39
5	s-metolachlor	7.62	EC	1.6	lb ai/a	PRT	0.92	4.7	0.54	18.0	2.93
	halosulfuron	75	WG	0.031	lb ai/a	PRT					
6	flumioxazin	51	WDG	0.064	lb ai/a	PRT	2.37	12.7	1.71	33.0	5.57
7	sulfentrazone	75	DF	0.28	lb ai/a	PRT	0.67	3.3	0.43	13.7	2.33
8	sulfentrazone	75	DF	0.14	lb ai/a	POT	1.59	5.3	0.69	23.7	3.88
9	trifluralin	4	EC	1	lb ai/a	PPI	1.19	28.0	3.32	38.0	4.95
	rimsulfuron	25	DF	0.031	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.25	% v/v	PO1					
10	trifluralin	4	EC	1	lb ai/a	PPI	2.53	9.0	1.26	45.3	7.38
	halosulfuron	75	WG	0.023	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.25	% v/v	PO1					
11	trifluralin	4	EC	1	lb ai/a	PPI	1.70	16.7	2.07	37.0	5.56
	sulfentrazone	75	DF	0.188	lb ai/a	PO1					
12	trifluralin	4	EC	1	lb ai/a	PPI	0.57	28.7	3.43	33.7	4.21
	metribuzin	75	DF	0.25	lb ai/a	PO1					
	clethodim	2	EC	0.125	lb ai/a	PO1					
	NIS		L	0.25	% v/v	PO1					
13	clomazone	3	ME	0.5	lb ai/a	PRT	4.87	15.7	2.37	72.0	12.82
14	untreated						3.53	12.0	1.83	55.3	10.34
LSD (P=.05)							1.632	12.83	1.676	25.72	4.536
Standard Deviation							0.972	7.64	0.999	15.32	2.702
CV							47.75	65.76	66.64	43.3	46.94

Weed Control in Pepper and Tomato

Dept. of Horticulture, MSU

Description							TOMATO	TOMATO	TOMATO	TOMATO	TOMATO
Rating Date							8/30/04	9/7/04	9/14/04	9/20/04	9/30/04
Rating Data Type							YIELD	YIELD	YIELD	YIELD	YIELD
Rating Unit							KG/PLOT	KG/PLOT	KG/PLOT	KG/PLOT	KG/PLOT
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
1	trifluralin	4	EC	1	lb ai/a	PPI	3.16	10.73	17.32	9.36	14.35
	metribuzin	75	DF	0.5	lb ai/a	PPI					
2	s-metolachlor	7.62	EC	0.95	lb ai/a	POT	3.73	8.02	17.88	11.10	9.96
3	s-metolachlor	7.62	EC	1.3	lb ai/a	POT	4.33	11.39	9.15	9.80	9.05
4	s-metolachlor II	7.64	EC	1.3	lb ai/a	POT	4.98	9.17	12.67	6.59	9.22
5	s-metolachlor	7.62	EC	1.6	lb ai/a	PRT	3.49	7.44	10.24	7.91	8.66
	halosulfuron	75	WG	0.031	lb ai/a	PRT					
6	flumioxazin	51	WDG	0.064	lb ai/a	PRT	0.67	0.85	2.45	2.28	2.47
7	sulfentrazone	75	DF	0.28	lb ai/a	PRT	0.78	1.51	2.66	3.07	5.71
8	sulfentrazone	75	DF	0.14	lb ai/a	POT	2.04	3.80	5.37	6.86	8.96
9	trifluralin	4	EC	1	lb ai/a	PPI	3.97	8.99	23.04	15.64	11.17
	rimsulfuron	25	DF	0.031	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.25	% v/v	PO1					
10	trifluralin	4	EC	1	lb ai/a	PPI	4.33	11.28	14.15	6.30	9.49
	halosulfuron	75	WG	0.023	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.25	% v/v	PO1					
11	trifluralin	4	EC	1	lb ai/a	PPI	5.33	9.83	10.25	9.89	6.83
	sulfentrazone	75	DF	0.188	lb ai/a	PO1					
12	trifluralin	4	EC	1	lb ai/a	PPI	2.73	10.25	15.30	15.58	8.91
	metribuzin	75	DF	0.25	lb ai/a	PO1					
	clethodim	2	EC	0.125	lb ai/a	PO1					
	NIS		L	0.25	% v/v	PO1					
13	clomazone	3	ME	0.5	lb ai/a	PRT	3.80	6.99	5.80	6.58	9.63
14	untreated						4.95	11.20	19.51	13.05	8.93
LSD (P=.05)							2.465	5.894	9.591	7.495	7.176
Standard Deviation							1.468	3.511	5.713	4.465	4.274
CV							42.55	44.11	48.24	50.41	48.52

Weed Control in Pepper and Tomato

Dept. of Horticulture, MSU

Description							TOMATO
Rating Date							
Rating Data Type							TOT YLD
Rating Unit							KG/PLOT
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	
1	trifluralin	4	EC	1	lb ai/a	PPI	54.92
	metribuzin	75	DF	0.5	lb ai/a	PPI	
2	s-metolachlor	7.62	EC	0.95	lb ai/a	POT	50.69
3	s-metolachlor	7.62	EC	1.3	lb ai/a	POT	43.72
4	s-metolachlor II	7.64	EC	1.3	lb ai/a	POT	42.63
5	s-metolachlor	7.62	EC	1.6	lb ai/a	PRT	37.73
	halosulfuron	75	WG	0.031	lb ai/a	PRT	
6	flumioxazin	51	WDG	0.064	lb ai/a	PRT	8.71
7	sulfentrazone	75	DF	0.28	lb ai/a	PRT	13.73
8	sulfentrazone	75	DF	0.14	lb ai/a	POT	27.03
9	trifluralin	4	EC	1	lb ai/a	PPI	62.81
	rimsulfuron	25	DF	0.031	lb ai/a	PO1	
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1	
	NIS		L	0.25	% v/v	PO1	
10	trifluralin	4	EC	1	lb ai/a	PPI	45.56
	halosulfuron	75	WG	0.023	lb ai/a	PO1	
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1	
	NIS		L	0.25	% v/v	PO1	
11	trifluralin	4	EC	1	lb ai/a	PPI	42.13
	sulfentrazone	75	DF	0.188	lb ai/a	PO1	
12	trifluralin	4	EC	1	lb ai/a	PPI	52.77
	metribuzin	75	DF	0.25	lb ai/a	PO1	
	clethodim	2	EC	0.125	lb ai/a	PO1	
	NIS		L	0.25	% v/v	PO1	
13	clomazone	3	ME	0.5	lb ai/a	PRT	32.80
14	untreated						57.65
LSD (P=.05)							20.423
Standard Deviation							12.166
CV							29.73

Postemergence Weed Control in Tomato - HTRC

Project Code: WC 101-04-03 **Location: HTRC Block 123**

Personnel: Bernard H. Zandstra, Michael Particka
Crop: Tomato **Variety: Jackpot**
Planting Method: Transplant **Planting Date: 6-3-04**
Spacing: 24 IN **Row Spacing: 36 IN**
Tillage Type: **Study Design: RCB** **Replications: 3**
Plot Size: 8 ft wide x 30 ft long

Soil Type: Capac loam **OM: 1.0%** **pH: 6.2**
Sand: 64% **Silt: 23%** **Clay: 13%** **CEC: 5.4**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PO1	6/22/04	3:30 pm	70/70	°F	Damp	8 NW	46	30% Cloudy	N

Crop and Weed Information at Application

Date	Crop or Weed	Height or Diameter	Number of Leaves	Density
6/22	Tomato			
6/22	GRFT = Green foxtail	0.5-3 in		
6/22	LACG = Large crabgrass	0.5-3 in		
6/22	COLQ = Common lambsquarters	0.25-1 in		
6/22	COPU = Common purslane			
6/22	EBNS = Eastern black nightshade	0.25-0.75 in		
6/22	RRPW = Redroot pigweed			
6/22	WIRA = Wild radish			

Notes and Comments
1. **Sprays applied with 2 nozzle shielded boom FF11002, 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.**

Postemergence Weed Control in Tomato - HTRC

Dept. of Horticulture, MSU

Trial ID: WC 101-04-03 Study Director:
Location: HTRC Block 123 Investigator: Dr. Bernard Zandstra

Description							TOMATO	GRFT	COPU	EBNS	WIRA
Rating Date							6/30/04	6/30/04	6/30/04	6/30/04	6/30/04
Rating Data Type							RATING	RATING	RATING	RATING	RATING
Rating Unit											
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
1	carfentrazone	2	EC	0.016	lb ai/a	PO-DIR	3.3	4.3	10.0	10.0	8.0
	COC		L	1	% v/v	PO-DIR					
2	carfentrazone	2	EC	0.016	lb ai/a	PO-DIR	5.7	10.0	10.0	10.0	10.0
	rimsulfuron	25	DF	0.031	lb ai/a	PO-DIR					
	COC		L	1	% v/v	PO-DIR					
3	carfentrazone	2	EC	0.024	lb ai/a	PO-DIR	3.7	10.0	10.0	10.0	9.7
	clethodim	2	EC	0.125	lb ai/a	PO-DIR					
	COC		L	1	% v/v	PO-DIR					
4	glyphosate	4	L	1	lb ai/a	PO-DIR	3.7	10.0	10.0	10.0	10.0
5	metribuzin	75	DF	0.25	lb ai/a	PO-DIR	1.3	10.0	10.0	6.0	10.0
	rimsulfuron	25	DF	0.031	lb ai/a	PO-DIR					
	clethodim	2	EC	0.125	lb ai/a	PO-DIR					
	COC		L	1	% v/v	PO-DIR					
6	untreated					PO-DIR	1.3	1.0	1.0	1.0	1.0
LSD (P=.05)							1.79	1.13	0.00	1.96	1.40
Standard Deviation							0.98	0.62	0.00	1.08	0.77
CV							31.05	8.25	0.0	13.79	9.46

Description							TOMATO	TOMATO	GRFT	LACG	EBNS
Rating Date							7/13/04	7/13/04	7/13/04	7/13/04	7/13/04
Rating Data Type							PLT/PLOT	RATING	RATING	RATING	RATING
Rating Unit											
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
1	carfentrazone	2	EC	0.016	lb ai/a	PO-DIR	30.7	2.7	1.0	1.7	9.7
	COC		L	1	% v/v	PO-DIR					
2	carfentrazone	2	EC	0.016	lb ai/a	PO-DIR	17.7	5.7	9.7	9.7	10.0
	rimsulfuron	25	DF	0.031	lb ai/a	PO-DIR					
	COC		L	1	% v/v	PO-DIR					
3	carfentrazone	2	EC	0.024	lb ai/a	PO-DIR	21.7	4.0	8.7	9.3	10.0
	clethodim	2	EC	0.125	lb ai/a	PO-DIR					
	COC		L	1	% v/v	PO-DIR					
4	glyphosate	4	L	1	lb ai/a	PO-DIR	31.7	4.0	7.3	8.7	9.7
5	metribuzin	75	DF	0.25	lb ai/a	PO-DIR	33.3	2.0	10.0	10.0	5.0
	rimsulfuron	25	DF	0.031	lb ai/a	PO-DIR					
	clethodim	2	EC	0.125	lb ai/a	PO-DIR					
	COC		L	1	% v/v	PO-DIR					
6	untreated					PO-DIR	31.0	1.0	1.0	1.0	1.0
LSD (P=.05)							5.08	2.27	2.04	1.23	3.21
Standard Deviation							2.79	1.25	1.12	0.67	1.77
CV							10.09	38.71	17.85	10.04	23.39

Postemergence Weed Control in Tomato - HTRC

Dept. of Horticulture, MSU

Description						WIRA	TOMATO	TOMATO	TOMATO	TOMATO
Rating Date						7/13/04	8/30/04	9/7/04	9/14/04	9/20/04
Rating Data Type						RATING	YIELD	YIELD	YIELD	YIELD
Rating Unit							KG/PLOT	KG/PLOT	KG/PLOT	KG/PLOT
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
1	carfentrazone	2	EC	0.016	lb ai/a	PO-DIR	2.7	4.67	9.21	16.93	10.38
	COC		L	1	% v/v	PO-DIR					
2	carfentrazone	2	EC	0.016	lb ai/a	PO-DIR	10.0	2.23	6.03	9.33	10.92
	rimsulfuron	25	DF	0.031	lb ai/a	PO-DIR					
	COC		L	1	% v/v	PO-DIR					
3	carfentrazone	2	EC	0.024	lb ai/a	PO-DIR	9.0	4.21	8.74	18.71	14.10
	clethodim	2	EC	0.125	lb ai/a	PO-DIR					
	COC		L	1	% v/v	PO-DIR					
4	glyphosate	4	L	1	lb ai/a	PO-DIR	8.3	0.73	3.79	12.98	10.05
5	metribuzin	75	DF	0.25	lb ai/a	PO-DIR	10.0	11.05	23.98	32.34	24.21
	rimsulfuron	25	DF	0.031	lb ai/a	PO-DIR					
	clethodim	2	EC	0.125	lb ai/a	PO-DIR					
	COC		L	1	% v/v	PO-DIR					
6	untreated					PO-DIR	1.0	10.26	21.65	20.01	13.94
LSD (P=.05)							1.20	7.433	7.611	15.364	7.682
Standard Deviation							0.66	4.086	4.184	8.446	4.223
CV							9.63	73.97	34.2	45.94	30.31

Description						TOMATO	TOMATO
Rating Date						9/30/04	
Rating Data Type						YIELD	TOT YIELD
Rating Unit						KG/PLOT	KG/PLOT
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage		
1	carfentrazone	2	EC	0.016	lb ai/a	PO-DIR	12.86	54.05
	COC		L	1	% v/v	PO-DIR		
2	carfentrazone	2	EC	0.016	lb ai/a	PO-DIR	23.34	51.85
	rimsulfuron	25	DF	0.031	lb ai/a	PO-DIR		
	COC		L	1	% v/v	PO-DIR		
3	carfentrazone	2	EC	0.024	lb ai/a	PO-DIR	11.95	57.70
	clethodim	2	EC	0.125	lb ai/a	PO-DIR		
	COC		L	1	% v/v	PO-DIR		
4	glyphosate	4	L	1	lb ai/a	PO-DIR	21.51	49.05
5	metribuzin	75	DF	0.25	lb ai/a	PO-DIR	25.42	116.99
	rimsulfuron	25	DF	0.031	lb ai/a	PO-DIR		
	clethodim	2	EC	0.125	lb ai/a	PO-DIR		
	COC		L	1	% v/v	PO-DIR		
6	untreated					PO-DIR	9.17	75.03
LSD (P=.05)							11.720	25.533
Standard Deviation							6.442	14.036
CV							37.08	20.81

Weed Control in Radish, Rutabaga, & Turnip - HTRC

Project Code: WC 118-04-01 **Location:** HTRC Block 128

Personnel: Bernard H. Zandstra, Michael Particka
Crop: See notes **Variety:** See notes
Planting Method: Seeded **Planting Date:** 5/7/04
Spacing: 3 IN **Row Spacing:** 14 IN
Tillage Type: Conventional **Study Design:** RCBD **Replications:** 3
Plot Size: 8 ft wide x 30 ft long

Soil Type: Capac Loam **OM:** 2.6% **pH:** 7.6
Sand: 52% **Silt:** 27% **Clay:** 21% **CEC:** 13.8

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PPI	5/7/04	10:35 am	54/55	°F	Dry	7 NE	41	Clear	N
PRE	5/7/04	2:15 pm	61/60	°F	Dry	10 NE	23	Clear	N
PO1	6/8/04	10:00 am	79/72	°F	Dry	6 SW	69	Clear	N

Crop and Weed Information at Application

Date	Crop or Weed	Height or Diameter	Number of Leaves	Density
6/8	Radish	3-6 in	5-7	
6/8	RUTA = Rutabaga	3-5 in	4-6	
6/8	Turnip	6-7 in	6-8	
6/8	GRFT = Green foxtail	2-4 in	2-3	few
6/8	COLQ = Common lambsquarters	1-3 in	2-6	moderate
6/8	EBNS = Eastern black nightshade	1-2 in	2-6	moderate
6/8	LATH = Ladysthumb	1-3 in	4-5	moderate
6/8	RRPW = Redroot pigweed	2-4 in	4-6	few

Notes and Comments

1. Sprays applied with 5-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.
3. Planted 1 row of red beet, sugar beet, and swiss chard per plot; planted 2 rows of spinach per plot.
4. Crops and varieties: Radish – Reggae, Sugar beet – E-17, Swiss Chard – Large White Ribbed, Spinach – Bloomsdale Long Standing.

Weed Control in Radish, Rutabaga, & Turnip - HTRC

Dept. of Horticulture, MSU
Trial ID: WC 118-04-01 Study Director:
Location: HTRC Block 128 Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	RADISH	RUTA	TURNIP	GRFT	COLQ
	Description						RADISH	RUTA	TURNIP	GRFT	COLQ
	Rating Date						6/7/04	6/7/04	6/7/04	6/7/04	6/7/04
	Rating Data Type						RATING	RATING	RATING	RATING	RATING
	Rating Unit										
1	trifluralin	4	EC	1	lb ai/a	PPI	2.0	2.3	2.7	9.0	9.3
2	napropramide	50	DF	2	lb ai/a	PRE	1.3	1.3	1.0	9.0	10.0
3	s-metolachlor	7.62	EC	1.3	lb ai/a	PRE	1.7	1.7	4.3	10.0	10.0
4	dimethenamid-p	6	EC	0.98	lb ai/a	PRE	5.0	6.3	7.7	10.0	10.0
5	flufenacet	60	DF	0.6	lb ai/a	PRE	8.0	8.3	9.3	10.0	10.0
6	clomazone	3	ME	0.25	lb ai/a	PRE	6.7	4.0	4.7	9.3	10.0
7	sulfentrazone	75	DF	0.14	lb ai/a	PRE	10.0	10.0	10.0	10.0	10.0
8	ethalfluralin	3	EC	1.13	lb ai/a	PRE	2.7	4.3	4.7	9.0	10.0
9	ethalfluralin	3	EC	0.75	lb ai/a	PRE	7.0	2.0	5.0	10.0	10.0
	clomazone	3	ME	0.25	lb ai/a	PRE					
10	trifluralin	4	EC	1	lb ai/a	PPI	1.7	1.0	1.7	9.7	8.7
	clopyralid	3	EC	0.125	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.25	% v/v	PO1					
11	trifluralin	4	EC	1	lb ai/a	PPI	2.0	4.0	3.0	10.0	9.7
	sulfentrazone	75	DF	0.066	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.25	% v/v	PO1					
12	untreated						1.0	1.0	1.0	1.0	1.0
	LSD (P=.05)						1.70	1.83	2.54	1.41	0.88
	Standard Deviation						1.00	1.08	1.50	0.83	0.52
	CV						24.58	27.94	32.73	9.31	5.74

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	EBNS	LATH	RRPW	RADISH	RUTA
	Description						EBNS	LATH	RRPW	RADISH	RUTA
	Rating Date						6/7/04	6/7/04	6/7/04	6/16/04	6/16/04
	Rating Data Type						RATING	RATING	RATING	RATING	RATING
	Rating Unit										
1	trifluralin	4	EC	1	lb ai/a	PPI	6.3	8.7	9.3	2.0	2.7
2	napropramide	50	DF	2	lb ai/a	PRE	2.3	9.3	10.0	1.3	1.0
3	s-metolachlor	7.62	EC	1.3	lb ai/a	PRE	10.0	10.0	10.0	1.7	1.3
4	dimethenamid-p	6	EC	0.98	lb ai/a	PRE	10.0	10.0	10.0	4.3	3.7
5	flufenacet	60	DF	0.6	lb ai/a	PRE	10.0	10.0	10.0	7.0	6.3
6	clomazone	3	ME	0.25	lb ai/a	PRE	10.0	10.0	10.0	2.3	6.7
7	sulfentrazone	75	DF	0.14	lb ai/a	PRE	10.0	10.0	10.0	9.3	9.3
8	ethalfluralin	3	EC	1.13	lb ai/a	PRE	7.7	8.7	9.7	3.3	2.0
9	ethalfluralin	3	EC	0.75	lb ai/a	PRE	9.0	10.0	10.0	1.0	5.7
	clomazone	3	ME	0.25	lb ai/a	PRE					
10	trifluralin	4	EC	1	lb ai/a	PPI	8.0	9.7	9.3	2.3	3.3
	clopyralid	3	EC	0.125	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.25	% v/v	PO1					
11	trifluralin	4	EC	1	lb ai/a	PPI	6.3	10.0	9.0	3.0	3.0
	sulfentrazone	75	DF	0.066	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.25	% v/v	PO1					
12	untreated						1.0	1.0	1.0	2.0	1.7
	LSD (P=.05)						2.10	1.06	1.17	2.61	2.11
	Standard Deviation						1.24	0.63	0.69	1.54	1.25
	CV						16.4	6.99	7.63	46.71	32.1

Weed Control in Radish, Rutabaga, & Turnip - HTRC

Dept. of Horticulture, MSU

Description						TURNIP	GRFT	COLQ	EBNS	LATH
Rating Date						6/16/04	6/16/04	6/16/04	6/16/04	6/16/04
Rating Data Type						RATING	RATING	RATING	RATING	RATING
Rating Unit										
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
1	trifluralin	4	EC	1	lb ai/a	PPI	2.7	9.0	8.7	4.3	7.7
2	napropramide	50	DF	2	lb ai/a	PRE	1.7	9.7	10.0	1.0	9.0
3	s-metolachlor	7.62	EC	1.3	lb ai/a	PRE	2.3	10.0	9.3	10.0	9.3
4	dimethenamid-p	6	EC	0.98	lb ai/a	PRE	4.7	10.0	10.0	10.0	9.7
5	flufenacet	60	DF	0.6	lb ai/a	PRE	7.3	10.0	9.3	10.0	10.0
6	clomazone	3	ME	0.25	lb ai/a	PRE	3.3	10.0	10.0	8.3	10.0
7	sulfentrazone	75	DF	0.14	lb ai/a	PRE	9.7	10.0	10.0	10.0	10.0
8	ethalfluralin	3	EC	1.13	lb ai/a	PRE	1.7	9.0	9.3	2.3	6.7
9	ethalfluralin	3	EC	0.75	lb ai/a	PRE	3.0	10.0	10.0	8.3	10.0
	clomazone	3	ME	0.25	lb ai/a	PRE					
10	trifluralin	4	EC	1	lb ai/a	PPI	3.0	10.0	10.0	2.0	9.3
	clopyralid	3	EC	0.125	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.25	% v/v	PO1					
11	trifluralin	4	EC	1	lb ai/a	PPI	2.7	10.0	10.0	5.3	9.7
	sulfentrazone	75	DF	0.066	lb ai/a	PO1					
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1					
	NIS		L	0.25	% v/v	PO1					
12	untreated						1.7	4.0	1.0	1.7	2.7
LSD (P=.05)							2.53	2.94	1.31	3.69	3.05
Standard Deviation							1.49	1.74	0.77	2.18	1.80
CV							41.06	18.68	8.6	35.68	20.75

Description						RRPW	RADISH	TURNIP TOP	TURNIP ROOT
Rating Date						6/16/04	6/16/04	7/8/04	7/8/04
Rating Data Type						RATING	YIELD	YIELD	YIELD
Rating Unit							KG/PLOT	KG/PLOT	KG/PLOT
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage			
1	trifluralin	4	EC	1	lb ai/a	PPI	9.3	2.87	6.70	16.05
2	napropramide	50	DF	2	lb ai/a	PRE	10.0	4.95	11.24	14.37
3	s-metolachlor	7.62	EC	1.3	lb ai/a	PRE	10.0	3.95	9.90	16.31
4	dimethenamid-p	6	EC	0.98	lb ai/a	PRE	10.0	1.33	11.38	16.29
5	flufenacet	60	DF	0.6	lb ai/a	PRE	10.0	0.41	8.84	8.56
6	clomazone	3	ME	0.25	lb ai/a	PRE	10.0	0.60	6.41	10.93
7	sulfentrazone	75	DF	0.14	lb ai/a	PRE	10.0	0.05	0.00	0.00
8	ethalfluralin	3	EC	1.13	lb ai/a	PRE	10.0	2.48	9.47	19.22
9	ethalfluralin	3	EC	0.75	lb ai/a	PRE	10.0	0.96	13.35	24.18
	clomazone	3	ME	0.25	lb ai/a	PRE				
10	trifluralin	4	EC	1	lb ai/a	PPI	9.3	3.96	7.96	16.44
	clopyralid	3	EC	0.125	lb ai/a	PO1				
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1				
	NIS		L	0.25	% v/v	PO1				
11	trifluralin	4	EC	1	lb ai/a	PPI	10.0	3.42	6.93	13.13
	sulfentrazone	75	DF	0.066	lb ai/a	PO1				
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1				
	NIS		L	0.25	% v/v	PO1				
12	untreated						1.7	5.77	11.15	23.31
LSD (P=.05)							1.01	1.641	5.301	12.120
Standard Deviation							0.59	0.969	3.130	7.157
CV							6.47	37.82	36.35	48.04

Weed Control in Radish, Rutabaga, & Turnip - HTRC

Dept. of Horticulture, MSU

Description						RUTA TOP	RUTA ROOT
Rating Date						7/20/04	7/20/04
Rating Data Type						YIELD	YIELD
Rating Unit						KG/PLOT	KG/PLOT
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage		
1	trifluralin	4	EC	1	lb ai/a	PPI	5.97	11.29
2	napropramide	50	DF	2	lb ai/a	PRE	9.99	18.65
3	s-metolachlor	7.62	EC	1.3	lb ai/a	PRE	10.31	19.31
4	dimethenamid-p	6	EC	0.98	lb ai/a	PRE	9.92	16.31
5	flufenacet	60	DF	0.6	lb ai/a	PRE	8.08	9.30
6	clomazone	3	ME	0.25	lb ai/a	PRE	6.51	14.10
7	sulfentrazone	75	DF	0.14	lb ai/a	PRE	21.17	20.96
8	ethalfluralin	3	EC	1.13	lb ai/a	PRE	6.07	11.11
9	ethalfluralin	3	EC	0.75	lb ai/a	PRE	11.41	23.22
	clomazone	3	ME	0.25	lb ai/a	PRE		
10	trifluralin	4	EC	1	lb ai/a	PPI	8.30	15.72
	clopyralid	3	EC	0.125	lb ai/a	PO1		
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1		
	NIS		L	0.25	% v/v	PO1		
11	trifluralin	4	EC	1	lb ai/a	PPI	6.08	10.97
	sulfentrazone	75	DF	0.066	lb ai/a	PO1		
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1		
	NIS		L	0.25	% v/v	PO1		
12	untreated						8.76	12.86
LSD (P=.05)							5.071	10.791
Standard Deviation							2.994	6.372
CV							31.92	41.6

Weed Control in Strawberries - HTRC

Project Code: WC 126-04-01 **Location: HTRC Block 25**

Personnel: Bernard H. Zandstra, Michael Particka
Crop: Strawberry **Variety: Mira**
Planting Method: Transplant **Planting Date: 4-30-01**
Spacing: 2 FT **Row Spacing: 6 FT**
Tillage Type: **Study Design: RCB** **Replications: 3**
Plot Size: 6 ft wide x 30 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	RH	Sky	Dew
PRE	4/16/04	1:00 pm	70/52	°F	Dry	7 S	36	45% Cloudy	N

Crop and Weed Information at Application

Date	Crop or Weed	Height or Diameter	Number of Leaves	Density
4/16	STBE = Strawberry			
4/16	COCW = Common chickweed	2-4 in		
4/16	CUDO = Curly dock			
4/16	MATA = Marestail (Horseweed)			
4/16	MWCH = Mayweed chamomile			
4/16	YERO = Yellow rocket	2-6 in		
4/16	WICA = Wild carrot	2-4 in		

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.

Weed Control in Strawberries - HTRC

Dept. of Horticulture, MSU

Trial ID: WC 126-04-01 Study Director:
Location: HTRC Investigator: Dr. Bernard Zandstra

Description							STBE	QUGR	COCW	CUDO	MACH
Rating Date							5/26/04	5/26/04	5/26/04	5/26/04	5/26/04
Rating Data Type							RATING	RATING	RATING	RATING	RATING
Rating Unit											
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
1	napropramide	50	DF	4	lb ai/a	PRE	1.3	6.0	7.0	7.0	3.0
2	terbacil	80	WP	0.4	lb ai/a	PRE	1.7	8.0	10.0	9.0	9.3
3	flumioxazin	51	WDG	0.19	lb ai/a	PRE	2.0	4.3	10.0	10.0	7.0
4	flumioxazin	51	WDG	0.38	lb ai/a	PRE	2.7	6.3	10.0	10.0	9.3
5	oxyfluorfen	2	L	0.5	lb ai/a	PRE	2.3	7.7	3.0	10.0	4.7
6	sulfentrazone	75	DF	0.25	lb ai/a	PRE	1.3	5.7	6.3	10.0	6.0
7	sulfentrazone	75	DF	0.5	lb ai/a	PRE	1.3	5.7	8.3	10.0	8.7
8	dimethenamid-p	6	EC	0.98	lb ai/a	PRE	1.7	4.3	7.0	7.7	9.3
9	napropramide	50	DF	4	lb ai/a	PRE	2.0	1.7	7.3	10.0	10.0
	clopyralid	3	EC	0.188	lb ai/a	LPRE					
10	untreated						1.0	5.3	1.7	7.0	6.0
LSD (P=.05)							1.20	4.77	4.21	4.50	4.78
Standard Deviation							0.70	2.78	2.45	2.62	2.79
CV							40.34	50.55	34.69	28.93	37.98

Description							MATA	STBE	QUGR	MACH	MATA
Rating Date							5/26/04	6/14/04	6/14/04	6/14/04	6/14/04
Rating Data Type							RATING	RATING	RATING	RATING	RATING
Rating Unit											
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
1	napropramide	50	DF	4	lb ai/a	PRE	1.0	1.7	5.7	4.0	1.0
2	terbacil	80	WP	0.4	lb ai/a	PRE	10.0	2.0	7.7	5.3	8.0
3	flumioxazin	51	WDG	0.19	lb ai/a	PRE	1.7	2.0	6.7	3.7	1.3
4	flumioxazin	51	WDG	0.38	lb ai/a	PRE	6.7	4.0	6.7	8.3	5.3
5	oxyfluorfen	2	L	0.5	lb ai/a	PRE	1.7	2.0	8.7	3.0	1.0
6	sulfentrazone	75	DF	0.25	lb ai/a	PRE	5.0	1.7	4.7	4.7	2.7
7	sulfentrazone	75	DF	0.5	lb ai/a	PRE	10.0	1.7	6.3	8.7	8.0
8	dimethenamid-p	6	EC	0.98	lb ai/a	PRE	4.3	2.3	6.0	7.3	6.3
9	napropramide	50	DF	4	lb ai/a	PRE	10.0	2.0	3.7	9.7	9.7
	clopyralid	3	EC	0.188	lb ai/a	LPRE					
10	untreated						1.3	2.0	8.3	5.0	2.3
LSD (P=.05)							2.66	1.54	5.58	5.31	3.38
Standard Deviation							1.55	0.90	3.26	3.09	1.97
CV							30.01	42.22	50.6	51.84	43.16

Weed Control in Strawberries - HTRC

Dept. of Horticulture, MSU

Description						STBE	STBE	STBE	STBE
Rating Date						6/8/04	6/11/04	6/16/04	6/18/04
Rating Data Type						YIELD	YIELD	YIELD	YIELD
Rating Unit						G/PLOT	G/PLOT	G/PLOT	G/PLOT
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
1	napropramide	50	DF	4	lb ai/a	PRE	718.3	1896.3	2555.3	3458.3
2	terbacil	80	WP	0.4	lb ai/a	PRE	1135.7	2854.7	3062.7	3312.0
3	flumioxazin	51	WDG	0.19	lb ai/a	PRE	849.0	1893.3	2930.3	2362.0
4	flumioxazin	51	WDG	0.38	lb ai/a	PRE	628.0	1475.7	1490.3	1787.0
5	oxyfluorfen	2	L	0.5	lb ai/a	PRE	631.7	2210.3	2744.7	2676.7
6	sulfentrazone	75	DF	0.25	lb ai/a	PRE	1026.7	2779.0	3287.0	3702.0
7	sulfentrazone	75	DF	0.5	lb ai/a	PRE	1284.7	3208.7	3504.3	3922.7
8	dimethenamid-p	6	EC	0.98	lb ai/a	PRE	881.7	1940.0	1921.7	2587.7
9	napropramide	50	DF	4	lb ai/a	PRE	217.7	1832.0	2193.7	2585.7
	clopyralid	3	EC	0.188	lb ai/a	LPRE				
10	untreated						716.0	1989.3	3434.3	3740.3
LSD (P=.05)							697.33	1177.58	1473.54	1777.12
Standard Deviation							406.50	686.45	858.98	1035.94
CV							50.25	31.09	31.67	34.38

Description						STBE	STBE	STBE	STBE
Rating Date						6/21/04	6/23/04	6/25/04	
Rating Data Type						YIELD	YIELD	YIELD	TOT YIELD
Rating Unit						G/PLOT	G/PLOT	G/PLOT	KG/PLOT
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
1	napropramide	50	DF	4	lb ai/a	PRE	3335.3	779.3	655.3	13.40
2	terbacil	80	WP	0.4	lb ai/a	PRE	2339.7	1234.0	706.7	14.65
3	flumioxazin	51	WDG	0.19	lb ai/a	PRE	2047.7	737.0	540.0	11.36
4	flumioxazin	51	WDG	0.38	lb ai/a	PRE	1651.7	559.0	323.3	7.92
5	oxyfluorfen	2	L	0.5	lb ai/a	PRE	2563.0	1017.0	753.7	12.60
6	sulfentrazone	75	DF	0.25	lb ai/a	PRE	2657.0	1214.3	856.0	15.52
7	sulfentrazone	75	DF	0.5	lb ai/a	PRE	3447.3	870.7	794.7	17.03
8	dimethenamid-p	6	EC	0.98	lb ai/a	PRE	2265.3	830.7	586.7	11.01
9	napropramide	50	DF	4	lb ai/a	PRE	1927.0	820.7	466.3	10.04
	clopyralid	3	EC	0.188	lb ai/a	LPRE				
10	untreated						3465.0	807.0	1067.7	15.22
LSD (P=.05)							1541.47	903.31	569.16	6.054
Standard Deviation							898.58	526.57	331.78	3.529
CV							34.97	59.37	49.15	27.41

Weed Control in Apple

Project Code: WC 128-04-01 **Location: HTRC Block 45**

Personnel: Bernard H. Zandstra, Michael Particka
Crop: Apple **Variety: several**
Planting Method: Transplant **Planting Date: 5/24/94**
Spacing: 15 FT **Row Spacing: 20 FT**
Tillage Type: **Study Design: RCB** **Replications: 3**
Plot Size: 11 ft wide x 35 ft long, 2 trees/plot

Soil Type: Marlette Fine Sandy Loam **OM: 2.1%** **pH: 6.0**
Sand: 56% **Silt: 29%** **Clay: 15%** **CEC: 7.0**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
LPRE	5/5/04	10:00 am	50/50	°F	Dry	8 W	46	Clear	N
PO1	6/8/04	11:00 am	87/74	°F	Dry	3 SW	55	20% Cloudy	N

Crop and Weed Information at Application

Date	Crop or Weed	Height or Diameter	Number of Leaves	Density
5/5	Apple			
5/5	BYGR = Barnyardgrass			
5/5	GRFT = Green foxtail			
5/5	QUGR = Quackgrass			
5/5	ALFA = Alfalfa			
5/5	COGR = Common groundsel			
5/5	DAND = Dandelion			
5/5	REFE = Red fescue			
5/5	WICA = Wild carrot			

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.
3. One boom pass on each side of row

Weed Control in Apple

Dept. of Horticulture, MSU

Trial ID: WC 128-04-01 Study Director:
Location: HTRC Block 140-148 Investigator: Dr. Bernard Zandstra

Description						APPLE	QUGR	REFE	ALFA	COGR
Rating Date						6/8/04	6/8/04	6/8/04	6/8/04	6/8/04
Rating Data Type						RATING	RATING	RATING	RATING	RATING
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
1	diuron	80	DF	3	lb ai/a	LPRE	1.0	9.3	10.0	7.7	9.7
	glyphosate	5.5	L	1	lb ai/a	LPRE					
2	flumioxazin	51	WDG	0.383	lb ai/a	LPRE	1.0	8.3	10.0	9.3	10.0
	glyphosate	5.5	L	1	lb ai/a	LPRE					
3	flumioxazin	51	WDG	0.383	lb ai/a	LPRE	1.0	9.3	9.7	4.3	10.0
	glufosinate	1	L	1	lb ai/a	LPRE					
4	diuron	80	DF	3	lb ai/a	LPRE	1.0	10.0	10.0	6.3	10.0
	glufosinate	1	L	1	lb ai/a	LPRE					
5	diuron	80	DF	3	lb ai/a	LPRE	1.0	9.3	10.0	4.0	10.0
	paraquat	3	L	0.5	lb ai/a	LPRE					
	NIS		L	0.25	% v/v	LPRE					
	carfentrazone	2	EC	0.03	lb ai/a	EPO					
	glyphosate	5.5	L	1	lb ai/a	EPO					
	AMS	100	DF	2	% ai/v	EPO					
6	diuron	80	DF	3	lb ai/a	LPRE	1.0	10.0	9.7	8.0	10.0
	paraquat	3	L	0.5	lb ai/a	LPRE					
	NIS		L	0.25	% v/v	LPRE					
	diuron	80	DF	3	lb ai/a	EPO					
	carfentrazone	2	EC	0.03	lb ai/a	EPO					
	COC		L	1	% v/v	EPO					
7	flumioxazin	51	WDG	0.383	lb ai/a	LPRE	1.0	9.7	10.0	9.3	10.0
	paraquat	3	L	0.5	lb ai/a	LPRE					
	NIS		L	0.25	% v/v	LPRE					
	flumioxazin	51	WDG	0.383	lb ai/a	EPO					
	carfentrazone	2	EC	0.03	lb ai/a	EPO					
	COC		L	1	% v/v	EPO					
8	diuron	80	DF	3	lb ai/a	LPRE	1.0	9.0	8.7	6.7	10.0
	glyphosate	5.5	L	1	lb ai/a	LPRE					
	mesotrione	4	SC	0.188	lb ai/a	EPO					
9	diuron	80	DF	3	lb ai/a	LPRE	1.0	9.7	10.0	8.3	10.0
	paraquat	3	L	0.5	lb ai/a	LPRE					
	NIS		L	0.5	% v/v	LPRE					
	fluroxypyr	1.5	L	0.19	lb ai/a	EPO					
	sethoxydim	1.53	EC	0.19	lb ai/a	EPO					
10	untreated						1.0	3.0	3.0	1.7	1.0
LSD (P=.05)							0.00	1.47	0.94	4.87	0.31
Standard Deviation							0.00	0.85	0.55	2.84	0.18
CV							0.0	9.74	6.02	43.23	2.01

Weed Control in Apple

Dept. of Horticulture, MSU

Description							DAND	WICA	APPLE	GRFT	QUGR
Rating Date							6/8/04	6/8/04	6/16/04	6/16/04	6/16/04
Rating Data Type							RATING	RATING	RATING	RATING	RATING
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
1	diuron	80	DF	3	lb ai/a	LPRE	9.3	7.3	1.0	9.3	8.7
	glyphosate	5.5	L	1	lb ai/a	LPRE					
2	flumioxazin	51	WDG	0.383	lb ai/a	LPRE	10.0	10.0	1.0	10.0	8.3
	glyphosate	5.5	L	1	lb ai/a	LPRE					
3	flumioxazin	51	WDG	0.383	lb ai/a	LPRE	10.0	9.0	1.0	10.0	9.3
	glufosinate	1	L	1	lb ai/a	LPRE					
4	diuron	80	DF	3	lb ai/a	LPRE	10.0	10.0	1.0	8.0	9.7
	glufosinate	1	L	1	lb ai/a	LPRE					
5	diuron	80	DF	3	lb ai/a	LPRE	10.0	10.0	1.0	10.0	9.7
	paraquat	3	L	0.5	lb ai/a	LPRE					
	NIS		L	0.25	% v/v	LPRE					
	carfentrazone	2	EC	0.03	lb ai/a	EPO					
	glyphosate	5.5	L	1	lb ai/a	EPO					
	AMS	100	DF	2	% ai/v	EPO					
6	diuron	80	DF	3	lb ai/a	LPRE	10.0	10.0	1.0	9.7	10.0
	paraquat	3	L	0.5	lb ai/a	LPRE					
	NIS		L	0.25	% v/v	LPRE					
	diuron	80	DF	3	lb ai/a	EPO					
	carfentrazone	2	EC	0.03	lb ai/a	EPO					
	COC		L	1	% v/v	EPO					
7	flumioxazin	51	WDG	0.383	lb ai/a	LPRE	10.0	7.7	1.0	10.0	10.0
	paraquat	3	L	0.5	lb ai/a	LPRE					
	NIS		L	0.25	% v/v	LPRE					
	flumioxazin	51	WDG	0.383	lb ai/a	EPO					
	carfentrazone	2	EC	0.03	lb ai/a	EPO					
	COC		L	1	% v/v	EPO					
8	diuron	80	DF	3	lb ai/a	LPRE	9.7	7.7	1.0	8.3	8.3
	glyphosate	5.5	L	1	lb ai/a	LPRE					
	mesotrione	4	SC	0.188	lb ai/a	EPO					
9	diuron	80	DF	3	lb ai/a	LPRE	9.7	10.0	1.0	10.0	9.3
	paraquat	3	L	0.5	lb ai/a	LPRE					
	NIS		L	0.5	% v/v	LPRE					
	fluroxypyr	1.5	L	0.19	lb ai/a	EPO					
	sethoxydim	1.53	EC	0.19	lb ai/a	EPO					
10	untreated						1.0	1.0	1.0	1.0	2.0
LSD (P=.05)							0.80	4.03	0.00	1.79	1.80
Standard Deviation							0.47	2.35	0.00	1.04	1.05
CV							5.21	28.45	0.0	12.07	12.29

Weed Control in Apple

Dept. of Horticulture, MSU

Description							ALFA	COGR	DAND	WICA	APPLE
Rating Date							6/16/04	6/16/04	6/16/04	6/16/04	8/5/04
Rating Data Type							RATING	RATING	RATING	RATING	RATING
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
1	diuron	80	DF	3	lb ai/a	LPRE	9.0	10.0	9.7	5.3	1.0
	glyphosate	5.5	L	1	lb ai/a	LPRE					
2	flumioxazin	51	WDG	0.383	lb ai/a	LPRE	7.3	10.0	9.7	9.7	1.0
	glyphosate	5.5	L	1	lb ai/a	LPRE					
3	flumioxazin	51	WDG	0.383	lb ai/a	LPRE	5.0	10.0	10.0	10.0	1.0
	glufosinate	1	L	1	lb ai/a	LPRE					
4	diuron	80	DF	3	lb ai/a	LPRE	2.3	10.0	10.0	10.0	1.0
	glufosinate	1	L	1	lb ai/a	LPRE					
5	diuron	80	DF	3	lb ai/a	LPRE	8.7	10.0	10.0	10.0	1.0
	paraquat	3	L	0.5	lb ai/a	LPRE					
	NIS		L	0.25	% v/v	LPRE					
	carfentrazone	2	EC	0.03	lb ai/a	EPO					
	glyphosate	5.5	L	1	lb ai/a	EPO					
	AMS	100	DF	2	% ai/v	EPO					
6	diuron	80	DF	3	lb ai/a	LPRE	7.3	10.0	10.0	10.0	1.0
	paraquat	3	L	0.5	lb ai/a	LPRE					
	NIS		L	0.25	% v/v	LPRE					
	diuron	80	DF	3	lb ai/a	EPO					
	carfentrazone	2	EC	0.03	lb ai/a	EPO					
	COC		L	1	% v/v	EPO					
7	flumioxazin	51	WDG	0.383	lb ai/a	LPRE	9.3	10.0	10.0	9.7	1.0
	paraquat	3	L	0.5	lb ai/a	LPRE					
	NIS		L	0.25	% v/v	LPRE					
	flumioxazin	51	WDG	0.383	lb ai/a	EPO					
	carfentrazone	2	EC	0.03	lb ai/a	EPO					
	COC		L	1	% v/v	EPO					
8	diuron	80	DF	3	lb ai/a	LPRE	5.3	10.0	9.3	9.3	1.0
	glyphosate	5.5	L	1	lb ai/a	LPRE					
	mesotrione	4	SC	0.188	lb ai/a	EPO					
9	diuron	80	DF	3	lb ai/a	LPRE	8.7	10.0	10.0	10.0	1.0
	paraquat	3	L	0.5	lb ai/a	LPRE					
	NIS		L	0.5	% v/v	LPRE					
	fluroxypyr	1.5	L	0.19	lb ai/a	EPO					
	sethoxydim	1.53	EC	0.19	lb ai/a	EPO					
10	untreated						1.0	1.0	1.0	1.0	1.0
LSD (P=.05)							3.07	0.00	0.53	2.43	0.00
Standard Deviation							1.79	0.00	0.31	1.42	0.00
CV							27.97	0.0	3.46	16.65	0.0

Weed Control in Apple

Dept. of Horticulture, MSU

Description						BYGR	GRFT	DAND	WICA
Rating Date						8/5/04	8/5/04	8/5/04	8/5/04
Rating Data Type						RATING	RATING	RATING	RATING
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
1	diuron	80	DF	3	lb ai/a	LPRE	4.3	4.7	5.7	6.7
	glyphosate	5.5	L	1	lb ai/a	LPRE				
2	flumioxazin	51	WDG	0.383	lb ai/a	LPRE	7.7	7.3	8.0	7.7
	glyphosate	5.5	L	1	lb ai/a	LPRE				
3	flumioxazin	51	WDG	0.383	lb ai/a	LPRE	8.7	8.3	9.3	9.7
	glufosinate	1	L	1	lb ai/a	LPRE				
4	diuron	80	DF	3	lb ai/a	LPRE	2.0	4.0	8.3	9.3
	glufosinate	1	L	1	lb ai/a	LPRE				
5	diuron	80	DF	3	lb ai/a	LPRE	2.0	2.0	9.0	9.7
	paraquat	3	L	0.5	lb ai/a	LPRE				
	NIS		L	0.25	% v/v	LPRE				
	carfentrazone	2	EC	0.03	lb ai/a	EPO				
	glyphosate	5.5	L	1	lb ai/a	EPO				
	AMS	100	DF	2	% ai/v	EPO				
6	diuron	80	DF	3	lb ai/a	LPRE	2.0	2.3	8.0	10.0
	paraquat	3	L	0.5	lb ai/a	LPRE				
	NIS		L	0.25	% v/v	LPRE				
	diuron	80	DF	3	lb ai/a	EPO				
	carfentrazone	2	EC	0.03	lb ai/a	EPO				
	COC		L	1	% v/v	EPO				
7	flumioxazin	51	WDG	0.383	lb ai/a	LPRE	9.7	10.0	9.3	9.7
	paraquat	3	L	0.5	lb ai/a	LPRE				
	NIS		L	0.25	% v/v	LPRE				
	flumioxazin	51	WDG	0.383	lb ai/a	EPO				
	carfentrazone	2	EC	0.03	lb ai/a	EPO				
	COC		L	1	% v/v	EPO				
8	diuron	80	DF	3	lb ai/a	LPRE	2.7	3.0	9.0	9.7
	glyphosate	5.5	L	1	lb ai/a	LPRE				
	mesotrione	4	SC	0.188	lb ai/a	EPO				
9	diuron	80	DF	3	lb ai/a	LPRE	5.7	6.7	8.3	10.0
	paraquat	3	L	0.5	lb ai/a	LPRE				
	NIS		L	0.5	% v/v	LPRE				
	fluroxypyr	1.5	L	0.19	lb ai/a	EPO				
	sethoxydim	1.53	EC	0.19	lb ai/a	EPO				
10	untreated						1.7	1.7	2.0	7.0
LSD (P=.05)							3.88	4.19	3.16	4.44
Standard Deviation							2.26	2.44	1.84	2.59
CV							48.85	48.85	23.89	28.98

Weed Control in Blueberry - HTRC

Project Code: WC 127-04-02 **Location: HTRC Block 114**

Personnel: Bernard H. Zandstra, Michael Particka
Crop: Blueberry **Variety: Jersey**
Planting Method: Transplant **Planting Date: 1991**
Spacing: 4 FT **Row Spacing: 10 FT**
Tillage Type: **Study Design: RCB** **Replications: 3**
Plot Size: 6 ft wide x 20 ft long

Soil Type: Capac Loam **OM: 5.0%** **pH: 5.2**
Sand: 61% **Silt: 15%** **Clay: 24%** **CEC: 16.1**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
LPRE	4/2/04	3:00 pm	56/55	°F	Dry	9 SE	47	Clear	N

Crop and Weed Information at Application

Date	Crop or Weed	Height or Diameter	Number of Leaves	Density
5-18	BLBE = Blueberry	5-6 ft		

Notes and Comments
1. Sprays applied with 2 nozzle boom FF110002, 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.
3. Application made with 2 nozzle boom with one pass on each side of row.
4. 5 plants per plot

Weed Control in Blueberry - HTRC

Dept. of Horticulture, MSU

Trial ID: WC 127-04-02 Study Director: Mike Particka

Location: HTRC Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	BLBE 6/8/04 RATING	QUGR 6/8/04 RATING	REFE 6/8/04 RATING	RESO 6/8/04 RATING	ROFB 6/8/04 RATING	WICA 6/8/04 RATING
1	glufosinate	1	L	0.75	lb ai/a	LPRE	1.3	5.7	5.3	7.0	4.7	4.3
2	glufosinate	1	L	1	lb ai/a	LPRE	2.0	7.7	7.3	5.3	5.0	3.7
3	glufosinate	1	L	0.5	lb ai/a	LPRE	1.7	9.7	9.0	10.0	3.3	9.7
	diuron	80	DF	1.6	lb ai/a	LPRE						
	terbacil	80	WP	0.8	lb ai/a	LPRE						
4	glufosinate	1	L	0.75	lb ai/a	LPRE	1.7	10.0	10.0	10.0	5.7	9.0
	diuron	80	DF	1.6	lb ai/a	LPRE						
	terbacil	80	WP	0.8	lb ai/a	LPRE						
5	glufosinate	1	L	1	lb ai/a	LPRE	1.0	9.7	9.3	10.0	4.0	10.0
	diuron	80	DF	1.6	lb ai/a	LPRE						
	terbacil	80	WP	0.8	lb ai/a	LPRE						
6	glufosinate	1	L	0.75	lb ai/a	LPRE	1.7	8.3	10.0	10.0	9.0	7.0
	flumioxazin	51	WDG	0.383	lb ai/a	LPRE						
7	glyphosate	5.5	L	1	lb ai/a	LPRE	2.3	9.7	10.0	10.0	9.7	9.7
	diuron	80	DF	1.6	lb ai/a	LPRE						
	terbacil	80	WP	0.8	lb ai/a	LPRE						
8	paraquat	3	L	1	lb ai/a	LPRE	1.3	9.7	10.0	9.7	5.0	10.0
	diuron	80	DF	1.6	lb ai/a	LPRE						
	terbacil	80	WP	0.8	lb ai/a	LPRE						
9	untreated						1.3	2.7	3.0	1.0	1.0	1.7
LSD (P=.05)							1.24	3.56	3.50	3.36	4.86	4.07
Standard Deviation							0.71	2.06	2.02	1.94	2.81	2.35
CV							44.81	25.37	24.58	23.96	53.44	32.55

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	BLBE 7/9/04 RATING	REFE 7/9/04 RATING	BHPL 7/9/04 RATING	ROFB 7/9/04 RATING	WICA 7/9/04 RATING
1	glufosinate	1	L	0.75	lb ai/a	LPRE	1.0	3.7	3.0	3.0	1.7
2	glufosinate	1	L	1	lb ai/a	LPRE	1.7	3.7	5.3	4.0	3.0
3	glufosinate	1	L	0.5	lb ai/a	LPRE	1.0	9.0	7.7	3.0	9.3
	diuron	80	DF	1.6	lb ai/a	LPRE					
	terbacil	80	WP	0.8	lb ai/a	LPRE					
4	glufosinate	1	L	0.75	lb ai/a	LPRE	1.3	9.7	7.3	5.0	9.0
	diuron	80	DF	1.6	lb ai/a	LPRE					
	terbacil	80	WP	0.8	lb ai/a	LPRE					
5	glufosinate	1	L	1	lb ai/a	LPRE	1.0	9.3	9.3	5.0	9.7
	diuron	80	DF	1.6	lb ai/a	LPRE					
	terbacil	80	WP	0.8	lb ai/a	LPRE					
6	glufosinate	1	L	0.75	lb ai/a	LPRE	1.0	8.7	10.0	4.0	8.0
	flumioxazin	51	WDG	0.383	lb ai/a	LPRE					
7	glyphosate	5.5	L	1	lb ai/a	LPRE	1.7	9.7	9.0	7.7	9.3
	diuron	80	DF	1.6	lb ai/a	LPRE					
	terbacil	80	WP	0.8	lb ai/a	LPRE					
8	paraquat	3	L	1	lb ai/a	LPRE	1.7	7.0	9.3	4.0	10.0
	diuron	80	DF	1.6	lb ai/a	LPRE					
	terbacil	80	WP	0.8	lb ai/a	LPRE					
9	untreated						2.0	5.7	3.0	1.7	2.3
LSD (P=.05)							1.09	5.12	4.03	4.32	2.69
Standard Deviation							0.63	2.96	2.33	2.50	1.55
CV							46.05	40.12	32.73	60.18	22.42

Weed Control in Blueberry - SWMREC

Project Code: WC 127-04-01 **Location: SWMREC**

Personnel: Bernard H. Zandstra, Eric Hanson, Michael Particka
Crop: Blueberry **Variety: Bluecrop**
Planting Method: Transplant **Planting Date: 1990**
Spacing: 4 FT **Row Spacing: 10 FT**
Tillage Type: **Study Design: RCB** **Replications: 3**
Plot Size: 6 ft wide x 30 ft long

Soil Type: Sandy Clay Loam **OM: 2.1%** **pH: 4.9**
Sand: 67% **Silt: 13%** **Clay: 20%** **CEC: 11.2**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
LPRE	5/10/04	10:00 am	74/65	°F	Damp	5 SW	55	10% Cloudy	N

Crop and Weed Information at Application

Date	Crop or Weed	Height or Diameter	Number of Leaves	Density
5/10	Blueberry			
5/10	BABR = Bald brome			
5/10	REFE = Red fescue	4-6 in		many
5/10	RESO = Red sorrel	6-10 in		moderate

Notes and Comments
1. Sprays applied with 2 nozzle boom FF11002, 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.
3. Application made with 2 nozzle boom with one pass on each side of row.
4. 15 plants per plot

Weed Control in Blueberry - SWMREC

Dept. of Horticulture, MSU

Trial ID: WC 127-04-01 — Study Director: Eric Hanson & Mike Particka

Location: SWMREC — Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	REFE RATING 6/3/04	RESO RATING 6/3/04	BABR RATING 6/3/04	OVERALL WD CONT RATING 6/4/04	RESO RATING 6/4/04	BABR RATING 6/4/04
1	glufosinate	1	L	0.75	lb ai/a	LPRE	6.8	9.3	3.3	2.8	5.3	3.5
2	glufosinate	1	L	1	lb ai/a	LPRE	6.5	9.8	5.3	4.0	7.5	5.0
3	glufosinate	1	L	0.5	lb ai/a	LPRE	10.0	9.0	9.0	8.0	9.0	8.8
	diuron	80	DF	1.6	lb ai/a	LPRE						
	terbacil	80	WP	0.8	lb ai/a	LPRE						
4	glufosinate	1	L	0.75	lb ai/a	LPRE	10.0	10.0	8.8	9.0	9.0	8.5
	diuron	80	DF	1.6	lb ai/a	LPRE						
	terbacil	80	WP	0.8	lb ai/a	LPRE						
5	glufosinate	1	L	1	lb ai/a	LPRE	10.0	10.0	9.0	9.0	10.0	9.5
	diuron	80	DF	1.6	lb ai/a	LPRE						
	terbacil	80	WP	0.8	lb ai/a	LPRE						
6	glufosinate	1	L	0.75	lb ai/a	LPRE	9.5	9.8	8.5	9.3	10.0	9.3
	flumioxazin	51	WDG	0.383	lb ai/a	LPRE						
7	glyphosate	5.5	L	1	lb ai/a	LPRE	10.0	9.5	9.8	8.3	9.0	8.3
	diuron	80	DF	1.6	lb ai/a	LPRE						
	terbacil	80	WP	0.8	lb ai/a	LPRE						
8	paraquat	3	L	1	lb ai/a	LPRE	10.0	10.0	10.0	9.5	10.0	9.8
	diuron	80	DF	1.6	lb ai/a	LPRE						
	terbacil	80	WP	0.8	lb ai/a	LPRE						
9	untreated						3.0	1.0	1.5	1.8	3.0	2.8
LSD (P=.05)							3.31	0.92	2.45	2.15	2.16	2.44
Standard Deviation							2.27	0.63	1.68	1.47	1.48	1.67
CV							26.98	7.28	23.21	21.56	18.27	23.07

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	OVERALL WD CONT RATING 7/12/04	RESO RATING 7/12/04	BABR RATING 7/12/04
1	glufosinate	1	L	0.75	lb ai/a	LPRE	1.3	3.0	1.0
2	glufosinate	1	L	1	lb ai/a	LPRE	1.5	2.5	1.3
3	glufosinate	1	L	0.5	lb ai/a	LPRE	7.0	8.5	8.3
	diuron	80	DF	1.6	lb ai/a	LPRE			
	terbacil	80	WP	0.8	lb ai/a	LPRE			
4	glufosinate	1	L	0.75	lb ai/a	LPRE	8.5	8.5	6.8
	diuron	80	DF	1.6	lb ai/a	LPRE			
	terbacil	80	WP	0.8	lb ai/a	LPRE			
5	glufosinate	1	L	1	lb ai/a	LPRE	7.3	9.8	6.8
	diuron	80	DF	1.6	lb ai/a	LPRE			
	terbacil	80	WP	0.8	lb ai/a	LPRE			
6	glufosinate	1	L	0.75	lb ai/a	LPRE	5.3	7.0	6.0
	flumioxazin	51	WDG	0.383	lb ai/a	LPRE			
7	glyphosate	5.5	L	1	lb ai/a	LPRE	7.0	8.8	8.5
	diuron	80	DF	1.6	lb ai/a	LPRE			
	terbacil	80	WP	0.8	lb ai/a	LPRE			
8	paraquat	3	L	1	lb ai/a	LPRE	9.0	9.5	9.5
	diuron	80	DF	1.6	lb ai/a	LPRE			
	terbacil	80	WP	0.8	lb ai/a	LPRE			
9	untreated						1.0	2.8	1.3
LSD (P=.05)							2.06	2.95	3.19
Standard Deviation							1.41	2.02	2.18
CV							26.64	30.18	39.92

Detecting and Recognizing Herbicide Stress in Blueberries

Investigators:

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Introduction; Priority Addressed:

Simazine (Princep), diuron (Karmex), terbacil (Sinbar) and, to a lesser extent, hexazinone (Velpar) have been basic weed management tools for Michigan blueberries for many years. These herbicides are applied to the soil early in the season to control weeds during the summer. They are effective when applied at rates high enough to control weeds but too low to injure the fruit crop. Excessive rates cause visible leaf injury and can even kill blueberries, but some growers suspect that intermediate rates may have subtle, less recognizable effects on bushes. Others speculate that annual use of these products may result in a chronic stress that limits long-term blueberry productivity. The risk of crop injury is hard to define because it depends on application rates and timing, soil type, bush size/health, irrigation and weather.

These herbicides represent three chemical families, but they all work by disrupting a specific step in photosynthesis. This means that affected plants are not able to trap sunlight and produce carbohydrates effectively. Chlorophyll fluorescence is a convenient way to measure how well the photosythetic apparatus in plants is functioning. Portable fluorometers can be used to measure fluorescence in the field. Other researchers have found that chlorophyll fluorescence is a sensitive indicator of herbicide inhibition in Douglas fir and strawberry leaves. If blueberry responds in a similar way, fluorescence would be a valuable way to study the effects of herbicide carryover from year to year, or the effects of various factors on the risk of herbicide injury. This approach may be equally valuable in tree fruits and grapes, which are also treated with photosynthesis inhibiting herbicides.

Objective and methods:

The purpose of this work was to determine if simazine (Princep), terbacil (Sinbar) and hexazinone (Velpar) affect chlorophyll fluorescence or growth of blueberries. We also wanted to describe the symptoms of injury caused by excessive applications of these products on blueberries.

Bluecrop blueberry bushes at the Southwest Michigan Research and Extension Center in Benton Harbor, Mich. received the following soil applied treatments on 16 Apr, 2004: non-treated control; terbacil (Sinbar) 0.25 lb/acre a.i.; terbacil 1.0 lb; terbacil 4 lb; hexazinone (Velpar) 0.25 lb; hexazinone 1.0 lb; hexazinone 4.0 lb; or simaizine (Princep) 2.0 lb. Herbicides were applied to the soil beneath 2-bush plots, and treatments were replicated four times. Weed pressure was maintained at similar levels in all plots by periodic applications of the postemergent herbicide paraquat (Gramoxone). Chlorophyll fluorescence was measured on one leaf per plot every two to four weeks through the growing season. Presence of herbicide injury symptoms were noted when present.

A second study tested the effects of foliar applications of Sinbar on leaf fluorescence. Branches roughly 1 ft long were sprayed to the point of runoff with solutions of 0, 100, 200, or 400 mg/liter a.i. on 20 May, 2004. Fluorescence was measured on treated leaves every 7 to10 days until mid June.

Results:

The effects of soil applied herbicides on leaf fluorescence are summarized in Figure 1. Velpar at 4.0 lb/acre active ingredient (8 quarts) severely reduced Fv/Fm. Effects were observed on 24 May (about 4 weeks after treatment), and persisted through the entire season. Velpar affected fluorescence before visible symptoms of injury were apparent. Plants treated with 4.0 lb Vepar exhibited herbicide injury (marginal leaf chlorosis and necrosis) on June 22. Symptom severity increased into August, when many leaves had abscised, and remained the same through September. The only other treatment affecting Fv/Fm was Velpar at 1.0 lb, which reduced levels compared to controls on one date later in the season. No symptoms of injury were observed on bushes treated with 1.0 lb Velpar.

The maximum quantum efficiency of photosystem II (Fv/Fm), measured at time intervals after blueberry leaves were sprayed with terbacil (Sinbar), was reduced slightly (Table 1). The effect was not strong and was no longer apparent by 25 days after treatment.

These results indicate that fluorescence has potential for detecting herbicide stress before symptoms of injury become apparent. A limitation of fluorescence was the variability in measurements between bushes receiving the same herbicide treatment. Perhaps this variability could be controlled to a greater extent by leaf selection.

Table 1. Effect of foliar sprays of terbacil applied on 21 May to branches of 'Bluecrop' blueberries on leaf fluorescence, Benton Harbor, Mich.

Terbacil ($mg \cdot L^{-1}$)	Leaf fluorescence (Fv/Fm)			
	24 May	2 June	4 June	15 June
0	0.82a	--	0.71a	0.79
100	0.80a	0.74	0.51b	0.80
200	0.60b	0.73	0.61ab	0.80
400	0.76ab	0.69	0.51b	0.80
P value	0.05	0.62	0.06	0.61
$LSD^{0.05}$	0.158	--	0.160	--

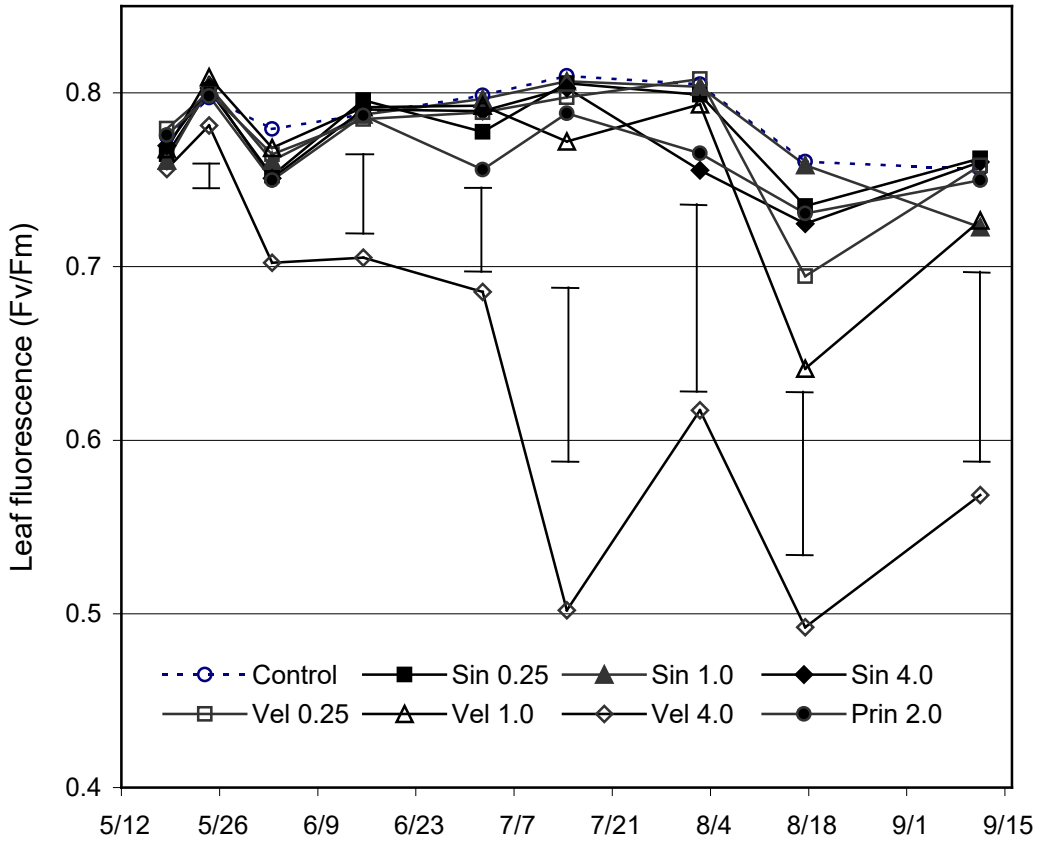

Figure 1. Effect of soil preemergent herbicides applied on 16 Apr to the soil beneath 'Bluecrop' blueberries, on leaf fluorescence. Vertical bars represent one $LSD^{0.05}$.

Casoron Efficacy Trials on Blueberries

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METHODS

Two trials were conducted in 2004 to compare the efficacy of different rates of Casoron CS and Casoron 4G in highbush blueberries.

Trial I was conducted in a mature planting of 'Jersey' blueberries on a research farm in Fennville, Mich. The field had a not been treated with herbicides for several years and had a nearly continual stand of mixed grasses and perennial broadleaf weeds. Treatments were applied on 6 May, and replicated 3 times. Plots contained single rows of 11 bushes. A 40 ft x 5 ft swath was treated beneath the row. Liquid herbicides were applied with a CO2-pressured back-pack sprayer at 20 psi and a volume of 20 gal/acre. Granular materials were applied shaking a perforated cup over the treated areas. Treatments were evaluated on 15 June and 19 July by rating overall weed control and grass control on a scale of 1 (complete weed cover, no control) to 10 (no weeds present). Because the populations of individual weed species were too low or variable to rate numerically, the species present in each plot were noted.

Trial II was conducted in a 14 year-old planting of 'Bluecrop' plants at the Southwest Michigan Research and Extension Center in Benton Harbor, Mich. The field contained a mixture of annual and perennial broadleaf weeds and grasses that are common in commercial fields in Michigan. Treatments were applied on 12 May as described above. Plots were single rows of eight bushes. A 36 x 5 foot swath was treated beneath the bushes. Plots were evaluated on 4 June and 14 July, as described previously, except that grass control was not rated.

RESULTS

The CS formulation of Casoron provided less weed control than the 4G formulation in the Fennville trial (Table 1), but the CS and 4G formulations provided similar weed control in the Benton Harbor trial (Table 3). The weed mix at the Fennville site was dominated by perennials. Perhaps the granular formulation was more effective here, whereas the liquid formulation provided better control of annuals, which tended to account for more of the weed mix at the Benton Harbor site. There was no clear improvement in weed control with increasing rates of either the CS or 4G formulation at the Fennville site (Table 1), whereas the higher rates of both CS and 4G formulations were more effective than the lower rates at the Benton Harbor site.

Weed control provided by the CS and 4G materials was as good or better than that resulting from a standard blueberry treatment (Princep + Sinbar), indicating that Casoron formulations could have a place in blueberry weed control programs if prices are competitive. I think a primary reason Casoron use has been minimal in Michigan blueberries is that growers are not familiar with or equipped to spread granular materials. The liquid formulation could be of value if it controls a different spectrum of weeds than the standard preemergent herbicides (primarily simazine, diuron, terbacil, and norflurazon). Since triazine-resistant weeds are beginning to develop in Michigan blueberries, I think herbicides like casoron with different modes of action will have increasing utility in blueberries.

Lastly, a limitation of these trials was that only 3 replications could be included due to space restrictions. Future work is needed to determine efficacy on specific weeds. If crop destruction was not necessary, we could establish trials in commercial fields during 2005 to learn more about efficacy against specific species.

Casoron Efficacy Trials on Blueberries

Table 1. Effects of Casoron formulations and a standard herbicide treatment on overall weed control and grass control, Fennville, Mich., 2004.

Herbicide(s)	Rate (lb ai/acre)	15 June		19 July	
		Overall[z]	Grass	Overall	Grass
Control		1.0a	3.0	2.3ab	1.0a
Princep + Sinbar	2.7 0.8	1.7a	2.0	1.3a	2.3ab
Casoron CS	2.0	4.0ab	5.3	3.7 bc	4.3 bc
Casoron CS	3.0	3.5ab	3.5	2.3ab	4.0abc
Casoron CS	4.0	2.3a	3.3	3.0a	2.3ab
Casoron 4G	2.0	5.3 bc	6.5	4.0 bc	5.7 c
Casoron 4G	3.0	5.8 bc	6.0	5.3 cd	7.0 c
Casoron 4G	4.0	7.7 c	7.0	7.0 d	6.7 c
P value		0.00	0.14	0.01	0.01

[z]ratings on a scale of 1 (no control) to 10 (complete control).

Table 2. Weeds present on 15 June in herbicide plots in Fennville, Mich., 2004.[z]

Herbicide, rates (lb ai/acre)	Annual grass	Black-berry	Dew-berry	False dandelion	Golden-rod	Red sorrel	Rushes	Sedges	Virginia creeper
Control	xxx	xx	xxx		xxx	xxx			
Princep 2.7, Sinbar 0.8	xxx	x	xx	x	xx	x			
Casoron CS 2.0	xx		xxx		xx			x	x
Casoron CS 3.0	xx	xx	xxx		xxx	xx	xx	x	
Casoron CS 4.0	xxx	xxx	xxx	x	xxx	x	x		
Casoron 4G 2.0	x	xx	x	x	xx	x	xx		x
Casoron 4G 3.0	x		xx		x		xx	x	
Casoron 4G 4.0			x		x		x		

[z]x's indicate the number of plots containing weed (out of 3).

Table 3. Effects of Casoron formulations and a standard herbicide treatment on overall weed control, Benton Harbor, Mich., 2004.

Herbicide(s)	Rate (lb ai/acre)	Overall control[z]	
		4 June	14 July
Control		1.7a	1.0a
Princep + Sinbar	2.7, 0.8	6.0 bc	5.3 cd
Casoron CS	2.0	4.0 b	2.7ab
Casoron CS	4.0	6.0 bc	6.7 d
Casoron 4G	2.0	4.7 b	3.7 bc
Casoron 4G	4.0	7.0 c	6.3 d
P-value		0.001	0.001

[z]ratings on a scale of 1 (no control) to 10 (complete control).

Table 4. Weeds present on 4 June in herbicide plots in Fennville, Mich., 2004.

Herbicide, rates (lb ai/acre)	Wild oats	*Rubus* sp.	False dandelion	Mares -tail	Red sorrel	Yellow woodsorrel	Horse-nettle	Pepper-weed	Quack-grass
Control	xxx		xxx	xx	xxx		x		x
Princep 2.7, Sinbar 0.8	xx		xx		xx	x	xx		
Casoron CS 2.0	xxx		x	x	xx		x	x	x
Casoron CS 4.0	xx		x		x	x		x	x
Casoron 4G 2.0	x	xx	x		x	x	x		xx
Casoron 4G 4.0	x	x	xx			xx	x		xx

Weed Control in Cherry - HTRC

Project Code: WC 128-04-02 **Location: HTRC Block 13-16**

Personnel: Bernard H. Zandstra, Michael Particka
Crop: Cherry **Variety: Montmorency**
Planting Method: Transplant **Planting Date: 1986**
Spacing: 15 FT **Row Spacing: 20 FT**
Tillage Type: **Study Design: RCB** **Replications: 3**
Plot Size: 11 ft wide x 30 ft long

Soil Type: Marlette Fine Sandy Loam **OM: 1.5%** **pH: 6.1**
Sand: 59% **Silt: 28%** **Clay: 13%** **CEC: 3.8**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
LPRE	5/5/04	1:30 pm	60/	°F			35		
PO1	6/8/04	11:55 am	87/74	°F	Dry	7 SW	55	30% Cloudy	N

Crop and Weed Information at Application

Date	Crop or Weed	Height or Diameter	Number of Leaves	Density
5/5	Cherry			
5/5	ORGR = Orchardgrass			
5/5	DAND = Dandelion			
5/5	FAPA = Fall panicum			
5/5	RECL = Red clover			
5/5	WICA = Wild Carrot			

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.

Weed Control in Cherry - HTRC

Dept. of Horticulture, MSU

Trial ID: WC 128-04-02 Study Director:
Location: HTRC Block 13-16 Investigator: Dr. Bernard Zandstra

Description						CHERRY	ORGR	DAND	RECL	WICA
Rating Date						5/26/04	5/26/04	5/26/04	5/26/04	5/26/04
Rating Data Type						RATING	RATING	RATING	RATING	RATING
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
1	rimsulfuron	25	DF	0.03125	lb ai/a	LPRE	1.0	10.0	10.0	9.5	9.0
	glyphosate	4	L	1	lb ai/a	LPRE					
	NIS		L	0.25	% v/v	LPRE					
2	rimsulfuron	25	DF	0.0625	lb ai/a	LPRE	1.0	9.0	10.0	9.7	9.0
	glyphosate	4	L	1	lb ai/a	LPRE					
	NIS		L	0.25	% v/v	LPRE					
3	rimsulfuron	25	DF	0.125	lb ai/a	LPRE	1.0	10.0	9.7	10.0	8.7
	glyphosate	4	L	1	lb ai/a	LPRE					
	NIS		L	0.25	% v/v	LPRE					
4	terbacil	80	WP	1	lb ai/a	LPRE	1.0	9.3	9.0	10.0	9.3
	glyphosate	4	L	1	lb ai/a	LPRE					
	NIS		L	0.25	% v/v	LPRE					
5	diuron	80	DF	3	lb ai/a	LPRE	1.0	9.3	9.7	10.0	3.7
	glyphosate	4	L	1	lb ai/a	LPRE					
	NIS		L	0.25	% v/v	LPRE					
6	simazine	90	WDG	3	lb ai/a	LPRE	1.0	10.0	9.7	9.3	6.0
	glyphosate	4	L	1	lb ai/a	LPRE					
	NIS		L	0.25	% v/v	LPRE					
7	flumioxazin	51	WDG	0.383	lb ai/a	LPRE	1.0	10.0	10.0	10.0	9.7
	glyphosate	4	L	1	lb ai/a	LPRE					
	NIS		L	0.25	% v/v	LPRE					
8	flumioxazin	51	WDG	0.765	lb ai/a	LPRE	1.0	10.0	10.0	10.0	9.7
	glyphosate	4	L	1	lb ai/a	LPRE					
	NIS		L	0.25	% v/v	LPRE					
9	glyphosate	4	L	1	lb ai/a	LPRE	1.0	9.0	9.7	8.3	7.7
	NIS		L	0.25	% v/v	LPRE					
	glyphosate	4	L	1	lb ai/a	EPO					
	NIS		L	0.25	% v/v	EPO					
10	untreated						1.0	1.0	1.0	1.0	1.0
LSD (P=.05)							0.00	1.34	1.14	0.85	2.35
Standard Deviation							0.00	0.78	0.66	0.50	1.36
CV							0.0	8.86	7.44	5.65	18.49

Weed Control in Cherry - HTRC

Dept. of Horticulture, MSU

Description						CHERRY	QUGR	RECL	WICA	CHERRY
Rating Date						6/16/04	6/16/04	6/16/04	6/16/04	8/5/04
Rating Data Type						RATING	RATING	RATING	RATING	RATING
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
1	rimsulfuron	25	DF	0.03125	lb ai/a	LPRE	1.0	9.5	9.0	8.0	1.0
	glyphosate	4	L	1	lb ai/a	LPRE					
	NIS		L	0.25	% v/v	LPRE					
2	rimsulfuron	25	DF	0.0625	lb ai/a	LPRE	1.0	9.7	10.0	8.7	1.0
	glyphosate	4	L	1	lb ai/a	LPRE					
	NIS		L	0.25	% v/v	LPRE					
3	rimsulfuron	25	DF	0.125	lb ai/a	LPRE	1.3	9.7	10.0	8.7	1.3
	glyphosate	4	L	1	lb ai/a	LPRE					
	NIS		L	0.25	% v/v	LPRE					
4	terbacil	80	WP	1	lb ai/a	LPRE	1.0	9.0	10.0	9.0	1.0
	glyphosate	4	L	1	lb ai/a	LPRE					
	NIS		L	0.25	% v/v	LPRE					
5	diuron	80	DF	3	lb ai/a	LPRE	1.0	9.3	10.0	4.7	1.0
	glyphosate	4	L	1	lb ai/a	LPRE					
	NIS		L	0.25	% v/v	LPRE					
6	simazine	90	WDG	3	lb ai/a	LPRE	1.0	9.3	10.0	6.3	1.0
	glyphosate	4	L	1	lb ai/a	LPRE					
	NIS		L	0.25	% v/v	LPRE					
7	flumioxazin	51	WDG	0.383	lb ai/a	LPRE	1.0	10.0	10.0	8.7	1.0
	glyphosate	4	L	1	lb ai/a	LPRE					
	NIS		L	0.25	% v/v	LPRE					
8	flumioxazin	51	WDG	0.765	lb ai/a	LPRE	1.0	10.0	10.0	9.0	1.0
	glyphosate	4	L	1	lb ai/a	LPRE					
	NIS		L	0.25	% v/v	LPRE					
9	glyphosate	4	L	1	lb ai/a	LPRE	1.0	10.0	9.0	7.3	1.0
	NIS		L	0.25	% v/v	LPRE					
	glyphosate	4	L	1	lb ai/a	EPO					
	NIS		L	0.25	% v/v	EPO					
10	untreated						1.0	1.0	1.0	1.0	1.0
LSD (P=.05)							0.32	0.99	0.84	2.76	0.32
Standard Deviation							0.19	0.57	0.49	1.60	0.19
CV							18.18	6.57	5.45	22.43	18.18

Weed Control in Cherry - HTRC

Dept. of Horticulture, MSU

Description						RECL	FAPA	WICA
Rating Date						8/5/04	8/5/04	8/5/04
Rating Data Type						RATING	RATING	RATING
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage			
1	rimsulfuron	25	DF	0.03125	lb ai/a	LPRE	7.5	10.0	5.0
	glyphosate	4	L	1	lb ai/a	LPRE			
	NIS		L	0.25	% v/v	LPRE			
2	rimsulfuron	25	DF	0.0625	lb ai/a	LPRE	7.3	10.0	6.0
	glyphosate	4	L	1	lb ai/a	LPRE			
	NIS		L	0.25	% v/v	LPRE			
3	rimsulfuron	25	DF	0.125	lb ai/a	LPRE	7.7	10.0	5.3
	glyphosate	4	L	1	lb ai/a	LPRE			
	NIS		L	0.25	% v/v	LPRE			
4	terbacil	80	WP	1	lb ai/a	LPRE	9.0	10.0	8.0
	glyphosate	4	L	1	lb ai/a	LPRE			
	NIS		L	0.25	% v/v	LPRE			
5	diuron	80	DF	3	lb ai/a	LPRE	9.3	10.0	3.3
	glyphosate	4	L	1	lb ai/a	LPRE			
	NIS		L	0.25	% v/v	LPRE			
6	simazine	90	WDG	3	lb ai/a	LPRE	7.3	4.3	3.0
	glyphosate	4	L	1	lb ai/a	LPRE			
	NIS		L	0.25	% v/v	LPRE			
7	flumioxazin	51	WDG	0.383	lb ai/a	LPRE	7.3	10.0	5.0
	glyphosate	4	L	1	lb ai/a	LPRE			
	NIS		L	0.25	% v/v	LPRE			
8	flumioxazin	51	WDG	0.765	lb ai/a	LPRE	6.0	10.0	5.3
	glyphosate	4	L	1	lb ai/a	LPRE			
	NIS		L	0.25	% v/v	LPRE			
9	glyphosate	4	L	1	lb ai/a	LPRE	9.0	8.3	6.7
	NIS		L	0.25	% v/v	LPRE			
	glyphosate	4	L	1	lb ai/a	EPO			
	NIS		L	0.25	% v/v	EPO			
10	untreated						1.0	1.0	1.0
LSD (P=.05)							3.96	2.02	4.22
Standard Deviation							2.30	1.17	2.45
CV							32.18	13.98	50.38

Matrix Carryover in Cucumber, Snapbean, and Sugarbeet - HTRC

Project Code: WC 101-03-05 **Location: HTRC Block 66**

Personnel: Bernard H. Zandstra, Michael Particka
Crop: Cucumber, Snapbean, Sugarbeet **Variety: Vlaspik, Hercules, E-17**
Planting Method: seeded **Planting Date: 6/4/04**
Spacing: 3 IN **Row Spacing: 14 IN**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 20 ft wide x 50 ft long

Soil Type: Capac Loam **OM: 1.8%** **pH: 6.5**
Sand: 48% **Silt: 27%** **Clay: 25%** **CEC: 8.7**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
	8/21/03	11:00 am	85/74	°F	Dry	5 SW	61	10% Cloudy	N

Crop and Weed Information at Application

Date	Crop or Weed	Height or Diameter	Number of Leaves	Density
6/28	SNBE = Snapbean			
6/28	CUKE = Cucumber			
6/28	SUBE = Sugarbeet			

Notes and Comments

1. Sprays applied with 16 nozzle boom FF8002, 20 gpa, 30 psi, 3.2 mph, CO_2 tractor mounted sprayer.
2. Weed injury ratings on scale of 1-10: 1 = no injury, 10 = complete kill.
3. Herbicide treatments applied in August of 2003.
4. Cucumber, snapbean, and sugarbeet planted across 2003 plots.
5. Harvested 12 ft of three 14 inch rows of cucumber, snapbean, and sugarbeet.
6. Sugarbeet and snapbean were treated with Dual Magnum for weed control in 2004. Cucumbers were treated with Curbit.

Matrix Carryover in Cucumber, Snapbean, and Sugarbeet - HTRC

Dept. of Horticulture, MSU

Trial ID: WC 101-03-05 Study Director:
Location: HTRC Investigator: Dr. Bernard Zandstra

Description							SNBE	SUBE	CUCU	CUKE VINE
Rating Date							6/28/04	6/28/04	6/28/04	7/30/04
Rating Data Type							RATING	RATING	RATING	YIELD
Rating Unit										KG/12 FT
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
1	untreated						4.3	1.3	2.0	7.27
2	rimsulfuron	25	DF	0.032	lb ai/a		3.0	1.3	1.3	6.99
3	rimsulfuron	25	DF	0.063	lb ai/a		2.0	1.3	1.3	6.83
4	rimsulfuron	25	DF	0.125	lb ai/a		2.0	4.7	1.3	8.51
5	rimsulfuron	25	DF	0.25	lb ai/a		3.0	6.3	2.7	6.79
6	halosulfuron	75	WG	0.047	lb ai/a		5.7	7.3	1.7	6.03
7	halosulfuron	75	WG	0.094	lb ai/a		1.3	6.3	1.0	10.07
8	sulfentrazone	4	F	0.25	lb ai/a		2.0	6.3	3.3	6.99
9	flumioxazin	51	WG	0.096	lb ai/a		5.0	4.3	2.0	6.00
10	metribuzin	75	DF	0.5	lb ai/a		1.3	4.0	1.0	9.71
LSD (P=.05)							3.92	4.30	2.31	4.512
Standard Deviation							2.29	2.51	1.35	2.630
CV							77.11	57.85	76.33	34.99

Description							CUKE FRUIT	CUKE 1'S	CUKE 2'S
Rating Date							7/30/04	7/30/04	7/30/04
Rating Data Type							YIELD	NO. 1 SIZE	NO. 2 SIZE
Rating Unit							KG/12 FT	GRAMS	GRAMS
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage			
1	untreated						10.55	255.7	751.7
2	rimsulfuron	25	DF	0.032	lb ai/a		7.51	333.7	606.0
3	rimsulfuron	25	DF	0.063	lb ai/a		8.49	252.0	911.0
4	rimsulfuron	25	DF	0.125	lb ai/a		9.33	315.3	1045.3
5	rimsulfuron	25	DF	0.25	lb ai/a		8.87	230.3	873.0
6	halosulfuron	75	WG	0.047	lb ai/a		7.87	196.0	552.3
7	halosulfuron	75	WG	0.094	lb ai/a		12.44	380.7	1622.7
8	sulfentrazone	4	F	0.25	lb ai/a		9.00	362.7	1314.0
9	flumioxazin	51	WG	0.096	lb ai/a		6.77	218.7	883.3
10	metribuzin	75	DF	0.5	lb ai/a		10.65	280.7	1046.0
LSD (P=.05)							6.948	167.34	692.73
Standard Deviation							4.050	97.55	403.82
CV							44.28	34.52	42.04

Matrix Carryover in Cucumber, Snapbean, and Sugarbeet - HTRC

Dept. of Horticulture, MSU

Description							CUKE 3'S	CUKE OS	SNAPBEAN
Rating Date							7/30/04	7/30/04	8/5/04
Rating Data Type							NO. 3 SIZE	OVER SIZE	PLANT
Rating Unit							GRAMS	GRAMS	COUNT
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage			
1	untreated						3533.3	5935.3	52.0
2	rimsulfuron	25	DF	0.032	lb ai/a		2692.0	3762.3	47.7
3	rimsulfuron	25	DF	0.063	lb ai/a		2783.3	4420.0	45.7
4	rimsulfuron	25	DF	0.125	lb ai/a		2965.7	4830.7	55.3
5	rimsulfuron	25	DF	0.25	lb ai/a		2833.0	4858.7	51.3
6	halosulfuron	75	WG	0.047	lb ai/a		3174.7	3856.7	40.0
7	halosulfuron	75	WG	0.094	lb ai/a		3812.0	6430.7	61.3
8	sulfentrazone	4	F	0.25	lb ai/a		3681.7	3446.7	63.7
9	flumioxazin	51	WG	0.096	lb ai/a		2084.0	3501.7	43.7
10	metribuzin	75	DF	0.5	lb ai/a		4114.7	5084.7	60.7
LSD (P=.05)							2688.97	4373.41	28.78
Standard Deviation							1567.49	2549.41	16.78
CV							49.49	55.27	32.18

Description							BEAN PLANT	BEAN FRUIT	SUBE	SUBE
Rating Date							8/5/04	8/5/04	10/22/04	10/22/04
Rating Data Type							BIOMASS	YIELD	COUNT	YIELD
Rating Unit							KG/PLOT	KG/PLOT	BEETS	KG/12FT
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
1	untreated						2.65	3.69	45.0	12.65
2	rimsulfuron	25	DF	0.032	lb ai/a		1.82	2.53	44.3	10.98
3	rimsulfuron	25	DF	0.063	lb ai/a		2.09	2.80	32.0	6.74
4	rimsulfuron	25	DF	0.125	lb ai/a		3.17	3.91	32.3	6.47
5	rimsulfuron	25	DF	0.25	lb ai/a		2.51	3.79	25.0	6.06
6	halosulfuron	75	WG	0.047	lb ai/a		2.13	3.91	21.7	2.45
7	halosulfuron	75	WG	0.094	lb ai/a		4.08	4.87	11.3	2.04
8	sulfentrazone	4	F	0.25	lb ai/a		3.88	4.75	25.3	7.03
9	flumioxazin	51	WG	0.096	lb ai/a		1.85	3.00	38.7	13.18
10	metribuzin	75	DF	0.5	lb ai/a		2.68	3.09	39.3	7.61
LSD (P=.05)							2.157	2.583	15.84	5.568
Standard Deviation							1.246	1.492	9.23	3.246
CV							46.39	41.06	29.31	43.16