HORTICULTURAL REPORT

2011 WEED CONTROL RESEARCH ON FRUIT & VEGETABLE CROPS

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WEED CONTROL IN HORTICULTURAL CROPS – 2011
FORWORD

This report summarizes the results of weed control experiments on horticultural crops in Michigan in 2011. 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 AgBio Research Station. The following companies and organizations provided financial support, chemicals, equipment, seeds, plants, research sites, or other support for our program:

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TABLE OF CONTENTS

PAGE

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 8.3.4, 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
ALFA	alfalfa	*Medicago sativa* L.
ANBG	annual bluegrass	*Poa annua* L.
ANFB	annual fleabane	*Erigeron annuus (*L.*) Pers.*
ATRI	Atriplex	*Atriplex patula L. (Gray)*
BABR	bald brome (upright brome)	*Bromus racemosus* L.
BEGR	Bermudagrass	*Cynodon dactylon* L. *Pers.*
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.
CABR	California brome	*Bromus carinatus* L.
CAGE	Carolina geranium	*Geranium carolinianam L.*
CATH	Canada thistle	*Cirsium arvense* (L.) Scop.
CAWE	carpetweed	*Mollugo verticillata* L.
CLGC	clammy groundcherry	*Physalis heterophylla* Nees.
COBD	common burdock	*Arctium minus (Hill) Bernh.*
COBU	cocklebur	*Xanthium strumarium* L.
COCW	common chickweed	*Stellaria media* (L.) Cyrillo
COGR	common groundsel	*Senecio vulgaris* L.
COLQ	common lambsquarters	*Chenopodium album* L.
COMA	common mallow	*Malva neglecta Wallr.*
COMU	common mullien	*Verbascum Thapsus* L.
COMW	common milkweed	*Asclepias syriaca* L.
COPU	common purslane	*Portulaca oleracea* L.
COPW	common pokeweed	*Phytolacca americana* L.
CORW	common ragweed	*Ambrosia artemisiifolia* L.
CRWS	creeping woodsorrel	*Oxalis corniculata* 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
FIVI	field violet	*Viola arvensis*
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.
HABC	hairy bittercress	*Cardamine hirsute* L.
HANS	hairy nightshade	*Solanum sarrachoides* Sendtner

WEED LIST

Abbr.	Common Name	Botanical Name
HEMU	hedge mustard	*Sisymbrium officinale (L.) Scop.*
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
MECW	mouseear chickweed	*Cerastium vulgatum* L.
MECR	mouseear cress	Arabidopsis thaliana(L.) Heynh
MONO	monolepis	*Monolepis nuttaliane* Greene
MUTH	musk thistle	*Carduus nutans* L.
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.
PERG	perennial ryegrass	*Lolium perenne* 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.
PUDN	purple deadnettle	*Lamium purpureum* L.
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.
ROCI	rough cinquefoil	*Potentilla norvegica L.*
ROFB	rough fleabane	*Erigeron strigosus* Muhl. ex Willd.
RRPW	redroot pigweed	*Amaranthus retroflexus* L.
RSFI	redstem filaree	*Erodium cicutarium* (L.) L'Hér. ex Ait.
RUTH	Russian thistle	*Salsola iberica* L.
SFGE	smallflower geranium	*Geranium pusillum*
SHPU	shepherdspurse	*Capsella bursa-pastoris* (L.) Medic.
SPKW	spotted knapweed	*Centaurea biebersteinii* DC.
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.
TRCV	trailing crownvetch	*Coronilla caria L.*
TUPW	tumble pigweed	*Amaranthus albus* L.
VELE	velvetleaf	*Abutilon theophrasti* Medic.
VICR	Virginia creeper	*Parthenocissus quinquefolia* (L.) Planch.
VIPW	Virginia pepperweed	*Lepidium virginicum* L.

WEED LIST

Abbr.	Common Name	Botanical Name
VOAS	volunteer asparagus	*Asparagus officinalis* L.
WESA	western salsify	*Tragopogon dubius* Scop.
WHCA	white campion	*Silene latifolia Poir.*
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.
YEHW	yellow hawkweed	*Hieracium caespitosum Dumort.*
YENS	yellow nutsedge	*Cyperus esculentus* L.
YERO	yellow rocket	*Barbarea vulgaris* R. Br.

CHEMICAL LIST

COMMON NAME	TRADE NAME	FORMULATION	MANUFACTURER
2,4-D amine	Weedar 64	3.8 L	Nufarm Inc.
acetochlor	Harness	7.0 E	Monsanto
acetochlor	Surpass	6.4 E	Dow Agrosciences
acifluorfen	Ultra Blazer	2 L	United Phosphorus
atrazine	Aatrex	4 L	Syngenta
bensulide	Prefar	4 EC	Gowan
bentazon	Basagran	4 L	Arysta
bromoxynil	Buctril	4 EC	Bayer CropScience
carfentrazone	Aim	2.0 EC	FMC
chlorimuron-ethyl	Classic	25 WDG	DuPont
clethodim	Intensity One	0.97 EC	CPS
clethodim	Select Max	0.97 EC	Valent
clomazone	Command	3 ME	FMC
clopyralid	Stinger	3 EC	Dow Agrosciences
cloransulam-methyl	Firstrate	84 WDG	Dow Agrosciences
cycloate	Ro-Neet	6 EC	Helm Agro
dicamba	Clarity	4 L	BASF
diclobenil	Casoron G	4 G	Chemtura
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
EPTC	Eptam	7 EC	Gowan
ethalfluralin	Curbit	3 EC	CPS
ethalfluralin 1.6 lb ai + clomazone 0.5 lb ai	Strategy	2.1 EC	CPS
ethofumesate	Nortron SC	4 SC	Bayer CropScience
flazasulfuron	Mission	25WG	ISK Bioscience
flazasulfuron	SL160	25WG	ISK Bioscience
fluazifop-P	Fusilade DX	2 EC	Syngenta
flucarbazone	Everest	70 WDG	Arysta
flufenacet	Define	60 DF	Bayer CropScience
flufenacet 54.4% + metribuzin 13.6%	Axiom	68 DF	Bayer CropScience
flumetsulam	Python	80 WDG	Dow Agrosciences
flumioxazin	Chateau	51 WG	Valent
flumioxazin	Sureguard	51 WDG	Valent
fluroxypyr	Starane Ultra	2.8 L	Dow Agrosciences
fomesafen	Reflex	2 EC	Syngenta
fomesafen 10.2% + s-metolachlor 46.4%	Prefix	5.29 L	Syngenta
foramsulfuron	Option	35 WG	Bayer CropScience
glufosinate	Rely 280	2.34 L	Bayer CropScience
glyphosate	Roundup Weath. Max	5.5 L	Monsanto
glyphosate	Touchdown Total	4.17 L	Syngenta
glyphosate	Roundup Original	4 L	Monsanto
glyphosate	Roundup Ultra	4 L	Monsanto
glyphosate	Roundup Ultramax	5 L	Monsanto

CHEMICAL LIST

COMMON NAME	TRADE NAME	FORMULATION	MANUFACTURER
halosulfuron	Permit	75 WG	Gowan
halosulfuron	Sandea	75 WG	Gowan
hexazinone	Velpar	2 L	DuPont
hexazinone	Velpar ULV	75 SG	DuPont
hexazinone + sulfometuron	Westar	75 WDG	DuPont
imazamox	Raptor	1 AS	BASF
imazapic	Plateau	70 WG	BASF
imazethapyr	Pursuit	2 EC	BASF
imazosulfuron	V 10142	75 WDG	Valent
indaziflam	Alion	1.67 CS	Bayer CropScience
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
norflurazon	Solicam	80 DF	Syngenta
oryzalin	Surflan	4 AS	United Phosphorus
oxyfluorfen	Goal XL	2 L	Dow Agrosciences
oxyfluorfen	Goaltender	4 SC	Dow Agrosciences
paraquat	Firestorm	3 L	Chemtura
paraquat	Gramoxone Inteon	2 L	Syngenta
pelargonic acid	Scythe	4.2 EC	Gowan
pendimethalin	Prowl	3.3 EC	BASF
pendimethalin	Prowl H2O	3.8 ACS	BASF
phenmedipham	Spin-Aid	1.3 L	Bayer CropScience
phenmedipham 0.6 lb ai+ desmedipham 0.6 lb ai+	Betamix	1.3 L	Bayer CropScience
prometryn	Caparol	4 L	Syngenta
pronamide	Kerb	50 WP	Dow Agrosciences
pronamide	Kerb	3.3 SC	Dow Agrosciences
propachlor	Ramrod	4 L	Monsanto
pyraflufen-ethyl	Venue	0.2 SC	Nichino
pyrazon	Pyramin	68 DF	Arysta
pyroxasulfone	Zidua	85 WDG	BASF
quinclorac	Quinstar	3.8 L	BASF
quizalofop p-ethyl	Assure II	0.88 EC	DuPont
quizalofop p-ethyl	Targa	0.88 EC	Gowan
rimsulfuron	Matrix	25 DF	DuPont
rimsulfuron	Pruven	25 DF	MANA
saflufenacil	Treevix	70 WG	BASF
sethoxydim	Poast	1.53 EC	BASF
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
sulfentrazone	Spartan	4 F	FMC
sulfentrazone 3.15 lb ai+ carfentrazone 0.35 lb i	Spartan Charge	3.5 SE	FMC
sulfosulfuron	Maverick	75 WG	Monsanto
tembotrione	Laudis	3.5 SC	Bayer CropScience
terbacil	Sinbar	80 WDG	TKI
topramezone	Impact	2.8 L	Amvac
triclopyr	Garlon	3 SC	Dow Agrosciences
trifloxysulfuron	Envoke	75 WG	Syngenta
trifluralin	Treflan	4 EC	Dow Agrosciences
triflusulfuron	Upbeet	50 WDG	DuPont

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
LI6193-11	COC		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 =	Caption Exchange Capacity
CRC =	Clarksville Research Center
CS =	Capsule Suspension
CV =	Coefficient of Variability
DF =	Dry Flowable
DS =	Designator
EC =	Emulsifiable Concentrate
EPRE =	Early PRE
EPOS =	Early POST
F =	Flowable
FALL =	Fall Application
FORM =	Formulation
FM =	Formulation
FT =	Distance in FT
g / gr =	Gram
GAL =	Gallon
GPA =	Gallon 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
LPOS =	Late POST
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
SE =	Suspoemulsion
SNBE =	Snapbean
SP =	Soluble Powder
SPRING =	Spring Application
STBE =	Strawberry
SURF =	Surface
T =	Temperature
TRNC =	Trevor Nichols Research Complex
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
2011

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	48.1	21.8		**1**	71.6	51.1		**1**	74.8	61.4	
2	45	29.1	0.01	**2**	55.9	46		**2**	71	50.5	
3	45.1	27.5	0.18	**3**	49	38.3		**3**	75.6	51.6	
4	59.3	37.6	0.01	**4**	60.4	36.9		**4**	89.4	60.7	
5	45.5	29.7		**5**	64.3	34.1		**5**	85.4	56.8	
6	41.1	33.7	0.27	**6**	63.3	48.7	0.03	**6**	84.7	55.6	
7	50	36.5		**7**	68.7	39.1		**7**	92.9	73.8	
8	53.8	38.5	0.19	**8**	68.4	43.6		**8**	91.4	74.9	
9	57.8	30.9		**9**	69.2	39.4		**9**	82.4	57.4	0.01
10	82.6	44.7		**10**	72.3	52.1	0.04	**10**	60	52.9	0.44
11	74	43.3	0.41	**11**	78	54.2		**11**	75.2	58.1	
12	56.8	35.7		**12**	86	54.7	0.25	**12**	66.2	50.3	
13	65.6	31.5		**13**	85.6	58.2	2.26	**13**	78.4	52.2	
14	52.5	33.2		**14**	63	48.5	0.2	**14**	76.5	50.1	
15	52.9	31.1	0.01	**15**	49.8	39.7	0.39	**15**	67.3	47.5	0.05
16	55.1	34.2	0.15	**16**	55.2	39.1		**16**	73	57.7	0.51
17	43.4	34.6		**17**	56.3	44.2	0.07	**17**	77.8	53.2	
18	39.7	27.9	0.08	**18**	62	48	0.43	**18**	82.6	56	
19	38.8	32.9	0.53	**19**	72.8	54.8	0.1	**19**	80.2	56.6	
20	42	33	0.77	**20**	75.3	56.3		**20**	76	59.8	
21	52.4	33.6		**21**	76.7	53.3	0.03	**21**	86.8	66.8	0.24
22	44.9	35.3	0.31	**22**	83.2	58.3	0.07	**22**	79.9	63.9	0.26
23	66.7	41.8	0.21	**23**	77.5	61.8	0.04	**23**	70.1	62.1	0.02
24	61.8	44		**24**	74.6	57.7		**24**	64.5	58.3	0.05
25	55.7	47.4	0.05	**25**	60.6	50.5	0.77	**25**	77.7	57.4	
26	70.1	46.9	0.07	**26**	56.6	44.2	0.35	**26**	81	52.2	
27	63.7	51.1	0.34	**27**	54.4	45.4		**27**	78.3	58.1	
28	51.5	39.7	0.92	**28**	66	52.3	0.01	**28**	70.9	61.3	
29	61.2	36	0.05	**29**	74.5	55.9	0.69	**29**	78.7	53.3	
30	58.7	35.8		**30**	88	58.5		**30**	83	51.4	
				31	88.2	67.8	0.03				

TEMPERATURE AND PRECIPITATION DATA

MSU Horticulture Teaching and Research Center

Recorded at
MSU Horticulture Teaching and Research Center (HTRC)
East Lansing, Michigan
2011

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	85.6	58.4		**1**	88.8	71.6		**1**	89.1	64.1	
2	91.6	68.9		**2**	85.7	68.3	0.06	**2**	90.5	71.1	0.01
3	86.7	66.1		**3**	84	70.2	0.77	**3**	88.7	68.5	
4	85.4	62.7		**4**	80.8	64.9		**4**	73.4	58.9	0.11
5	87.6	57.7		**5**	84.5	61.9		**5**	59.5	48.1	
6	86.1	67.5		**6**	80.8	69.9	0.09	**6**	66.6	46.2	
7	79.6	56.5		**7**	81	66.3		**7**	67.2	48.9	0.06
8	86.1	56.8		**8**	81.2	40	0.02	**8**	64.4	55.6	
9	89.4	60.2		**9**	79.6	63.2	0.28	**9**	76.7	59.1	0.33
10	89	66.2		**10**	73.9	60.4		**10**	78.8	60.1	0.04
11	80.1	66.8	0.34	**11**	77.8	53.3		**11**	77.6	57.5	
12	86.1	66.2		**12**	78.7	55.2		**12**	81.8	58.9	
13	78.1	59.4		**13**	79.5	60.6	0.31	**13**	76.4	54.2	
14	80	51.5		**14**	72.9	58.4	0.17	**14**	65.4	43.8	0.16
15	84.5	61.8		**15**	79.2	56.5		**15**	59.8	38.9	
16	90.9	57.4		**16**	83.3	53.5		**16**	58.9	36.3	
17	91.2	64.8		**17**	80.6	55.4		**17**	64.8	45.9	
18	90.4	74.6	0.20	**18**	82.8	62.7	0.01	**18**	69.3	43.8	
19	93	72.6		**19**	83.4	53.3		**19**	66.7	55.9	0.73
20	92.9	70.3		**20**	80.7	59.8	0.49	**20**	71	46.5	0.01
21	93.9	72		**21**	76.7	56.5	0.02	**21**	74.7	51.9	
22	82	65.7	0.03	**22**	76.2	49.3		**22**	67.4	49.8	
23	86.8	67.7	0.02	**23**	80.3	53.2	0.45	**23**	63.9	50.9	
24	86.3	67.2		**24**	87.8	65.5	0.41	**24**	64.8	43.9	
25	86.9	71.4		**25**	76.9	58.9		**25**	70.1	49.5	0.02
26	82.5	65		**26**	79.5	51.5		**26**	69.3	49.1	0.61
27	77.4	56.5	1.28	**27**	81.9	55.9		**27**	65.7	43.8	0.09
28	86.1	69.2	1.62	**28**	75.1	54.8		**28**	61.7	52	
29	87.2	70.4	1.61	**29**	76.4	47.9		**29**	62.4	49.3	0.35
30	88.2	62.4		**30**	77.2	53.7		**30**	52.3	39.9	0.13
31	88	64.2		**31**	79.9	61.2					

TEMPERATURE AND PRECIPITATION DATA

MSU Muck Soils Research Station

Recorded at
MSU Muck Soils Research Station (Muck Farm)
Laingsburg, Michigan
2011

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	47	20.9		**1**	72.8	51.6		**1**	75.2	58.1	
2	45.9	25.1	0.02	**2**	55.9	45.5		**2**	70.5	49.2	
3	45.5	24.6	0.26	**3**	47.9	35.6		**3**	76.5	47.7	
4	59.6	36.9	0.02	**4**	60.7	34.8		**4**	89	61.8	
5	45	27.5		**5**	64.8	28.7		**5**	85.1	52.4	
6	41.7	31.9	0.28	**6**	64.5	44.2	0.02	**6**	85.6	51.8	
7	50.5	37.3		**7**	67	33.4		**7**	93.4	71.7	
8	52.9	32	0.13	**8**	68.3	36.3		**8**	92.7	71	
9	56.9	27.7		**9**	70.8	32.5		**9**	82.4	56.3	
10	82.9	44.9		**10**	74.6	52.9	0.01	**10**	60.4	53.4	0.26
11	75	42.6	0.32	**11**	80.4	55.2		**11**	74.7	55.9	
12	55.4	29.2		**12**	84.6	56.2	0.43	**12**	66.9	50.6	
13	65.1	24.5		**13**	85.2	55.7	1.22	**13**	78.5	42.3	
14	51.7	31.7		**14**	61.7	48.7		**14**	77.1	42.3	
15	51	29.9	0.01	**15**	49.9	39.5		**15**	68.3	41.8	0.11
16	54.8	34.8	0.24	**16**	54	39		**16**	73.7	55.4	0.76
17	42.7	29.4		**17**	53.6	43.1	0.09	**17**	76.9	49	
18	37.7	27.5	0.09	**18**	62.3	48.3	0.55	**18**	83.1	51.6	
19	38	32.2	0.23	**19**	70.5	54.8	0.12	**19**	81.4	51	
20	42.9	33.3	0.83	**20**	73.9	51.9		**20**	76.1	59.3	0.19
21	51.4	33.8		**21**	77.1	49.9	0.03	**21**	86.1	65.9	0.48
22	45.9	36.3	0.23	**22**	84	59.1	0.04	**22**	79.8	64.5	0.43
23	66	41.4	0.39	**23**	78	62.3		**23**	69	62.9	0.04
24	59.4	39.5		**24**	72.2	56.6		**24**	64	58.3	0.06
25	57	48.7	0.04	**25**	60.6	49.5	0.91	**25**	76.5	56.5	
26	71.1	46.7	0.08	**26**	53.7	44.2	0.46	**26**	79.3	48.7	
27	64.6	50.3	0.62	**27**	54.2	45.2		**27**	76.1	53.4	0.01
28	51.6	40.4	1.07	**28**	67.1	51.7		**28**	70.8	54.6	
29	60.4	35.8	0.05	**29**	74.7	57.1	1.06	**29**	77.8	48.1	
30	60.3	35		**30**	88.4	58.2		**30**	81.9	46	
				31	88.6	64.7					

TEMPERATURE AND PRECIPITATION DATA

MSU Muck Soils Research Station

Recorded at
MSU Muck Soils Research Station (Muck Farm)
Laingsburg, Michigan
2011

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	86	53.4	0.01	**1**	90	70		**1**	92.1	59.8	
2	92.2	68.2		**2**	86.2	63.9	0.19	**2**	92	66.5	0.01
3	85.2	57.8		**3**	82.5	69.1	0.43	**3**	90.6	64.6	
4	86.1	54.8		**4**	82	63.5		**4**	75.4	57.6	0.05
5	87.5	53.1		**5**	84.2	58.8		**5**	61.4	39.7	
6	85.8	59.6		**6**	81.6	67	0.24	**6**	66.8	36.2	
7	79	49.2		**7**	82.3	66.9		**7**	68.2	45.3	
8	86.6	51.3		**8**	79.8	67.5		**8**	65.4	55.3	
9	88.4	53.4		**9**	80.2	59.8	0.29	**9**	77.4	58.6	0.01
10	88.7	62.3		**10**	73.7	57.2		**10**	81	56.6	0.03
11	80.9	62.2	0.51	**11**	79.2	47.1		**11**	79.1	53.5	
12	85.7	62		**12**	80.9	49.7		**12**	84.2	51.7	
13	78.9	54.7		**13**	78.9	56.8	0.60	**13**	76.8	46.7	
14	80.5	44.7		**14**	72.1	56.5	0.23	**14**	66.7	36.5	0.22
15	85.7	58.2		**15**	79.8	51		**15**	60.5	30.2	
16	90.6	52.3		**16**	82.5	46		**16**	58.7	29.3	
17	95.1	59.4		**17**	81.7	50.7		**17**	66.3	39.6	
18	91.8	69.2	0.52	**18**	82.3	55.8	0.22	**18**	71.8	34.3	
19	92.6	68.5		**19**	85.6	48.1		**19**	68	53.6	0.56
20	95.1	66.2		**20**	82.6	54	0.19	**20**	71.5	43.5	
21	97.1	62.4		**21**	77.1	50.4	0.01	**21**	75.8	45.8	
22	83.3	59.8	0.08	**22**	75.8	42.4		**22**	68	42.4	
23	86.8	62.6		**23**	83.4	46.6	0.20	**23**	63.3	43.6	
24	87.7	63.5		**24**	88.3	65.5	0.44	**24**	66.5	39.4	
25	88.1	70		**25**	74.5	53.6		**25**	73.4	43.2	
26	83.9	56.3		**26**	80.2	48.4		**26**	69.6	45.9	0.47
27	78.5	49	1.17	**27**	83.2	51.2		**27**	66.9	39.5	0.05
28	87.1	69.5	0.44	**28**	75.6	47.6		**28**	63.5	50.7	0.02
29	87.3	66.5	1.50	**29**	78.3	43.1		**29**	62.9	48.4	0.37
30	88.1	57.8		**30**	78.7	45.8		**30**	51.9	40.2	0.13
31	89	59.1		**31**	82.1	57.7					

TEMPERATURE AND PRECIPITATION DATA

MSU Clarksville Research Center

Recorded at
MSU Clarksville Research Center (Clarksville)
Clarksville, Michigan
2011

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	48.3	23.1		**1**	65.8	47.6		**1**	73.3	60.4	
2	44.2	27.6		**2**	52.1	41.1		**2**	71.5	47	
3	41.7	27.7	0.28	**3**	52.2	38.4		**3**	77.3	53.3	
4	47.5	35.9	0.10	**4**	60.7	31.7		**4**	87.9	66.8	
5	44	29.3		**5**	62.6	32.5		**5**	83.9	57.3	
6	42	35	0.25	**6**	62.3	44.7	0.03	**6**	83.8	54.8	
7	51	35.7		**7**	68.4	39.4		**7**	91.2	70.8	
8	56.4	36.9	0.14	**8**	67.9	41.3		**8**	90.2	73.8	
9	59.1	32.8		**9**	69.6	41.3	0.03	**9**	81.8	56.3	
10	82.6	49		**10**	70.2	51.6		**10**	57.2	50.4	0.51
11	73.5	42		**11**	76.6	54.9	0.56	**11**	69.9	53.3	
12	57.5	33.4		**12**	82.6	55.4	0.22	**12**	67.3	45.4	
13	64.4	29.9		**13**	81.3	59.8	0.15	**13**	78.2	47.4	
14	49.3	31.7		**14**	60.6	49.2	0.11	**14**	78.2	48.8	
15	48.8	29.7		**15**	49.8	38.3	0.50	**15**	68.1	50.9	0.16
16	53.2	32	0.25	**16**	59.7	36.2		**16**	69.1	57.2	0.35
17	43	31.1		**17**	58.7	44.1		**17**	78.7	54.2	
18	40.1	26.1	0.16	**18**	60.1	48.2	0.49	**18**	84.2	58	
19	34.3	31.1	0.69	**19**	69.4	54.9	0.11	**19**	82.3	56.5	
20	41.7	32.1	0.24	**20**	73.1	52.9		**20**	76.6	61.1	
21	51.8	31.1		**21**	76	53.4	0.06	**21**	89.3	65.5	0.59
22	43.1	34.9	0.51	**22**	82.6	57.1		**22**	77.6	63.4	0.27
23	58.1	39.7	0.23	**23**	74.6	59.7	0.45	**23**	65.4	58.8	0.16
24	59.8	41.8		**24**	71.8	52.8		**24**	62	57.3	0.02
25	60.2	44.5	0.02	**25**	58.2	49.1	0.60	**25**	74.7	52.7	
26	65.4	44.7	0.55	**26**	51.1	46.3	0.74	**26**	80.1	52	
27	60.9	47.1	0.75	**27**	57.4	41.7		**27**	75.2	58.4	0.03
28	47.2	38.6	0.76	**28**	63.2	51	0.02	**28**	69.8	58.2	
29	58.1	34.4	0.03	**29**	73	52	0.38	**29**	76	50.3	
30	60.7	35.9		**30**	87.4	58.8		**30**	82	51.9	
				31	86.1	68.8	0.06				

TEMPERATURE AND PRECIPITATION DATA

MSU Clarksville Research Center

Recorded at
MSU Clarksville Research Center (Clarksville)
Clarksville, Michigan
2011

	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	78.5	62.4	0.01	**1**	85.8	70.4		**1**	87.8	61.5	
2	89.1	67.8		**2**	84.3	67.3	0.10	**2**	86.9	70.4	0.08
3	83.8	63.5		**3**	83	66.6	0.52	**3**	85.9	68.3	
4	83.5	58.8		**4**	80.4	63.1		**4**	71.7	56.3	
5	86.9	58.4		**5**	85.5	63.4		**5**	62.6	42.3	
6	84.5	63		**6**	80.3	68.4	0.68	**6**	67.6	39.5	
7	80.2	54.5		**7**	81.2	65.6	0.01	**7**	68.9	44.7	
8	85.7	56.2		**8**	79.9	65.3	0.02	**8**	69.5	47.9	
9	87.2	58.9		**9**	78.3	62.9	0.14	**9**	76.5	54.9	0.02
10	87.7	71.1		**10**	71.9	56.1		**10**	79.6	56.7	0.01
11	79.2	66.6	0.81	**11**	77.6	50.8	0.01	**11**	78.1	55.4	
12	83.9	65.1		**12**	78	56.5		**12**	82.9	59.3	
13	78.8	55.1		**13**	75.6	60.4	1.02	**13**	74.1	45.9	
14	79.5	53.3		**14**	73	59.7		**14**	60.5	41.2	
15	84.2	61.6		**15**	78.3	55.6		**15**	58.7	35.7	
16	87.5	58.6		**16**	82	52.6		**16**	59.2	34.8	
17	90	64.1		**17**	79.5	57.3		**17**	65.9	45.3	
18	86.9	70.9	0.02	**18**	80.1	58.5		**18**	70.7	41.1	
19	91.8	70.7		**19**	82.8	52.3		**19**	64.2	50.5	0.45
20	93.2	70.9		**20**	78.1	61.1	0.32	**20**	72	44.6	0.01
21	93.2	68.4		**21**	75.2	55.4		**21**	72.5	52.3	
22	82.6	66.3	0.24	**22**	74.8	49.6		**22**	64.3	48.3	
23	85.4	68.7		**23**	78.8	52.6	0.29	**23**	64.3	44.2	
24	84.8	65.5		**24**	84.7	63.8	0.29	**24**	67.1	44	
25	85.5	64.6		**25**	76.7	58.5		**25**	64.7	51	
26	81.3	61.8		**26**	78.9	51.3		**26**	67.6	47.5	0.25
27	73.1	55	2.24	**27**	82.7	58.3		**27**	63.7	44.9	0.05
28	84	70.1	1.91	**28**	76.3	51.7		**28**	59.6	48	0.09
29	85.3	68.4	0.88	**29**	76.6	50.6		**29**	61.4	47.4	0.03
30	87	61.2		**30**	75.5	52.3		**30**	51.5	38.9	0.03
31	85.4	63.1		**31**	79.8	60					

TEMPERATURE AND PRECIPITATION DATA

MSU Trevor Nichols Research Complex

Recorded at
MSU Trevor Nichols Research Complex (Fennville)
Fennville, Michigan
2011

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	48	21		**1**	61.6	48.2		**1**	71.3	59.7	
2	45.8	27.9		**2**	50.6	40.1		**2**	75.6	51.6	
3	50.3	26.7	0.21	**3**	51	36.4		**3**	81	56.9	
4	67.8	37.9	0.14	**4**	51.9	32.9		**4**	78.9	60	
5	44	33.3		**5**	63.8	30.7		**5**	77.9	52.8	
6	48.6	39	0.17	**6**	62.4	42.6	0.04	**6**	87.7	50.3	
7	54.1	37.7		**7**	66.8	43		**7**	90	70.9	
8	52.8	39	0.46	**8**	71.6	41.1		**8**	89.5	65.3	
9	65.8	39.3		**9**	73.1	48.7	0.03	**9**	70.6	54.8	0.09
10	83.5	55.4		**10**	79.4	56.2		**10**	61.8	54.8	0.39
11	74.5	45		**11**	84.3	59	0.01	**11**	65.9	52.1	
12	57.4	35.4		**12**	86	59.4	0.14	**12**	63	46.4	
13	57.6	29.8		**13**	77.9	49.4	0.53	**13**	72.5	47.5	
14	53	38.6		**14**	59	49.7	0.06	**14**	78	48.4	
15	52.6	32.7	0.16	**15**	52.6	39.4	0.53	**15**	64.7	58	0.65
16	51.3	32.4	0.28	**16**	54	36.7		**16**	71.6	56.4	0.28
17	44.9	31.8		**17**	64.1	42.7		**17**	85.3	53.7	
18	42.1	28.5	0.17	**18**	66.2	50.3	0.06	**18**	84.5	62.5	
19	37.8	32.8	0.25	**19**	65.1	45.8	0.02	**19**	82.9	65.8	
20	40.1	34.5	0.83	**20**	67.6	45.6		**20**	80.2	65.5	
21	53.4	34.4		**21**	77.2	51.6	0.03	**21**	91.3	68.5	0.38
22	46.7	37.4	0.29	**22**	86.1	57.7		**22**	77.9	63.3	0.35
23	58.8	39.4	0.20	**23**	74	56.1	0.71	**23**	65.7	59.3	0.25
24	61.4	40.3		**24**	69.1	48.8		**24**	62.4	56	0.08
25	63.4	44.6	0.02	**25**	68.2	52.1	1.15	**25**	73.1	56.9	
26	64.9	48.2	1.20	**26**	57.1	49.1	0.44	**26**	82.1	52.4	
27	55.1	45.4	0.61	**27**	61.8	42.5		**27**	76.3	59.3	0.09
28	46.5	37.3	0.50	**28**	64.5	53.4	0.06	**28**	71.4	59	0.01
29	50.5	35.8	0.01	**29**	73.2	53.1	0.88	**29**	77.3	51.3	
30	67	38.2		**30**	89.3	59.3		**30**	82.8	53.7	0.04
				31	84.7	67.5					

TEMPERATURE AND PRECIPITATION DATA

MSU Trevor Nichols Research Complex

Recorded at
MSU Trevor Nichols Research Complex(Fennville)
Fennville, Michigan
2011

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	74.1	65	0.74	**1**	84.3	69.9		**1**	90.6	64	
2	84.8	66.5		**2**	88.4	70.6	0.69	**2**	87.6	72.7	0.05
3	83.4	62.1		**3**	80.2	66.8	0.76	**3**	85.3	69.6	
4	82	58.7		**4**	78.3	61.8		**4**	70.4	56.5	
5	83.8	57.2		**5**	87.6	64.2		**5**	65.1	46.9	
6	79.7	62.3		**6**	83	66.8	0.11	**6**	70.2	39.7	
7	79.1	54.8		**7**	78.9	65.1	0.21	**7**	71.2	43.7	
8	83	57.5		**8**	81.1	64.7	0.04	**8**	72.6	49.1	
9	85.2	56.6		**9**	77.3	65	0.01	**9**	72.7	55.4	
10	86	69.8	0.01	**10**	72.7	56.5		**10**	74.6	58.5	
11	78.2	67.3	1.03	**11**	77.8	53.1		**11**	75.5	55.9	
12	80.9	67.4		**12**	78.5	56.6		**12**	80	59.3	
13	76.4	58.7		**13**	76.6	62.8	0.49	**13**	75.3	47.5	
14	80.2	57		**14**	74.8	61		**14**	64	40.3	
15	85.5	63.9		**15**	76.7	55.8		**15**	61.1	38.2	
16	87.2	61		**16**	81.1	55.1		**16**	59.6	35.7	
17	87.5	65.6		**17**	79.8	58.4		**17**	68.3	47.8	
18	84.8	70.6	0.32	**18**	80.7	57.5	0.04	**18**	71.2	41.7	
19	88.3	69.7		**19**	86.1	52.7		**19**	64.8	50.4	
20	92.8	67.7	0.07	**20**	76.9	62.5	0.81	**20**	75.2	46.2	
21	88.6	69.1		**21**	76.5	56.1		**21**	69.6	55.8	
22	85.4	68.1	1.05	**22**	77.4	52.8		**22**	62.2	47.5	
23	84.8	68.2	0.09	**23**	77.8	56.1	0.11	**23**	63.9	46	0.02
24	85.3	67.8		**24**	84.1	65.9		**24**	64.1	43.1	0.19
25	83.6	64.7		**25**	78	59.3		**25**	62.4	49.3	0.41
26	82.3	59.3		**26**	80.1	53.5		**26**	68.6	48.5	0.38
27	76	55	1.44	**27**	85.7	59.5		**27**	58.5	51.4	0.29
28	84.1	70.9	0.72	**28**	76.1	52		**28**	65	50.5	0.09
29	81.9	64	0.42	**29**	75.2	51.4		**29**	63.9	48.5	0.52
30	86.8	60.7		**30**	75.4	53.7		**30**	54.7	42	0.13
31	84.8	62.3		**31**	84.6	60.6	0.07				

TEMPERATURE AND PRECIPITATION DATA

Fremont

Recorded at
City of Fremont
Fremont, Michigan
2011

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	51.6	22.7		**1**	62	44.3		**1**	73.8	55.6	
2	47.8	26.5		**2**	50	38.2		**2**	74.1	48	
3	39.8	27.5	0.77	**3**	48.8	36.6		**3**	79.1	53.6	
4	46.1	36	0.61	**4**	61.3	35.1		**4**	89.6	61.2	
5	43.9	30.5		**5**	61.3	29.3		**5**	87.9	53.6	
6	47.4	35	0.05	**6**	62.7	41.5	0.02	**6**	84.3	55.3	
7	56.5	32.9		**7**	68.1	36.7		**7**	89.2	64.4	
8	54.5	40.9		**8**	69	42.8		**8**	88.2	70.4	
9	60.3	35.8		**9**	70.8	45.2		**9**	70.7	56.9	0.26
10	78	49.8		**10**	70.8	52.3		**10**	58.7	51.4	0.08
11	72.9	41.5	0.03	**11**	75.5	57.2	0.32	**11**	68.7	51.5	0.13
12	64.7	29.6		**12**	82.9	57.3	0.16	**12**	70.3	44.3	
13	64.4	29.4		**13**	82.3	57		**13**	79.3	47.9	
14	54.6	34.8	0.04	**14**	59.5	49.7	0.08	**14**	78.6	51	
15	48.5	32	0.07	**15**	63.8	44.5	0.05	**15**	67.5	54.6	0.22
16	50.8	32.4	0.32	**16**	64.3	35.8		**16**	67.2	55.7	0.86
17	43.4	31.3	0.02	**17**	67.8	40.9		**17**	80.8	55.7	
18	46.5	29.4		**18**	67.4	51.7	0.06	**18**	83.9	58.1	
19	38	32.1	0.85	**19**	74.5	55.7	0.39	**19**	80.7	60.2	0.06
20	41.4	33.6	0.08	**20**	74.4	55.6		**20**	80.7	59.2	1.33
21	53.3	31.6		**21**	75.8	55.6	0.04	**21**	85	66	1.78
22	45	37.7	0.18	**22**	83	59.6		**22**	76.5	64.6	0.40
23	57	40.2	0.14	**23**	72.1	59	0.34	**23**	65	58.4	0.32
24	59	42.4		**24**	72.7	50.2		**24**	64.4	54.7	0.01
25	63.7	38.9		**25**	55.2	49.1	0.20	**25**	75.7	50.3	
26	62.1	43.8	0.98	**26**	60	46.1	0.11	**26**	80.3	49.8	
27	58.1	45.5	0.83	**27**	66.2	38.9		**27**	72.2	59.6	0.02
28	47.5	36.1	0.22	**28**	62.5	52.2	0.03	**28**	72.2	58.2	0.05
29	60.2	34.8	0.01	**29**	69.9	47.5	0.03	**29**	76.8	50.5	
30	63.1	35.3		**30**	85.9	59.3	0.01	**30**	80.2	51.1	0.23
				31	83.5	66.5					

TEMPERATURE AND PRECIPITATION DATA

Fremont

Recorded at
City of Fremont
Fremont, Michigan
2011

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	77	63	0.39	**1**	88.3	68.6		**1**	89.4	57.4	
2	83.9	67.9		**2**	83.2	67.5	0.12	**2**	84.4	70.9	0.12
3	83	59.4		**3**	82.9	65.8	0.04	**3**	83.7	66.2	
4	83.5	53		**4**	84.4	63.2		**4**	71.6	54	0.01
5	84.2	57.6		**5**	84.8	65.4		**5**	65.1	44.4	
6	83.9	58.7		**6**	79.8	68		**6**	70.3	37.7	
7	81.3	52.9		**7**	81.1	66.9	0.08	**7**	74.5	42.7	
8	85.6	55		**8**	82.6	62.6	0.06	**8**	78.8	50.5	
9	85.2	56.4		**9**	76.8	64	0.12	**9**	82	51.1	
10	84.4	70.9		**10**	73.4	58.3		**10**	84.3	51.5	
11	81.1	67.2	0.62	**11**	78.2	49.2		**11**	77.3	51.6	
12	82.9	63.4		**12**	77.8	55.9		**12**	80.3	54.4	
13	80.7	56.6		**13**	72.9	62	0.07	**13**	76.8	44	
14	80	57		**14**	74.5	61.2	0.02	**14**	62.1	37.8	
15	85.4	62.3		**15**	82.7	52.3		**15**	60.9	34.2	
16	86.9	60.1		**16**	79.7	55.6	0.06	**16**	60	34.1	
17	87.9	64.4		**17**	79.5	57.5		**17**	67.3	46.3	
18	87.6	70.3	0.10	**18**	80.7	56.4		**18**	70.9	43	0.01
19	95	70.9		**19**	81.7	52		**19**	67.5	48.7	0.10
20	91.4	70.2	0.02	**20**	75.6	59		**20**	70.4	46	
21	91.6	69.2		**21**	74.7	53.5	0.01	**21**	67.8	58.1	0.01
22	83.5	65.5	0.11	**22**	75.6	48.2		**22**	61.8	45.7	
23	85.4	65.9	0.02	**23**	77.6	53.3		**23**	64.5	45	
24	86.7	66.7		**24**	83.1	66.3		**24**	67.2	43.3	
25	87.1	65.8		**25**	78.5	54.7		**25**	64	49.4	
26	81.6	60.6		**26**	79.6	47.6		**26**	67.4	51.5	
27	69.7	54.5	0.49	**27**	86.2	58.5		**27**	64	46.5	
28	82.9	69.5	0.59	**28**	80.4	52		**28**	62.5	50.4	
29	87.3	64.6	0.03	**29**	78.1	49		**29**	62.3	49.1	0.01
30	86.3	60.8		**30**	75.6	52.1		**30**	54	41.3	
31	86.4	60.9		**31**	80.7	60.5	0.04				

TEMPERATURE AND PRECIPITATION DATA

Hart

Recorded at
Asparagus Research Farm
Hart, Michigan
2011

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	50.6	21.5		**1**	60.4	39.5	0.04	**1**	73.3	58	
2	44.9	29.2		**2**	46.4	34.3		**2**	63.4	46	
3	40.1	28.6	0.53	**3**	46.8	36.2		**3**	80.7	49.8	
4	49.7	35	0.36	**4**	53.8	28.5		**4**	85.6	55.9	
5	43.4	32		**5**	61.2	29.5	0.08	**5**	84	50.4	
6	50.4	35.9	0.03	**6**	60.4	38.8	0.01	**6**	85.9	52.2	
7	57.9	31.1		**7**	62.5	34.4		**7**	91	60.5	
8	57.8	39.5		**8**	68.9	40.6		**8**	85.4	68.3	0.02
9	63.2	37.3		**9**	69.6	46.2		**9**	68.6	51.3	0.14
10	78.2	52.4	0.01	**10**	71.3	54.3		**10**	57.8	52.7	0.08
11	71	39.7		**11**	73	56.3	0.37	**11**	62.3	49.8	0.18
12	56.2	30.4		**12**	82.3	55.7	0.01	**12**	65.4	44.8	
13	62.9	28.2		**13**	70	46.9		**13**	71.9	39.7	
14	52.8	35.1	0.02	**14**	56.8	44.3	0.36	**14**	79.5	50.5	
15	49.8	32.1	0.08	**15**	63	41.1	0.02	**15**	67.2	55.9	0.13
16	49.5	31.6	0.37	**16**	56.9	34.1		**16**	63.7	53.4	0.33
17	41.3	28.4	0.01	**17**	68.1	35		**17**	77.4	54.8	0.01
18	44.3	28.8		**18**	70	50.9	0.03	**18**	85.9	57.3	
19	38.9	31.1	0.81	**19**	73	50.7		**19**	81.4	61.4	
20	41.3	32	0.04	**20**	70.3	48.6		**20**	75.9	59.6	0.05
21	49.1	32.5		**21**	76.9	53.9	0.11	**21**	83.3	65.2	1.32
22	46.2	38.1	0.14	**22**	82.9	59.3		**22**	74.9	61.3	0.32
23	55.9	40.1	0.09	**23**	71.5	54	0.12	**23**	66.5	55.9	0.63
24	55.3	39		**24**	62.6	46		**24**	66.1	53.9	0.01
25	65.5	35.4		**25**	55.8	47.9	0.51	**25**	74.4	52.4	
26	61.8	43.1	0.93	**26**	59	41.3		**26**	81.3	51.6	
27	53.7	43.3	0.56	**27**	66.1	34.5		**27**	72	60.5	
28	44.6	34.9	0.21	**28**	63	52.4		**28**	72.6	55.1	
29	54.8	35		**29**	71.7	49.8	0.04	**29**	72.4	46.8	
30	64.9	36.8		**30**	85.3	59.8		**30**	81.7	52.4	1
				31	83.4	64.1					

TEMPERATURE AND PRECIPITATION DATA

Hart

Recorded at
Asparagus Research Farm
Hart, Michigan
2011

JULY				AUGUST				SEPTEMBER			
Date	High Temp F	Low Temp F	Total Prec. in.	Date	High Temp F	Low Temp F	Total Prec. in.	Date	High Temp F	Low Temp F	Total Prec. in.
1	76.9	63.9	0.20	**1**	85.9	69.7		**1**	91.8	56.8	
2	81.3	66.1		**2**	80.7	68.9	0.44	**2**	83	69.1	0.24
3	80	58.5		**3**	80.7	63.5		**3**	79.4	67.1	0.33
4	81	53.9		**4**	82.4	61.6		**4**	69	54.7	0.06
5	85.5	58.7		**5**	84.2	65.1		**5**	63.5	39.1	
6	81.4	58.9	0.01	**6**	80.8	65.8	0.08	**6**	68.1	34.4	
7	80.9	53.5		**7**	78.8	65.6		**7**	72.9	40.5	
8	82.6	57.2		**8**	81.3	61.6		**8**	80.6	42.5	
9	85.8	56.8		**9**	76.6	59.1		**9**	79.6	51.3	
10	85.2	72.5		**10**	73.1	55.9		**10**	81.2	51.2	
11	81.7	68.4	1.08	**11**	78.2	49		**11**	78.9	51.5	
12	80.7	62		**12**	80.1	63.7	0.10	**12**	82	55.7	
13	76.3	54.5		**13**	75.3	61.8	0.99	**13**	75.5	42.7	
14	79	57.8		**14**	75.8	58.5		**14**	59.5	36.2	
15	83.4	62.7		**15**	78.3	49.5		**15**	57.7	31.5	
16	84.9	62.3		**16**	81.2	55.8		**16**	60.8	32.6	0.01
17	87.7	66.2		**17**	81.2	59.2		**17**	68.1	41.9	
18	87.6	70.3	0.19	**18**	78.4	53.4		**18**	69.3	43.1	0.08
19	89.9	69		**19**	83	53.2		**19**	66.3	48.9	0.56
20	90.8	69	0.05	**20**	77.1	57.4	0.23	**20**	70.7	46.6	0.01
21	86.4	67.3		**21**	72.6	54.8		**21**	67.2	57.6	
22	82.2	67.3	0.04	**22**	73.9	47.1		**22**	60.4	48.9	0.03
23	85.5	67.2		**23**	78.2	57.2		**23**	61.7	44.2	
24	83.6	67.9		**24**	84.7	66.8	0.01	**24**	64.6	42.9	0.21
25	82.9	65.6		**25**	74.5	51.7		**25**	63.8	49.2	0.39
26	78.4	57		**26**	80.4	49.5		**26**	66.8	52.2	0.21
27	70.8	51.6	0.07	**27**	85.2	57		**27**	65	47	0.04
28	76.2	69.1	0.11	**28**	79.1	49.7		**28**	64	49	0.04
29	84.3	63.6		**29**	77.4	44.2		**29**	62.2	47	0.36
30	86.7	60.9		**30**	77.8	60.8		**30**	52.9	41.2	0.08
31	87.1	62.5	0.77	**31**	81.4	60.5	0.05				

TEMPERATURE AND PRECIPITATION DATA

Hudsonville

Recorded at
Michigan Celery Cooperative
Hudsonville, Michigan
2011

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	51.2	22.5		**1**	63.4	47.5		**1**	73.6	56.5	
2	46.7	29.3		**2**	51.2	42.3		**2**	73.2	51.8	
3	46.2	28.2	0.17	**3**	50.9	36.7		**3**	79.3	57.3	
4	52	37.9	0.15	**4**	57	29.1		**4**	84.9	62.3	
5	44.3	32		**5**	63.9	31.8		**5**	81.5	55.3	
6	46.6	39.9	0.30	**6**	63.1	42.2	0.01	**6**	86.2	53.1	
7	54	39.5		**7**	69.9	40.8		**7**	90	70.3	
8	56	40.5	0.16	**8**	69.2	46.7		**8**	90.3	70.6	
9	62.2	36.9		**9**	71.6	47.3	0.01	**9**	75	61.4	0.02
10	84.9	54.2		**10**	74.4	55.9		**10**	61.4	53.5	0.17
11	75.5	44.8		**11**	80.4	58.8	0.50	**11**	68.9	52.1	
12	61.3	34.2		**12**	85.5	57.9	0.06	**12**	67.4	44.7	
13	61.6	29.7		**13**	80.4	52.8	0.17	**13**	75.9	46	
14	50.9	36.8		**14**	59.4	51.1	0.32	**14**	78.7	51	
15	50.6	33.9	0.02	**15**	54.3	38.8	0.80	**15**	64.8	56.5	0.24
16	53	32.9	0.31	**16**	63.4	35.6		**16**	70.8	57.2	0.30
17	44.9	31.8		**17**	63.3	44.9		**17**	82.4	54.6	
18	43	28.3	0.10	**18**	64.2	51.4	0.17	**18**	83.7	61.8	
19	37.8	34.1	0.35	**19**	69.4	52		**19**	81.9	63	
20	41.5	34.2	0.58	**20**	74.3	48		**20**	80.3	65.1	
21	54	31.1	0.01	**21**	76.2	54.6	0.02	**21**	89	67.7	1.02
22	45.9	38.2	0.16	**22**	85.6	56.4		**22**	78.9	64.4	0.41
23	58.9	41.8	0.65	**23**	74.7	57.9	0.86	**23**	65.5	59.8	0.24
24	60.4	41.4		**24**	71.7	52.7		**24**	64.4	57.1	0.02
25	62.4	44.3		**25**	61.2	52.4	0.67	**25**	74.6	51.5	
26	64.8	47.3	1.04	**26**	54.9	49.2	0.40	**26**	80.6	52.6	
27	58.9	46.6	1.04	**27**	62	41.5		**27**	75.8	63.3	0.04
28	47.6	39	0.41	**28**	63.4	53.4	0.02	**28**	71.4	56.5	
29	54.5	35.8	0.01	**29**	71.7	51.8	0.32	**29**	77.2	50.2	
30	64.9	38.2	0.03	**30**	88.2	59.3		**30**	82.9	52.6	0.03
				31	84.8	70.7					

TEMPERATURE AND PRECIPITATION DATA

Hudsonville

Recorded at
Michigan Celery Cooperative
Hudsonville, Michigan
2011

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	71.8	65.1	0.88	**1**	84.6	70.1		**1**	90.1	62.2	
2	85.2	67	0.02	**2**	86.2	70.7		**2**	87.9	72.3	
3	84.1	61.8		**3**	84.4	67.4		**3**	88.8	68.5	
4	81.6	55.7		**4**	79.1	61.4		**4**	71.7	55.2	
5	85.4	57.9		**5**	84.8	65.7		**5**	65.1	48.4	
6	82.7	62.8		**6**	83.8	67.1		**6**	69.5	38.2	
7	81.6	53.3		**7**	80.3	66.3		**7**	72	43.4	
8	86.5	57.1		**8**	81.9	64.1		**8**	71.5	47.2	
9	86.2	57.5		**9**	77	63.2		**9**	77.4	55.2	0.01
10	86.4	71.8		**10**	71.9	56.5		**10**	80.8	59.1	0.01
11	78.8	67.3	0.06	**11**	77.4	52.2		**11**	78.2	53.1	
12	83.8	65.1		**12**	79.6	59		**12**	82.7	59.5	
13	80.5	58.2		**13**	77.4	63		**13**	75.1	46.8	
14	79.2	59.3		**14**	73.2	61.2		**14**	65.2	39	
15	83.3	64.5	0.01	**15**	80.4	53		**15**	62.5	33.9	
16	87.6	61.8		**16**	83.2	54.5		**16**	60.8	35.1	
17	87.4	66.7		**17**	80.5	58.9		**17**	66.5	49.3	
18	87.4	71.8		**18**	80.1	58		**18**	72.6	46.5	0.01
19	94.4	70.2		**19**	84.3	52.2		**19**	65.4	50.4	0.02
20	92.5	70.2		**20**	79	62		**20**	74.2	45.7	
21	89.5	69.6		**21**	76.1	55.9		**21**	71.7	56.7	
22	84.1	67.3		**22**	76.3	51.4		**22**	64.2	47.3	
23	84.2	68.4		**23**	78.8	55.3		**23**	66.2	45.6	
24	85.4	67		**24**	84	66.1		**24**	66.5	47.6	
25	85.4	65		**25**	78.9	57.9		**25**	66.1	48.6	
26	81.4	59.1		**26**	79.9	52.4		**26**	68.6	47.7	
27	72.3	54.7		**27**	85.5	59.4		**27**	62.9	46.7	
28	83.2	71.5	1.09	**28**	79.9	51		**28**	61.6	50.1	
29	83	65.7		**29**	77.9	50.9		**29**	64.1	48	
30	87	61.6		**30**	74.7	52.4		**30**	56.6	41.3	
31	85.7	63.3		**31**	81.2	61.6					

TEMPERATURE AND PRECIPITATION DATA

Imlay City

Recorded at
Lapeer USDA/NRCS Office
Lapeer, Michigan
2011

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	49.3	22.1		**1**	73.8	50.5		**1**	76.1	59.9	
2	48.2	23.1		**2**	61.4	45.2	0.01	**2**	71.8	45.9	
3	41.2	25.4	0.52	**3**	46.9	38.8	0.01	**3**	75.8	43.8	
4	62.2	36.9	0.05	**4**	60.2	37.7		**4**	90.1	58.2	
5	46.6	32.2		**5**	68.5	32.4		**5**	85.4	54.5	
6	41.3	27.3	0.19	**6**	64.5	47.5	0.13	**6**	88	52.2	
7	54.2	33.6		**7**	68.6	37.8		**7**	93.6	69.6	
8	52	32.9		**8**	66.8	36		**8**	94	72	
9	55.5	27.3		**9**	71	35.1		**9**	83.1	54	0.22
10	82.9	42.1		**10**	68.1	48.2	0.05	**10**	63.1	48.3	0.08
11	73.3	43.6	0.28	**11**	77.8	50.6		**11**	74.8	51	0.22
12	57	33.1		**12**	84.6	53.7	0.38	**12**	68.4	49.3	
13	65.7	25.5		**13**	83.5	60	0.50	**13**	75.7	45.7	
14	50.3	31.1		**14**	61.8	48.2	0.97	**14**	74.4	46.3	
15	48.2	31.2		**15**	49.5	39.4	1.24	**15**	74	45.6	
16	60.4	34.3	0.15	**16**	47.6	38.1	0.02	**16**	76.1	59.5	0.19
17	41.5	32	0.06	**17**	53.8	40.3	0.14	**17**	81	55.6	
18	37.2	27.7	0.14	**18**	68.9	50.6	0.38	**18**	85.2	55.6	
19	38.3	29.5	0.10	**19**	69.2	55.9	0.39	**19**	82.1	53.1	
20	43.2	33.7	0.70	**20**	74.9	52.2		**20**	79.3	54.9	0.02
21	51.8	33.8		**21**	78.3	48.7	0.01	**21**	83.4	64.3	0.33
22	48	36.1	0.05	**22**	87.2	59	0.05	**22**	83.8	64.6	0.86
23	69.5	40.5	0.44	**23**	81.3	65.2	0.01	**23**	73.7	62.2	0.07
24	63.8	40.7		**24**	73.1	48.2		**24**	67.6	59	0.35
25	53.8	41.1	0.07	**25**	58.2	45.6	1.01	**25**	78	56.2	
26	73.3	43.9	0.05	**26**	58.2	41.8	0.09	**26**	79.3	52.3	
27	67.2	54.5	0.74	**27**	54.5	42.9		**27**	77.4	52	0.08
28	56.6	39.9	1.00	**28**	72.6	51.7	0.01	**28**	73.5	59.6	
29	61.7	35.9	0.06	**29**	76	57.3	0.45	**29**	78.1	50.8	
30	60.8	32.3		**30**	91.1	57.2		**30**	85.1	49.1	
				31	91.6	63.2	0.14				

TEMPERATURE AND PRECIPITATION DATA

Imlay City

Recorded at
Lapeer USDA/NRCS Office
Lapeer, Michigan
2011

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	86.9	52.8		**1**	90	64.9		**1**	91.3	58.9	
2	94.2	69.2	0.1	**2**	83.2	64.1	0.23	**2**	96.1	63.3	0.01
3	86.1	63.6		**3**	81.5	67.6	0.10	**3**	91.6	65	0.09
4	85.4	56.7		**4**	84	63.2		**4**	77.5	58.6	0.33
5	89.1	55.8		**5**	85.2	62.3		**5**	58.7	50.6	0.06
6	86.7	62.3		**6**	82.8	66.4	0.15	**6**	66.7	49.9	
7	79.4	53.8		**7**	85.2	65.5	0.84	**7**	64.5	46.7	0.20
8	87.3	52.4		**8**	82.7	65.3		**8**	66.2	56.4	0.04
9	88.1	57		**9**	81	61.1	0.41	**9**	80.5	59.1	
10	89.4	68.1		**10**	74.5	56.7		**10**	81.5	54.9	
11	82	64.8	0.05	**11**	80.3	48.1		**11**	80.6	52	
12	88.7	66.4		**12**	81.4	50.4		**12**	83.4	51.9	0.25
13	79	52		**13**	80.7	58.9	0.20	**13**	74.6	55.1	
14	79.9	47.5		**14**	71.5	57.6	0.01	**14**	70.2	40.6	0.34
15	85.9	60.6		**15**	79.9	54.7		**15**	61	35.5	
16	90.5	55.7		**16**	84.6	48.7		**16**	62	32.3	
17	94.9	61.4		**17**	81.8	52.2		**17**	65.9	40.1	
18	94.6	71.9	0.05	**18**	85.4	55.3		**18**	67.5	36.4	
19	93.6	69.2	0.10	**19**	88.5	50		**19**	66.6	56.5	0.54
20	94.5	66.1		**20**	85.2	52.8	0.62	**20**	73.5	43.7	0.01
21	98.9	68.6		**21**	77.5	54.2		**21**	77.9	46.8	0.04
22	83.1	60.7		**22**	75.6	46.2		**22**	71.5	42.9	
23	89.3	63.8		**23**	80.7	47.2		**23**	56.7	51.1	0.10
24	89.4	65.1		**24**	87	65.3	0.17	**24**	69.1	42.3	
25	87.5	63.3		**25**	70.1	56.5		**25**	74.4	41.7	
26	84.7	60.9		**26**	80.9	49.2		**26**	71.9	53.8	0.20
27	81.9	51.4	0.20	**27**	82.7	51		**27**	72.3	40.3	
28	86.7	68	0.62	**28**	75.8	49.2		**28**	67.6	48.8	0.03
29	87.9	65.3	0.80	**29**	79.6	43.7		**29**	64.3	48.8	0.25
30	91.5	59.5		**30**	81.5	45.9		**30**	50.9	39.8	0.32
31	89.7	62.9		**31**	80.2	57.8					

TEMPERATURE AND PRECIPITATION DATA

Momence

Recorded at
Stelle, Illinois Climate Network Station
Stelle, Illinois
2011

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	47.2	22.1	0.10	**1**	59.8	45.8	0.06	**1**	82	54.8	
2	57.2	32.2		**2**	56.4	42		**2**	76.7	54.3	
3	81	39.4		**3**	53.7	35		**3**	90.2	64.7	
4	68.9	38.8	0.12	**4**	56.7	36.3		**4**	95.1	66.5	0.05
5	53.6	31.4		**5**	62.3	32.2	0.05	**5**	85.5	64.5	0.04
6	67	37.3		**6**	68.6	42.7		**6**	93.1	65.7	
7	55.7	32.3	0.33	**7**	72.1	50.1	0.11	**7**	95.6	69.7	
8	50.8	45.4	0.26	**8**	70.9	48.5		**8**	95.4	68.3	
9	76.4	46.3	0.04	**9**	76.2	51.7		**9**	78.2	53.1	0.48
10	82.5	61.8	0.67	**10**	90.9	62.9		**10**	77.6	52.2	0.10
11	66.7	44.9	0.08	**11**	89.7	62.1		**11**	75.1	52.9	
12	59.4	35.7		**12**	88.8	60.9	0.02	**12**	66.6	50.3	
13	65.3	32.2		**13**	79.1	49.4	0.33	**13**	74.9	54	
14	60.9	41.5		**14**	53.6	46.3	0.72	**14**	76.9	54.7	
15	53.5	41.8	0.26	**15**	49	40.2	0.32	**15**	75.8	57.7	1.12
16	50.5	35.9	0.09	**16**	55.8	36.1		**16**	81.7	58.2	
17	55.5	33.4	0.01	**17**	59.7	35.9		**17**	85.9	60.4	
18	47.6	37.7	0.10	**18**	59.9	48		**18**	81	64.8	
19	44.8	37.3	1.05	**19**	74.5	45.4		**19**	82.2	63.1	
20	42.9	30.8		**20**	80.1	50.4		**20**	76.9	66.2	0.34
21	53.2	31.9	0.48	**21**	77.3	60.7		**21**	85.7	67.7	0.02
22	62.7	41.9	1.16	**22**	85.6	57.6	0.73	**22**	73.6	64.3	0.02
23	64.4	49.2		**23**	79.7	61.4		**23**	69.2	61.1	
24	60.4	45.3	0.03	**24**	80.2	50.4		**24**	66.8	58.6	
25	58.2	47	0.66	**25**	73.6	50.5	1.65	**25**	76.4	55	0.07
26	67.2	48.4	0.25	**26**	54.7	45	0.16	**26**	78	64.3	
27	57.1	41.4	0.28	**27**	59.2	43.1		**27**	80.9	65.1	0.16
28	47.6	38.7		**28**	66	54.1	0.16	**28**	78.3	58.4	
29	61.8	37.4		**29**	76.3	60.5	0.30	**29**	82.7	53.3	
30	73.7	45		**30**	88	61.4		**30**	86.4	58.4	
				31	86.1	64.4					

TEMPERATURE AND PRECIPITATION DATA

Momence

Recorded at
Stelle, Illinois Climate Network Station
Stelle, Illinois
2011

	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	82	65.9	0.06	**1**	89.5	66.8		**1**	97.9	66.1	
2	91.6	69.9		**2**	91.9	71.9		**2**	97.3	65.7	
3	85.8	66.6		**3**	86.9	62.1		**3**	95.1	63.6	0.88
4	83.7	60.9		**4**	84.5	60.4		**4**	74.2	54.6	
5	88	57.9		**5**	86.6	64.2		**5**	67.8	47.9	
6	88.3	63.7		**6**	87.9	69.2		**6**	68.6	43.4	
7	81.4	62.3		**7**	88	68.3		**7**	71.2	45.4	0.01
8	86	60.1		**8**				**8**	72.2	49.2	0.06
9	89.2	57.3		**9**				**9**	68.5	60.2	0.94
10	89.7	64.2		**10**	76.7	56		**10**	76.6	57.4	
11	93.6	71.9		**11**	79.9	50.3		**11**	80.2	55.9	
12	88.8	66.9	0.02	**12**	83	52.5		**12**	85.2	64.3	
13	78.1	56.1		**13**	85.6	56.6	0.38	**13**	77.5	52.6	
14	81.6	55.3		**14**	76.4	57.6		**14**	64.8	40.6	0.16
15	85.5	61.1		**15**	79.5	54.9		**15**	61.8	36.2	
16	87.8	64.4		**16**	80.5	52.2		**16**	58.4	43.8	
17	92.9	62.7		**17**	85.8	54.5		**17**	70.2	48.4	
18	88.7	73.1	0.02	**18**	85.4	61		**18**	65.3	52.5	0.23
19	96.7	76.3		**19**	88.5	64.5	0.02	**19**	68.5	46.7	0.29
20	96.8	73.6		**20**	82.1	62	0.06	**20**	76.7	44.2	0.01
21	99.6	72.8		**21**	81.7	58.4		**21**	73.7	50.3	
22	95.1	74.6		**22**	83.4	51.8		**22**	62.4	44.2	
23	95.4	70.7		**23**	74.2	54.2	0.77	**23**	64.5	41.1	0.01
24	79.3	67	1.09	**24**	90.2	62.3		**24**	62.7	44.3	0.01
25	87.4	64.2		**25**	80.5	57.7		**25**	65	45.6	0.18
26	90.2	64.7		**26**	82.7	53.1		**26**	63.1	50.9	1.56
27	89.5	64.7		**27**	84.8	57.8		**27**	63.9	52.1	0.18
28	91.7	75		**28**	78	53.5		**28**	67.5	47.2	0.04
29	84.4	67.7	1.10	**29**	80.2	54.9		**29**	73.9	54.4	0.03
30	88.3	66.8		**30**	81.8	53.2	0.04	**30**	62.8	39.1	
31	89.7	65.5		**31**	91.6	62.8	0.01				

Weed Control in Asparagus – Hart 2011

Project Code: 120-11-01 **Location: Hart, MI**

Personnel: Bernard H. Zandstra, Rodney Tocco
Crop: Asparagus **Variety: Millenium**
Planting Method: Transplant **Planting Date: 4/30/2004**
Spacing: 1 ft **Row Spacing: 4.5 ft**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 5.5 ft wide x 50 ft long

Soil Type: Spinks Loamy Fine Sand **OM: 1.5%** **pH: 6.1**
Sand: 83% **Silt: 14%** **Clay: 3%** **CEC: 3.7**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	4/29/11	11:30 am	54/50	F	Moist	5-7 NW	63	0% Cloudy	N
PO1	6/20/11	12:00 pm	72/72	F	Damp	2-3 SE	82	100%Cloudy	Y

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
4/29	ASPA = asparagus		Dormant 100%	
4/29	LACG = large crabgrass	1-3″		Few
4/29	DAND = dandelion	3″, 1″		Few
4/29	HOWE = horseweed	2″, 1″		Many
4/29	SFBE = smallflower geranium	4-6″, 1″		Many
6/20	ASPA = asparagus		After final harvest	
6/20	FIBW = field bindweed	6-12″, 4-5″		Many
6/20	FISB = field sandbur	4-6″, 3-4″	Foliar	Few
6/20	HOWE = horseweed	4-8″	Foliar	Many
6/20	SFGE = smallflower geranium	12-18″, 6-8″	Flower	Many
6/20	VIPW = Virginia pepperweed	6-8″	Seeded	Moderate
6/20	YEHW = yellow hawkweed			

Notes and Comments
1. Plots are located at Michigan Asparagus Council Research Facility.
2. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
3. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.

Weed Control in Asparagus – Hart 2011

Weed Control in Asparagus - Hart 2011

Trial ID: 120-11-01 Protocol ID: 120-11-01
Location: Hart, MI Study Director: Rodney Tocco
Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	ASPA 31/May/11 RATING 1-10	DAND 31/May11 RATING 1-10	FIBW 31/May/11 RATING 1-10	HOWE 31/May/11 RATING 1-10	SFGE 31/May/11 RATING 1-10	ASPA 20/Jun/11 RATING 1-10
1	terbacil	80	WDG	1	lb ai/a	PRE	1.0	8.3	1.0	9.3	9.3	1.7
2	diuron	80	DF	1.2	lb ai/a	PRE	1.0	10.0	5.0	10.0	9.3	1.0
	metribuzin	75	DF	0.5	lb ai/a	PRE						
3	flumioxazin	51	WDG	0.191	lb ai/a	PRE	1.0	9.0	6.0	4.7	4.3	1.7
4	sulfentrazone	4	F	0.375	lb ai/a	PRE	1.0	10.0	6.7	4.3	8.3	1.3
	s-metolachlor	7.62	EC	1.9	lb ai/a	PRE						
5	norflurazon	80	DF	3	lb ai/a	PRE	1.0	10.0	4.7	10.0	6.7	1.3
	mesotrione	4	SC	0.188	lb ai/a	PRE						
6	carfentrazone	0.35	SE	0.027	lb ai/a	PRE	1.3	9.0	3.7	5.0	10.0	1.7
	sulfentrazone	3.15	SE	0.243	lb ai/a	PRE						
7	indaziflam	1.67	SC	0.065	lb ai/a	PRE	1.0	9.3	5.7	10.0	8.0	1.0
	saflufenacil	70	WG	0.045	lb ai/a	PRE						
8	pendimethalin	3.8	CS	3.8	lb ai/a	PRE	1.3	9.3	6.0	7.3	9.7	1.0
	halosulfuron	75	WG	0.023	lb ai/a	PRE						
9	flazasulfuron	25	WG	0.045	lb ai/a	PRE	1.0	10.0	2.7	7.0	10.0	1.0
10	s-metolachlor	7.62	EC	1.9	lb ai/a	PRE	1.0	10.0	1.0	1.3	5.0	1.7
	quinclorac	75	DF	0.375	lb ai/a	PO1						
	dicamba	4	L	0.25	lb ai/a	PO1						
	clethodim	0.97	EC	0.12	lb ai/a	PO1						
	NIS	100	SL	0.25	% v/v	PO1						
LSD (P=.05)							0.42	1.68	5.03	4.44	4.20	1.26
Standard Deviation							0.24	0.98	2.93	2.59	2.45	0.74
CV							22.82	10.29	69.29	37.53	30.38	55.15

Weed Control in Asparagus – Hart 2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	FISB	FIBW	HOWE	SFGE	VIPW	YEHW
Pest Code												
Crop Code												
Rating Date							20/Jun/11	20/Jun/11	20/Jun/11	20/Jun/11	20/Jun/11	20/Jun/11
Rating Type							RATING	RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10	1-10
1	terbacil	80	WDG	1	lb ai/a	PRE	9.3	4.0	9.3	10.0	10.0	2.0
2	diuron	80	DF	1.2	lb ai/a	PRE	8.0	8.0	9.0	8.3	10.0	10.0
	metribuzin	75	DF	0.5	lb ai/a	PRE						
3	flumioxazin	51	WDG	0.191	lb ai/a	PRE	7.0	9.3	4.0	6.3	10.0	9.3
4	sulfentrazone	4	F	0.375	lb ai/a	PRE	9.0	10.0	1.7	8.0	6.7	2.3
	s-metolachlor	7.62	EC	1.9	lb ai/a	PRE						
5	norflurazon	80	DF	3	lb ai/a	PRE	8.7	6.7	10.0	6.3	10.0	10.0
	mesotrione	4	SC	0.188	lb ai/a	PRE						
6	carfentrazone	0.35	SE	0.027	lb ai/a	PRE	8.0	7.0	4.3	10.0	8.3	7.0
	sulfentrazone	3.15	SE	0.243	lb ai/a	PRE						
7	indaziflam	1.67	SC	0.065	lb ai/a	PRE	8.7	8.0	9.7	7.0	7.0	10.0
	saflufenacil	70	WG	0.045	lb ai/a	PRE						
8	pendimethalin	3.8	CS	3.8	lb ai/a	PRE	7.7	9.0	5.7	8.7	10.0	8.0
	halosulfuron	75	WG	0.023	lb ai/a	PRE						
9	flazasulfuron	25	WG	0.045	lb ai/a	PRE	10.0	6.7	10.0	10.0	10.0	9.3
10	s-metolachlor	7.62	EC	1.9	lb ai/a	PRE	10.0	5.0	1.0	5.3	2.0	5.7
	quinclorac	75	DF	0.375	lb ai/a	PO1						
	dicamba	4	L	0.25	lb ai/a	PO1						
	clethodim	0.97	EC	0.12	lb ai/a	PO1						
	NIS	100	SL	0.25	% v/v	PO1						
LSD (P=.05)							2.29	5.67	2.25	4.95	3.77	4.59
Standard Deviation							1.34	3.31	1.31	2.89	2.20	2.67
CV							15.49	44.9	20.25	36.1	26.16	36.28

Weed Control in Asparagus – Hart 2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	ASPA 11/Jul/11 RATING 1-10	FISB 11/Jul/11 RATING 1-10	FIBW 11/Jul/11 RATING 1-10	HOWE 11/Jul/11 RATING 1-10	ASPA Total KG/PLOT
1	terbacil	80	WDG	1	lb ai/a	PRE	2.3	8.0	5.0	10.0	8.095
2	diuron	80	DF	1.2	lb ai/a	PRE	1.0	8.7	10.0	10.0	11.459
	metribuzin	75	DF	0.5	lb ai/a	PRE					
3	flumioxazin	51	WDG	0.191	lb ai/a	PRE	1.7	9.7	9.0	7.7	10.483
4	sulfentrazone	4	F	0.375	lb ai/a	PRE	1.7	7.7	10.0	8.0	9.843
	s-metolachlor	7.62	EC	1.9	lb ai/a	PRE					
5	norflurazon	80	DF	3	lb ai/a	PRE	1.0	10.0	6.3	10.0	11.056
	mesotrione	4	SC	0.188	lb ai/a	PRE					
6	carfentrazone	0.35	SE	0.027	lb ai/a	PRE	2.0	6.3	7.0	7.7	8.928
	sulfentrazone	3.15	SE	0.243	lb ai/a	PRE					
7	indaziflam	1.67	SC	0.065	lb ai/a	PRE	2.0	10.0	7.7	9.7	10.147
	saflufenacil	70	WG	0.045	lb ai/a	PRE					
8	pendimethalin	3.8	CS	3.8	lb ai/a	PRE	1.7	9.3	9.7	9.3	8.901
	halosulfuron	75	WG	0.023	lb ai/a	PRE					
9	flazasulfuron	25	WG	0.045	lb ai/a	PRE	1.0	10.0	7.0	10.0	10.743
10	s-metolachlor	7.62	EC	1.9	lb ai/a	PRE	1.7	10.0	10.0	8.3	9.101
	quinclorac	75	DF	0.375	lb ai/a	PO1					
	dicamba	4	L	0.25	lb ai/a	PO1					
	clethodim	0.97	EC	0.12	lb ai/a	PO1					
	NIS	100	SL	0.25	% v/v	PO1					
LSD (P=.05)							1.25	3.94	5.18	1.81	2.8022
Standard Deviation							0.73	2.30	3.02	1.06	1.6335
CV							45.48	25.6	37.0	11.65	16.54

Weed Control in Asparagus – HTRC 2011

Project Code: 120-11-02 **Location: East Lansing, MI**

Personnel: Bernard H. Zandstra, Rodney Tocco
Crop: Asparagus **Variety: Millenium**
Planting Method: Transplant **Planting Date: 6/16/2009**
Spacing: 1 ft **Row Spacing: 6 ft**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 5.5 ft wide x 50 ft long

Soil Type: Capac Loam **OM: 2.2%** **pH: 7.0**
Sand: 51% **Silt: 32%** **Clay: 17%** **CEC: 5.0**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	4/14/11	2:00 pm	50/52	F	Good	4-7 N	51	100%Cloudy	N
PRE #9	4/21/11	5:00 pm	53/57	F	Good	1-2 N	30	70% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
4/14	ASPA = asparagus		Dormant, 100%	
4/14	LACG = large crabgrass	2-4″		Few
4/14	DAND = dandelion	2-4″		Few
4/14	EBNS = eastern black nightshade			
4/14	HOWE = horseweed	1-2″		Moderate
4/14	WHCA = white campion	1-2″		Few
4/14	WIRA = wild radish	3-6″		Few
	HEMU = hedge mustard			

Notes and Comments
1. The second PRE timing treatment was only for treatment #9.
2. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
3. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.

Weed Control in Asparagus – HTRC 2011

Weed Control in Asparagus - HTRC 2011

Trial ID: 120-11-02 Protocol ID: 120-11-02
Location: East Lansing, MI Study Director: Rodney Tocco
Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	ASPA 1/Jun/11 RATING 1-10	HEMU 1/Jun/11 RATING 1-10	HOWE 1/Jun/11 RATING 1-10	ASPA 25/Jul/11 RATING 1-10	LACG 25/Jul/11 RATING 1-10	EBNS 25/Jul/11 RATING 1-10
1	diuron	80	DF	2	lb ai/a	PRE	3.0	10.0	5.7	3.0	7.0	7.0
	pendimethalin	3.8	CS	3.8	lb ai/a	PRE						
2	flumioxazin	51	WDG	0.191	lb ai/a	PRE	2.3	10.0	2.0	3.7	3.7	10.0
3	s-metolachlor	7.62	EC	1.9	lb ai/a	PRE	2.3	7.0	7.0	3.0	8.7	10.0
	mesotrione	4	SC	0.188	lb ai/a	PRE						
4	sulfentrazone	4	F	0.375	lb ai/a	PRE	2.3	7.0	4.0	3.0	6.3	10.0
	pendimethalin	3.8	CS	1.9	lb ai/a	PRE						
5	terbacil	80	WDG	1.2	lb ai/a	PRE	1.0	10.0	10.0	1.0	8.3	10.0
6	halosulfuron	75	WG	0.047	lb ai/a	PRE	2.0	10.0	7.7	1.3	8.3	10.0
	s-metolachlor	7.62	EC	1.9	lb ai/a	PRE						
7	carfentrazone	0.35	SE	0.027	lb ai/a	PRE	1.3	10.0	5.7	2.0	3.0	10.0
	sulfentrazone	3.15	SE	0.243	lb ai/a	PRE						
8	indaziflam	1.67	SC	0.065	lb ai/a	PRE	3.3	9.3	3.7	2.7	8.0	9.3
9	flazasulfuron	25	WG	0.045	lb ai/a	PRE	1.0	10.0	8.0	1.7	9.3	3.3
10	Untreated					PRE	1.7	8.7	1.3	2.7	3.7	3.7
LSD (P=.05)							1.96	3.87	4.30	2.39	2.67	3.68
Standard Deviation							1.14	2.26	2.50	1.39	1.56	2.15
CV							56.23	24.54	45.54	58.05	23.46	25.76

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	HOWE 25/Jul/11 RATING 1-10	WIRA 25/Jul/11 RATING 1-10	ASPA 9/May/11 Good Spr #	ASPA 9/May/11 Good Spr Kg/PLOT	ASPA 9/May/11 Bad Spr #	ASPA 9/May/11 Bad Spr Kg/PLOT
1	diuron	80	DF	2	lb ai/a	PRE	7.3	9.7	5.7	0.071	0.7	0.012
	pendimethalin	3.8	CS	3.8	lb ai/a	PRE						
2	flumioxazin	51	WDG	0.191	lb ai/a	PRE	2.0	10.0	0.0	0.000	0.0	0.000
3	s-metolachlor	7.62	EC	1.9	lb ai/a	PRE	9.0	9.3	1.0	0.017	0.0	0.000
	mesotrione	4	SC	0.188	lb ai/a	PRE						
4	sulfentrazone	4	F	0.375	lb ai/a	PRE	5.3	10.0	17.7	0.289	0.0	0.000
	pendimethalin	3.8	CS	1.9	lb ai/a	PRE						
5	terbacil	80	WDG	1.2	lb ai/a	PRE	10.0	10.0	2.3	0.046	0.0	0.000
6	halosulfuron	75	WG	0.047	lb ai/a	PRE	8.0	10.0	0.7	0.013	0.0	0.000
	s-metolachlor	7.62	EC	1.9	lb ai/a	PRE						
7	carfentrazone	0.35	SE	0.027	lb ai/a	PRE	4.0	7.3	3.7	0.076	0.0	0.000
	sulfentrazone	3.15	SE	0.243	lb ai/a	PRE						
8	indaziflam	1.67	SC	0.065	lb ai/a	PRE	2.7	10.0	2.3	0.048	0.3	0.006
9	flazasulfuron	25	WG	0.045	lb ai/a	PRE	7.7	10.0	6.7	0.107	0.0	0.000
10	Untreated					PRE	1.7	8.7	6.7	0.112	0.0	0.000
LSD (P=.05)							3.01	2.58	12.32	0.1972	0.72	0.0130
Standard Deviation							1.75	1.51	7.18	0.1150	0.42	0.0076
CV							30.39	15.86	153.93	147.69	417.22	414.57

Weed Control in Asparagus – HTRC 2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	ASPA 11/May/11 Good Spr #	ASPA 11/May/11 Good Spr Kg/PLOT	ASPA 11/May/11 Bad Spr #	ASPA 11/May/11 Bad Spr Kg/PLOT	ASPA 13/May/11 Good Spr #	ASPA 13/May/11 Good Spr Kg/PLOT
	Pest Code											
	Crop Code											
	Rating Date						11/May/11	11/May/11	11/May/11	11/May/11	13/May/11	13/May/11
	Rating Type						Good Spr	Good Spr	Bad Spr	Bad Spr	Good Spr	Good Spr
	Rating Unit						#	Kg/PLOT	#	Kg/PLOT	#	Kg/PLOT
1	diuron	80	DF	2	lb ai/a	PRE	12.7	0.218	0.0	0.000	23.3	0.442
	pendimethalin	3.8	CS	3.8	lb ai/a	PRE						
2	flumioxazin	51	WDG	0.191	lb ai/a	PRE	8.7	0.137	0.0	0.000	15.0	0.284
3	s-metolachlor	7.62	EC	1.9	lb ai/a	PRE	14.7	0.243	0.0	0.000	21.7	0.347
	mesotrione	4	SC	0.188	lb ai/a	PRE						
4	sulfentrazone	4	F	0.375	lb ai/a	PRE	26.3	0.423	0.0	0.000	20.3	0.616
	pendimethalin	3.8	CS	1.9	lb ai/a	PRE						
5	terbacil	80	WDG	1.2	lb ai/a	PRE	26.7	0.417	0.7	0.008	28.0	0.555
6	halosulfuron	75	WG	0.047	lb ai/a	PRE	17.7	0.317	1.0	0.024	31.0	0.584
	s-metolachlor	7.62	EC	1.9	lb ai/a	PRE						
7	carfentrazone	0.35	SE	0.027	lb ai/a	PRE	23.7	0.377	1.7	0.024	29.7	0.614
	sulfentrazone	3.15	SE	0.243	lb ai/a	PRE						
8	indaziflam	1.67	SC	0.065	lb ai/a	PRE	2.0	0.041	0.3	0.008	8.0	0.292
9	flazasulfuron	25	WG	0.045	lb ai/a	PRE	20.0	0.340	0.7	0.012	25.0	0.499
10	Untreated					PRE	20.0	0.332	1.7	0.032	33.0	0.596
LSD (P=.05)							19.14	0.3062	2.03	0.0395	19.80	0.4176
Standard Deviation							11.16	0.1785	1.18	0.0230	11.54	0.2434
CV							64.75	62.75	196.94	214.59	49.12	50.42

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	ASPA 13/May/11 Bad Spr #	ASPA 13/May/11 Bad Spr Kg/PLOT	ASPA 16/May/11 Good Spr #	ASPA 16/May/11 Good Spr Kg/PLOT	ASPA 16/May/11 Bad Spr #	ASPA 16/May/11 Bad Spr Kg/PLOT
	Pest Code											
	Crop Code											
	Rating Date						13/May/11	13/May/11	16/May/11	16/May/11	16/May/11	16/May/11
	Rating Type						Bad Spr	Bad Spr	Good Spr	Good Spr	Bad Spr	Bad Spr
	Rating Unit						#	Kg/PLOT	#	Kg/PLOT	#	Kg/PLOT
1	diuron	80	DF	2	lb ai/a	PRE	0.3	0.005	16.0	0.295	1.3	0.026
	pendimethalin	3.8	CS	3.8	lb ai/a	PRE						
2	flumioxazin	51	WDG	0.191	lb ai/a	PRE	0.3	0.007	12.7	0.290	1.7	0.039
3	s-metolachlor	7.62	EC	1.9	lb ai/a	PRE	0.7	0.013	13.3	0.262	1.0	0.014
	mesotrione	4	SC	0.188	lb ai/a	PRE						
4	sulfentrazone	4	F	0.375	lb ai/a	PRE	0.7	0.012	20.7	0.410	0.0	0.000
	pendimethalin	3.8	CS	1.9	lb ai/a	PRE						
5	terbacil	80	WDG	1.2	lb ai/a	PRE	0.0	0.000	30.3	0.596	0.7	0.011
6	halosulfuron	75	WG	0.047	lb ai/a	PRE	0.7	0.020	18.3	0.356	0.0	0.000
	s-metolachlor	7.62	EC	1.9	lb ai/a	PRE						
7	carfentrazone	0.35	SE	0.027	lb ai/a	PRE	0.7	0.019	28.7	0.565	1.7	0.029
	sulfentrazone	3.15	SE	0.243	lb ai/a	PRE						
8	indaziflam	1.67	SC	0.065	lb ai/a	PRE	0.7	0.012	9.0	0.193	2.0	0.057
9	flazasulfuron	25	WG	0.045	lb ai/a	PRE	0.7	0.015	32.7	0.701	1.3	0.033
10	Untreated					PRE	0.0	0.000	16.0	0.330	0.3	0.005
LSD (P=.05)							1.33	0.0316	15.35	0.3546	2.68	0.0619
Standard Deviation							0.78	0.0184	8.95	0.2067	1.56	0.0361
CV							166.5	177.69	45.26	51.69	155.99	169.56

Weed Control in Asparagus – HTRC 2011

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	ASPA 19/May/11 Good Spr #	ASPA 19/May/11 Good Spr Kg/PLOT	ASPA 19/May/11 Bad Spr #	ASPA 19/May/11 Bad Spr Kg/PLOT	ASPA 20/May/11 Good Spr #	ASPA 20/May/11 Good Spr Kg/PLOT
1	diuron	80	DF	2	lb ai/a	PRE	7.0	0.157	1.0	0.023	7.7	0.129
	pendimethalin	3.8	CS	3.8	lb ai/a	PRE						
2	flumioxazin	51	WDG	0.191	lb ai/a	PRE	8.0	0.135	1.0	0.023	7.3	0.122
3	s-metolachlor	7.62	EC	1.9	lb ai/a	PRE	9.3	0.157	0.0	0.000	10.7	0.152
	mesotrione	4	SC	0.188	lb ai/a	PRE						
4	sulfentrazone	4	F	0.375	lb ai/a	PRE	13.3	0.215	1.7	0.034	5.7	0.093
	pendimethalin	3.8	CS	1.9	lb ai/a	PRE						
5	terbacil	80	WDG	1.2	lb ai/a	PRE	18.0	0.342	0.7	0.010	12.3	0.200
6	halosulfuron	75	WG	0.047	lb ai/a	PRE	16.7	0.308	0.0	0.000	12.0	0.226
	s-metolachlor	7.62	EC	1.9	lb ai/a	PRE						
7	carfentrazone	0.35	SE	0.027	lb ai/a	PRE	12.3	0.231	0.7	0.012	9.3	0.159
	sulfentrazone	3.15	SE	0.243	lb ai/a	PRE						
8	indaziflam	1.67	SC	0.065	lb ai/a	PRE	6.0	0.348	1.3	0.031	5.3	0.129
9	flazasulfuron	25	WG	0.045	lb ai/a	PRE	19.7	0.361	1.7	0.041	11.7	0.196
10	Untreated					PRE	13.7	0.254	0.7	0.014	10.0	0.154
LSD (P=.05)							11.05	0.2910	1.88	0.0451	9.56	0.1580
Standard Deviation							6.44	0.1697	1.09	0.0263	5.58	0.0921
CV							51.93	67.64	126.2	139.74	60.6	59.01

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	ASPA 20/May/11 Bad Spr #	ASPA 20/May/11 Bad Spr Kg/PLOT	ASPA Total Gd Sp #	ASPA Total Gd Sp Kg/PLOT	ASPA Total Bd Sp #	ASPA Total Bd Sp Kg/PLOT
1	diuron	80	DF	2	lb ai/a	PRE	0.3	0.007	72.3	1.312	3.7	0.072
	pendimethalin	3.8	CS	3.8	lb ai/a	PRE						
2	flumioxazin	51	WDG	0.191	lb ai/a	PRE	1.0	0.013	51.7	0.968	4.0	0.082
3	s-metolachlor	7.62	EC	1.9	lb ai/a	PRE	0.3	0.005	70.7	1.177	2.0	0.033
	mesotrione	4	SC	0.188	lb ai/a	PRE						
4	sulfentrazone	4	F	0.375	lb ai/a	PRE	1.0	0.020	104.0	2.045	3.3	0.066
	pendimethalin	3.8	CS	1.9	lb ai/a	PRE						
5	terbacil	80	WDG	1.2	lb ai/a	PRE	0.3	0.009	117.7	2.156	2.3	0.038
6	halosulfuron	75	WG	0.047	lb ai/a	PRE	2.3	0.048	96.3	1.805	4.0	0.092
	s-metolachlor	7.62	EC	1.9	lb ai/a	PRE						
7	carfentrazone	0.35	SE	0.027	lb ai/a	PRE	0.3	0.007	107.3	2.021	5.0	0.091
	sulfentrazone	3.15	SE	0.243	lb ai/a	PRE						
8	indaziflam	1.67	SC	0.065	lb ai/a	PRE	1.3	0.029	32.7	1.051	6.0	0.143
9	flazasulfuron	25	WG	0.045	lb ai/a	PRE	0.7	0.013	115.7	2.204	5.0	0.114
10	Untreated					PRE	0.0	0.000	99.3	1.779	2.7	0.051
LSD (P=.05)							2.82	0.0587	69.31	1.3079	5.44	0.1193
Standard Deviation							1.64	0.0342	40.40	0.7624	3.17	0.0695
CV							214.33	226.47	46.57	46.16	83.46	89.02

Weed Control in Snap Bean – HTRC 2011

Project Code: 125-11-01 **Location: East Lansing, MI**

Personnel: Bernard H. Zandstra, Rodney Tocco
Crop: Snap bean **Variety: Foremost**
Planting Method: Seeded **Planting Date: 6/2/2011**
Spacing: 3 inch **Row Spacing: 14 inch, 3 rows/plot**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 5.5 ft wide x 30 ft long

Soil Type: Capac Loam **OM: 3%** **pH: 5.9**
Sand: 52% **Silt: 37%** **Clay: 11%** **CEC: 9.2**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	6/3/11	12:00 pm	75/66	F	Dry	7 SE	32	10% Cloudy	N
PO1	6/30/11	2:30 pm	66/77	F	Dry	3-5 S	72	100%Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
6/3	SNBE = snap bean		Just planted	
6/30	SNBE = snap bean			
6/30	GRFT = green foxtail			
6/30	LACG = large crabgrass	10-12″	6-8 LS	Few
6/30	YENS = yellow nutsedge	6-8″	6-8 LS	Moderate
6/30	COLQ = common lambsquarters	1-2″, 4-6″		Moderate
6/30	CORW = common ragweed			
6/30	EBNS = eastern black nightshade			
6/30	RRPW = redroot pigweed	1-2″	6-8 LS	Many

Notes and Comments
1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.

Weed Control in Snap Bean – HTRC 2011

Weed Control in Snap Bean - HTRC 2011

Trial ID: 125-11-01 Protocol ID: 125-11-01
Location: East Lansing, MI Study Director: Rodney Tocco
Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	SNBE 21/Jun/11 RATING 1-10	GRFT 21/Jun/11 RATING 1-10	YENS 21/Jun/11 RATING 1-10	EBNS 21/Jun/11 RATING 1-10	RRPW 21/Jun/11 RATING 1-10	SNBE 5/Jul/11 RATING 1-10
1	s-metolachlor	7.62	EC	1.26	lb ai/a	PRE	1.3	10.0	8.0	9.7	10.0	1.3
2	pendimethalin	3.8	CS	0.95	lb ai/a	PRE	1.0	10.0	7.0	9.3	7.0	1.7
3	clomazone	3	ME	0.25	lb ai/a	PRE	1.0	10.0	7.3	7.0	2.3	1.0
4	pendimethalin	3.8	CS	0.95	lb ai/a	PRE	1.0	10.0	2.7	9.7	10.0	1.3
	clomazone	3	ME	0.25	lb ai/a	PRE						
5	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	1.3	10.0	6.3	10.0	10.0	1.3
	clomazone	3	ME	0.25	lb ai/a	PRE						
6	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	1.0	10.0	9.3	10.0	10.0	1.3
	halosulfuron	75	WG	0.023	lb ai/a	PRE						
7	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	1.0	10.0	10.0	10.0	10.0	1.7
	fomesafen	2	SL	0.25	lb ai/a	PRE						
8	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	1.7	10.0	9.3	10.0	10.0	1.3
	halosulfuron	75	WG	0.023	lb ai/a	PO1						
	clethodim	0.97	EC	0.12	lb ai/a	PO1						
	NIS	100	SL	0.25	% v/v	PO1						
9	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	1.3	10.0	9.3	10.0	10.0	1.3
	imazamox	1	AS	0.031	lb ai/a	PO1						
	NIS	100	SL	0.25	% v/v	PO1						
10	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	1.3	10.0	9.3	10.0	10.0	1.3
	imazamox	1	AS	0.031	lb ai/a	PO1						
	bentazon	4	L	0.75	lb ai/a	PO1						
	NIS	100	SL	0.25	% v/v	PO1						
11	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	1.7	10.0	9.0	10.0	10.0	2.0
	fomesafen	2	SL	0.25	lb ai/a	PO1						
	NIS	100	SL	0.25	% v/v	PO1						
12	Untreated					PRE	1.0	9.0	7.7	7.7	2.3	1.7
	bentazon	4	L	1	lb ai/a	PO1						
	clethodim	0.97	EC	0.12	lb ai/a	PO1						
	NIS	100	SL	0.25	% v/v	PO1						
LSD (P=.05)							0.72	0.85	2.51	3.06	2.01	0.95
Standard Deviation							0.42	0.50	1.48	1.80	1.19	0.56
CV							34.64	5.04	18.65	19.1	14.04	38.9

Weed Control in Snap Bean – HTRC 2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	GRFT	COLQ	CORW	RRPW	SNBE	SNBE
Pest Code												
Crop Code											SNBE	SNBE
Rating Date							5/Jul/11	5/Jul/11	5/Jul/11	5/Jul/11	3/Aug/11	3/Aug/11
Rating Type							RATING	RATING	RATING	RATING	Plant	Pod
Rating Unit							1-10	1-10	1-10	1-10	KG/PLOT	KG/PLOT
1	s-metolachlor	7.62	EC	1.26	lb ai/a	PRE	10.0	7.7	9.3	4.0	13.752	15.640
2	pendimethalin	3.8	CS	0.95	lb ai/a	PRE	9.0	10.0	9.0	8.7	15.970	18.478
3	clomazone	3	ME	0.25	lb ai/a	PRE	9.0	10.0	10.0	2.7	11.190	11.633
4	pendimethalin	3.8	CS	0.95	lb ai/a	PRE	10.0	10.0	10.0	6.7	16.987	19.102
	clomazone	3	ME	0.25	lb ai/a	PRE						
5	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	10.0	9.7	10.0	6.0	16.960	18.275
	clomazone	3	ME	0.25	lb ai/a	PRE						
6	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	8.0	8.0	10.0	9.0	18.165	21.470
	halosulfuron	75	WG	0.023	lb ai/a	PRE						
7	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	9.7	8.3	10.0	9.7	18.457	21.252
	fomesafen	2	SL	0.25	lb ai/a	PRE						
8	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	10.0	7.3	10.0	8.7	19.155	20.920
	halosulfuron	75	WG	0.023	lb ai/a	PO1						
	clethodim	0.97	EC	0.12	lb ai/a	PO1						
	NIS	100	SL	0.25	% v/v	PO1						
9	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	10.0	9.7	10.0	10.0	22.103	19.893
	imazamox	1	AS	0.031	lb ai/a	PO1						
	NIS	100	SL	0.25	% v/v	PO1						
10	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	10.0	9.7	10.0	10.0	20.875	22.918
	imazamox	1	AS	0.031	lb ai/a	PO1						
	bentazon	4	L	0.75	lb ai/a	PO1						
	NIS	100	SL	0.25	% v/v	PO1						
11	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	10.0	9.3	10.0	10.0	19.752	20.868
	fomesafen	2	SL	0.25	lb ai/a	PO1						
	NIS	100	SL	0.25	% v/v	PO1						
12	Untreated					PRE	10.0	10.0	10.0	3.3	13.223	15.287
	bentazon	4	L	1	lb ai/a	PO1						
	clethodim	0.97	EC	0.12	lb ai/a	PO1						
	NIS	100	SL	0.25	% v/v	PO1						
LSD (P=.05)							1.31	1.46	0.97	2.06	3.3244	4.4058
Standard Deviation							0.77	0.86	0.58	1.21	1.9631	2.6017
CV							8.01	9.46	5.83	16.44	11.4	13.83

Weed Control in Beets & Chard – HTRC 2011

Project Code: 109-11-01 **Location: East Lansing, MI**

Personnel: Bernard H. Zandstra, Rodney Tocco
Crop: Beets, Swiss Chard **Variety: See notes**
Planting Method: Seeded **Planting Date: 5/5/2011**
Spacing: 3 inch **Row Spacing: 14 inch**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 5.5 ft wide x 35 ft long

Soil Type: Marlette Fine Sandy Loam **OM: 2.7%** **pH: 5.8**
Sand: 38% **Silt: 36%** **Clay: 26%** **CEC: 6.9**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	5/6/11	3:00 pm	65/64	F	Good	5-8 W	30	80% Cloudy	N
MAINT	6/2/11	4:00 pm	72/85	F	Good	3 S	30	0% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
5/6	REDBEET,CHARD,SUG BEET		Just planted	
5/6	GRFT = green foxtail			
5/6	LATH = ladysthumb			
6/2	REDBEET,CHARD,SUG BEET		4-8, 2-4, 2-4 LS	
6/2	YENS = yellow nutsedge	0.5″		Many
6/2	COLQ = common lambsquarters		2-3 LS	Few
6/2	CORW = common ragweed		2-4 LS	Many
6/2	RRPW = redroot pigweed			
6/2	WIRA = wild radish		4-6 LS	Few

Notes and Comments
1. 2 rows red beets, 1 row Swiss chard, 2 rows sugar beets per plot.
2. Varieties: Ruby Queen, Forkhook Giant, Crystal 963.
3. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
4. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.

Weed Control in Beets & Chard – HTRC 2011

Weed Control in Beet & Chard - HTRC 2011

Trial ID: 109-11-01 Protocol ID: 109-11-01
Location: East Lansing, MI Study Director: Rodney Tocco
Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	REDBEET 1/Jun/11 RATING 1-10	CHARD 1/Jun/11 RATING 1-10	SUGBEET 1/Jun/11 RATING 1-10	GRFT 1/Jun/11 RATING 1-10	YENS 1/Jun/11 RATING 1-10	CORW 1/Jun/11 RATING 1-10
1	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	1.0	1.0	4.0	10.0	10.0	10.0
2	dimethenamid-p	6	EC	0.75	lb ai/a	PRE	2.3	1.7	4.3	10.0	10.0	10.0
3	ethofumesate	4	SC	2.0	lb ai/a	PRE	1.0	1.0	3.7	9.7	9.3	7.0
4	pyrazon	68	DF	3	lb ai/a	PRE	1.0	1.0	3.3	9.7	5.3	10.0
5	cycloate	6	EC	3	lb ai/a	PRE	1.0	1.0	3.7	9.3	9.3	9.0
6	pyroxasulfone	85	WDG	0.15	lb ai/a	PRE	10.0	10.0	10.0	10.0	10.0	10.0
7	acetochlor	6.4	EC	0.5	lb ai/a	PRE	3.0	2.3	5.7	10.0	9.3	10.0
8	pendimethalin	3.8	CS	0.5	lb ai/a	PRE	6.3	6.0	6.3	10.0	1.3	10.0
9	carfentrazone	0.35	SE	0.01	lb ai/a	PRE	10.0	10.0	8.7	9.7	8.7	10.0
	sulfentrazone	3.15	SE	0.09	lb ai/a	PRE						
10	Untreated						1.0	1.0	3.0	1.0	1.7	1.0
LSD (P=.05)							0.91	1.08	2.18	0.79	2.03	2.87
Standard Deviation							0.53	0.63	1.27	0.46	1.18	1.67
CV							14.47	17.99	24.18	5.14	15.8	19.23

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	LATH 1/Jun/11 RATING 1-10	WIRA 1/Jun/11 RATING 1-10	REDBEET 9/Jun/11 RATING 1-10	CHARD 9/Jun/11 RATING 1-10	SUGBEET 9/Jun/11 RATING 1-10	YENS 9/Jun/11 RATING 1-10
1	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	8.7	10.0	1.3	1.3	2.7	10.0
2	dimethenamid-p	6	EC	0.75	lb ai/a	PRE	9.7	10.0	2.3	2.3	1.3	10.0
3	ethofumesate	4	SC	2.0	lb ai/a	PRE	8.7	10.0	2.0	2.0	2.3	9.7
4	pyrazon	68	DF	3	lb ai/a	PRE	9.0	10.0	1.0	2.7	2.3	6.0
5	cycloate	6	EC	3	lb ai/a	PRE	6.3	10.0	1.0	1.3	4.0	9.7
6	pyroxasulfone	85	WDG	0.15	lb ai/a	PRE	10.0	7.0	10.0	10.0	10.0	10.0
7	acetochlor	6.4	EC	0.5	lb ai/a	PRE	9.0	7.0	3.3	3.3	4.0	9.3
8	pendimethalin	3.8	CS	0.5	lb ai/a	PRE	4.7	4.0	6.0	6.7	3.7	2.0
9	carfentrazone	0.35	SE	0.01	lb ai/a	PRE	9.7	10.0	10.0	10.0	10.0	8.0
	sulfentrazone	3.15	SE	0.09	lb ai/a	PRE						
10	Untreated						1.0	4.0	1.0	1.0	2.7	2.0
LSD (P=.05)							2.25	4.97	1.32	1.00	1.84	1.44
Standard Deviation							1.31	2.90	0.77	0.58	1.07	0.84
CV							17.1	35.34	20.19	14.35	24.88	10.97

Weed Control in Beets & Chard – HTRC 2011

Dept of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	REDBEET 21/Jun/11 RATING 1-10	CHARD 21/Jun/11 RATING 1-10	SUGBEET 21/Jun/11 RATING 1-10	GRFT 21/Jun/11 RATING 1-10	YENS 21/Jun/11 RATING 1-10
1	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	1.7	1.0	2.3	10.0	10.0
2	dimethenamid-p	6	EC	0.75	lb ai/a	PRE	2.7	2.0	1.7	10.0	10.0
3	ethofumesate	4	SC	2.0	lb ai/a	PRE	1.3	1.3	1.3	9.7	9.7
4	pyrazon	68	DF	3	lb ai/a	PRE	1.7	1.7	2.7	10.0	9.0
5	cycloate	6	EC	3	lb ai/a	PRE	1.3	1.0	2.7	10.0	10.0
6	pyroxasulfone	85	WDG	0.15	lb ai/a	PRE	9.3	9.7	6.3	10.0	10.0
7	acetochlor	6.4	EC	0.5	lb ai/a	PRE	3.0	2.0	2.0	9.7	9.3
8	pendimethalin	3.8	CS	0.5	lb ai/a	PRE	7.0	7.3	6.0	10.0	6.3
9	carfentrazone	0.35	SE	0.01	lb ai/a	PRE	10.0	10.0	7.7	10.0	9.3
	sulfentrazone	3.15	SE	0.09	lb ai/a	PRE					
10	Untreated						1.0	1.0	1.7	8.7	7.7
LSD (P=.05)							1.10	1.18	2.30	0.72	1.09
Standard Deviation							0.64	0.69	1.34	0.42	0.64
CV							16.44	18.54	39.0	4.3	6.96

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	LATH 21/Jun/11 RATING 1-10	RRPW 21/Jun/11 RATING 1-10	REDBEET 6/Jul/11 RATING 1-10	CHARD 6/Jul/11 RATING 1-10	SUGBEET 6/Jul/11 RATING 1-10	CHARD 26/Jul/11 Harvest KG/PLOT
1	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	10.0	10.0	2.0	1.0	3.0	21.623
2	dimethenamid-p	6	EC	0.75	lb ai/a	PRE	10.0	10.0	2.3	2.3	2.0	20.335
3	ethofumesate	4	SC	2.0	lb ai/a	PRE	10.0	10.0	1.3	1.0	1.7	21.015
4	pyrazon	68	DF	3	lb ai/a	PRE	10.0	10.0	1.0	1.3	2.0	16.518
5	cycloate	6	EC	3	lb ai/a	PRE	10.0	10.0	1.0	1.3	2.0	19.635
6	pyroxasulfone	85	WDG	0.15	lb ai/a	PRE	10.0	10.0	9.0	9.0	9.0	1.490
7	acetochlor	6.4	EC	0.5	lb ai/a	PRE	9.7	10.0	2.0	2.3	2.3	13.382
8	pendimethalin	3.8	CS	0.5	lb ai/a	PRE	10.0	9.7	6.7	6.3	7.0	5.762
9	carfentrazone	0.35	SE	0.01	lb ai/a	PRE	9.3	10.0	10.0	10.0	9.0	0.000
	sulfentrazone	3.15	SE	0.09	lb ai/a	PRE						
10	Untreated						10.0	9.7	1.3	1.0	2.7	22.025
LSD (P=.05)							0.72	0.42	1.29	0.85	1.49	7.4118
Standard Deviation							0.42	0.24	0.75	0.50	0.87	4.3206
CV							4.21	2.45	20.53	13.97	21.32	30.47

Weed Control in Beets & Chard – HTRC 2011

Dept of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	REDBEET 9/Aug/11 Count #	REDBEET 9/Aug/11 Roots KG/PLOT	REDBEET 9/Aug/11 Shoots KG/PLOT	SUGBEET 7/Oct/11 Harvest #	SUGBEET 7/Oct/11 Harvest KG/PLOT
	Pest Code										
	Crop Code										
	Rating Date						9/Aug/11	9/Aug/11	9/Aug/11	7/Oct/11	7/Oct/11
	Rating Type						Count	Roots	Shoots	Harvest	Harvest
	Rating Unit						#	KG/PLOT	KG/PLOT	#	KG/PLOT
1	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	249.7	30.063	12.063	44.3	36.913
2	dimethenamid-p	6	EC	0.75	lb ai/a	PRE	213.7	23.545	12.187	42.3	42.913
3	ethofumesate	4	SC	2.0	lb ai/a	PRE	262.3	27.092	13.999	56.7	43.743
4	pyrazon	68	DF	3	lb ai/a	PRE	214.7	27.955	10.890	45.3	33.060
5	cycloate	6	EC	3	lb ai/a	PRE	274.7	32.380	13.658	56.7	42.520
6	pyroxasulfone	85	WDG	0.15	lb ai/a	PRE	10.0	2.392	1.082	20.3	30.587
7	acetochlor	6.4	EC	0.5	lb ai/a	PRE	193.3	23.540	10.903	47.3	39.707
8	pendimethalin	3.8	CS	0.5	lb ai/a	PRE	29.0	3.698	2.390	23.3	20.173
9	carfentrazone	0.35	SE	0.01	lb ai/a	PRE	0.0	0.000	0.000	18.0	22.753
	sulfentrazone	3.15	SE	0.09	lb ai/a	PRE					
10	Untreated						240.0	24.144	9.595	49.0	34.393
LSD (P=.05)							36.59	10.3375	2.0537	12.05	11.8627
Standard Deviation							21.33	6.0261	1.1972	7.02	6.9152
CV							12.64	30.93	13.8	17.41	19.94

Weed Control in Broccoli & Cabbage – HTRC 2011

Project Code: 114-11-01 **Location: East Lansing, MI**

Personnel: Bernard H. Zandstra, Rodney Tocco
Crop: Broccoli, Cabbage **Variety: Packman, Artost**
Planting Method: Transplant **Planting Date: 5/23/11**
Spacing: 22 inch **Row Spacing: 3 ft**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 5.5 ft wide x 35 ft long

Soil Type: Capac Loam **OM: 2.2%** **pH: 6.7**
Sand: 75% **Silt: 20%** **Clay: 5%** **CEC: 4.8**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRT	5/23/11	10:45 am	73/66	F	Moist	6 SW	77	17% Cloudy	N
POT	5/24/11	9:15 am	63/62	F	Good	3-5 SW	67	25% Cloudy	N
PO1	6/15/11	10:00 am	65/62	F	Dry	5-7 S	71	50% Cloudy	Y

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
5/23	BROCCOLI, CABBAGE		PRT 100%	
5/24	BROCCOLI, CABBAGE		POT, planted 5/23	
6/15	BROCCOLI, CABBAGE	6-7”, 5-6”	8-10, 7-10 LS	Good, Good
6/15	GRFT = green foxtail	1-3”		Many
6/15	COLQ = common lambsquarters	0.5-1”		Moderate
6/15	EBNS = eastern black nightshade	0.5”		Moderate
6/15	WIRA = wild radish	3-4”		Many

Notes and Comments
1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.

Weed Control in Broccoli & Cabbage – HTRC 2011

Weed Control in Broccoli & Cabbage - HTRC 2011

Trial ID: 114-11-01 Protocol ID: 114-11-01
Location: East Lansing, MI Study Director: Rodney Tocco
Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	BROCCOLI 15/Jun/11 RATING 1-10	CABBAGE 15/Jun/11 RATING 1-10	GRFT 15/Jun/11 RATING 1-10	COLQ 15/Jun/11 RATING 1-10	EBNS 15/Jun/11 RATING 1-10
1	s-metolachlor	7.62	EC	0.95	lb ai/a	PRT	2.3	2.0	10.0	10.0	10.0
	oxyfluorfen	4	SC	0.5	lb ai/a	PRT					
2	pendimethalin	3.8	CS	1.9	lb ai/a	PRT	1.7	1.3	9.7	10.0	10.0
3	pendimethalin	3.8	CS	1.9	lb ai/a	POT	1.0	1.0	10.0	10.0	9.3
4	napropamide	50	DF	2	lb ai/a	POT	1.0	1.0	10.0	10.0	2.0
5	napropamide-UV	50	DF	2	lb ai/a	POT	1.0	1.0	10.0	10.0	2.7
6	s-metolachlor	7.62	EC	0.95	lb ai/a	PRT	2.7	2.7	10.0	10.0	10.0
	clomazone	3	ME	0.25	lb ai/a	PRT					
7	s-metolachlor	7.62	EC	0.95	lb ai/a	PRT	1.7	1.3	10.0	10.0	10.0
	sulfentrazone	4	F	0.125	lb ai/a	PRT					
8	pyroxasulfone	85	WDG	0.186	lb ai/a	PRT	3.7	3.7	10.0	10.0	10.0
9	s-metolachlor	7.62	EC	0.95	lb ai/a	PRT	1.0	1.0	10.0	9.3	10.0
	oxyfluorfen	4	SC	0.25	lb ai/a	PO1					
	clethodim	0.97	EC	0.07	lb ai/a	PO1					
10	s-metolachlor	7.62	EC	0.95	lb ai/a	PRT	1.0	1.0	10.0	8.3	10.0
	clopyralid	3	L	0.1	lb ai/a	PO1					
	clethodim	0.97	EC	0.07	lb ai/a	PO1					
11	s-metolachlor	7.62	EC	0.95	lb ai/a	PRT	1.7	1.3	10.0	9.0	10.0
	oxyfluorfen	4	SC	0.25	lb ai/a	PO1					
	clopyralid	3	L	0.1	lb ai/a	PO1					
	clethodim	0.97	EC	0.07	lb ai/a	PO1					
12	Untreated						1.0	1.0	1.0	1.0	1.0
LSD (P=.05)							0.97	0.95	0.28	1.21	0.82
Standard Deviation							0.58	0.56	0.17	0.72	0.48
CV							35.09	36.77	1.81	7.98	6.12

Weed Control in Broccoli & Cabbage – HTRC 2011

Dept of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	WIRA	BROCCOLI	CABBAGE	GRFT	EBNS
Pest Code							WIRA			GRFT	EBNS
Crop Code								BROCCOLI	CABBAGE		
Rating Date							15/Jun/11	22/Jun/11	22/Jun/11	22/Jun/11	22/Jun/11
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	s-metolachlor	7.62	EC	0.95	lb ai/a	PRT	9.0	1.7	1.7	10.0	10.0
	oxyfluorfen	4	SC	0.5	lb ai/a	PRT					
2	pendimethalin	3.8	CS	1.9	lb ai/a	PRT	5.7	1.0	1.0	8.3	10.0
3	pendimethalin	3.8	CS	1.9	lb ai/a	POT	3.7	1.0	1.0	10.0	9.3
4	napropamide	50	DF	2	lb ai/a	POT	2.7	1.0	1.0	10.0	2.3
5	napropamide-UV	50	DF	2	lb ai/a	POT	2.3	1.3	1.3	10.0	2.0
6	s-metolachlor	7.62	EC	0.95	lb ai/a	PRT	3.3	1.7	1.3	10.0	10.0
	clomazone	3	ME	0.25	lb ai/a	PRT					
7	s-metolachlor	7.62	EC	0.95	lb ai/a	PRT	2.3	2.0	2.0	10.0	10.0
	sulfentrazone	4	F	0.125	lb ai/a	PRT					
8	pyroxasulfone	85	WDG	0.186	lb ai/a	PRT	9.3	4.7	4.3	10.0	10.0
9	s-metolachlor	7.62	EC	0.95	lb ai/a	PRT	1.7	3.0	3.0	10.0	10.0
	oxyfluorfen	4	SC	0.25	lb ai/a	PO1					
	clethodim	0.97	EC	0.07	lb ai/a	PO1					
10	s-metolachlor	7.62	EC	0.95	lb ai/a	PRT	1.7	2.0	1.7	10.0	10.0
	clopyralid	3	L	0.1	lb ai/a	PO1					
	clethodim	0.97	EC	0.07	lb ai/a	PO1					
11	s-metolachlor	7.62	EC	0.95	lb ai/a	PRT	1.3	3.7	2.7	10.0	10.0
	oxyfluorfen	4	SC	0.25	lb ai/a	PO1					
	clopyralid	3	L	0.1	lb ai/a	PO1					
	clethodim	0.97	EC	0.07	lb ai/a	PO1					
12	Untreated						1.0	1.0	1.0	1.0	1.0
LSD (P=.05)							2.13	1.07	1.29	0.28	0.75
Standard Deviation							1.26	0.63	0.76	0.17	0.44
CV							34.24	31.68	41.66	1.83	5.59

Weed Control in Broccoli & Cabbage – HTRC 2011

Dept of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	WIRA 22/Jun/11 RATING 1-10	BROCCOLI 29/Jun/11 RATING 1-10	CABBAGE 29/Jun/11 RATING 1-10	BROCCOLI 15/Jul/11 Harvest KG/PLOT	BROCCOLI 15/Jul/11 Harvest #/PLOT
1	s-metolachlor	7.62	EC	0.95	lb ai/a	PRT	8.7	1.3	1.7	0.353	1.7
	oxyfluorfen	4	SC	0.5	lb ai/a	PRT					
2	pendimethalin	3.8	CS	1.9	lb ai/a	PRT	3.0	1.7	1.0	0.420	2.3
3	pendimethalin	3.8	CS	1.9	lb ai/a	POT	4.0	1.0	1.3	0.767	3.0
4	napropamide	50	DF	2	lb ai/a	POT	2.3	1.0	1.0	1.143	5.7
5	napropamide-UV	50	DF	2	lb ai/a	POT	1.0	1.0	1.0	1.007	3.7
6	s-metolachlor	7.62	EC	0.95	lb ai/a	PRT	5.3	1.0	1.3	0.780	3.3
	clomazone	3	ME	0.25	lb ai/a	PRT					
7	s-metolachlor	7.62	EC	0.95	lb ai/a	PRT	2.7	2.0	2.0	0.060	0.3
	sulfentrazone	4	F	0.125	lb ai/a	PRT					
8	pyroxasulfone	85	WDG	0.186	lb ai/a	PRT	9.3	3.3	4.3	0.067	0.3
9	s-metolachlor	7.62	EC	0.95	lb ai/a	PRT	9.3	2.0	2.0	0.793	2.7
	oxyfluorfen	4	SC	0.25	lb ai/a	PO1					
	clethodim	0.97	EC	0.07	lb ai/a	PO1					
10	s-metolachlor	7.62	EC	0.95	lb ai/a	PRT	1.7	2.0	1.7	0.260	0.7
	clopyralid	3	L	0.1	lb ai/a	PO1					
	clethodim	0.97	EC	0.07	lb ai/a	PO1					
11	s-metolachlor	7.62	EC	0.95	lb ai/a	PRT	9.3	1.3	1.0	0.800	3.3
	oxyfluorfen	4	SC	0.25	lb ai/a	PO1					
	clopyralid	3	L	0.1	lb ai/a	PO1					
	clethodim	0.97	EC	0.07	lb ai/a	PO1					
12	Untreated						1.0	1.7	1.7	0.107	0.7
LSD (P=.05)							2.41	1.10	0.94	1.0215	3.65
Standard Deviation							1.42	0.65	0.56	0.6032	2.16
CV							29.63	40.31	33.44	110.41	93.52

Weed Control in Broccoli & Cabbage – HTRC 2011

Dept of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	BROCCOLI 18/Jul/11 Harvest KG/PLOT	BROCCOLI 18/Jul/11 Harvest #/PLOT	BROCCOLI 21/Jul/11 Harvest KG/PLOT	BROCCOLI 21/Jul/11 Harvest #/PLOT	BROCCOLI 29/Jul/11 Harvest KG/PLOT
1	s-metolachlor	7.62	EC	0.95	lb ai/a	PRT	1.047	4.7	1.130	5.3	0.973
	oxyfluorfen	4	SC	0.5	lb ai/a	PRT					
2	pendimethalin	3.8	CS	1.9	lb ai/a	PRT	1.189	5.3	0.900	5.7	0.435
3	pendimethalin	3.8	CS	1.9	lb ai/a	POT	1.825	9.0	0.577	3.3	0.192
4	napropamide	50	DF	2	lb ai/a	POT	0.886	4.0	1.173	7.3	0.160
5	napropamide-UV	50	DF	2	lb ai/a	POT	1.063	5.7	0.523	3.7	0.080
6	s-metolachlor	7.62	EC	0.95	lb ai/a	PRT	1.514	7.0	1.003	5.3	0.247
	clomazone	3	ME	0.25	lb ai/a	PRT					
7	s-metolachlor	7.62	EC	0.95	lb ai/a	PRT	1.240	5.3	1.480	7.0	0.502
	sulfentrazone	4	F	0.125	lb ai/a	PRT					
8	pyroxasulfone	85	WDG	0.186	lb ai/a	PRT	0.483	2.3	0.580	2.7	0.253
9	s-metolachlor	7.62	EC	0.95	lb ai/a	PRT	1.609	7.0	1.547	6.0	0.258
	oxyfluorfen	4	SC	0.25	lb ai/a	PO1					
	clethodim	0.97	EC	0.07	lb ai/a	PO1					
10	s-metolachlor	7.62	EC	0.95	lb ai/a	PRT	0.984	2.0	1.127	6.7	0.430
	clopyralid	3	L	0.1	lb ai/a	PO1					
	clethodim	0.97	EC	0.07	lb ai/a	PO1					
11	s-metolachlor	7.62	EC	0.95	lb ai/a	PRT	0.977	4.0	1.180	5.0	0.322
	oxyfluorfen	4	SC	0.25	lb ai/a	PO1					
	clopyralid	3	L	0.1	lb ai/a	PO1					
	clethodim	0.97	EC	0.07	lb ai/a	PO1					
12	Untreated						0.851	4.3	0.943	7.7	0.542
LSD (P=.05)							0.9582	4.34	1.0205	5.04	0.4264
Standard Deviation							0.5659	2.56	0.6026	2.98	0.2518
CV							49.68	50.71	59.45	54.4	68.78

Weed Control in Broccoli & Cabbage – HTRC 2011

Dept of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	BROCCOLI 29/Jul/11 Harvest #/PLOT	BROCCOLI 25/Jul/11 Harvest KG/PLOT	BROCCOLI 25/Jul/11 Harvest #/PLOT	BROCCOLI TOTAL KG/PLOT	BROCCOLI TOTAL #/PLOT
1	s-metolachlor	7.62	EC	0.95	lb ai/a	PRT	4.7	1.093	4.0	4.597	20.3
	oxyfluorfen	4	SC	0.5	lb ai/a	PRT					
2	pendimethalin	3.8	CS	1.9	lb ai/a	PRT	2.7	0.375	2.6	3.131	17.3
3	pendimethalin	3.8	CS	1.9	lb ai/a	POT	1.7	0.365	2.0	3.725	19.0
4	napropamide	50	DF	2	lb ai/a	POT	1.3	0.277	2.0	3.639	20.3
5	napropamide-UV	50	DF	2	lb ai/a	POT	1.0	0.715	5.0	3.388	19.0
6	s-metolachlor	7.62	EC	0.95	lb ai/a	PRT	2.0	0.158	1.0	3.702	18.7
	clomazone	3	ME	0.25	lb ai/a	PRT					
7	s-metolachlor	7.62	EC	0.95	lb ai/a	PRT	3.0	0.593	3.7	3.875	19.3
	sulfentrazone	4	F	0.125	lb ai/a	PRT					
8	pyroxasulfone	85	WDG	0.186	lb ai/a	PRT	2.3	1.610	8.1	2.393	12.7
9	s-metolachlor	7.62	EC	0.95	lb ai/a	PRT	1.7	0.600	3.3	4.807	20.7
	oxyfluorfen	4	SC	0.25	lb ai/a	PO1					
	clethodim	0.97	EC	0.07	lb ai/a	PO1					
10	s-metolachlor	7.62	EC	0.95	lb ai/a	PRT	4.0	0.787	3.7	3.587	17.0
	clopyralid	3	L	0.1	lb ai/a	PO1					
	clethodim	0.97	EC	0.07	lb ai/a	PO1					
11	s-metolachlor	7.62	EC	0.95	lb ai/a	PRT	2.3	0.800	3.7	4.078	18.3
	oxyfluorfen	4	SC	0.25	lb ai/a	PO1					
	clopyralid	3	L	0.1	lb ai/a	PO1					
	clethodim	0.97	EC	0.07	lb ai/a	PO1					
12	Untreated						3.3	0.305	1.7	2.747	17.7
LSD (P=.05)							2.48	0.6101	2.52	1.3029	3.60
Standard Deviation							1.46	0.3582	1.48	0.7694	2.13
CV							58.57	55.98	43.68	21.14	11.59

Weed Control in Broccoli & Cabbage – HTRC 2011

Dept of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	CABBAGE 29/Jul/11 Harvest KG/PLOT	CABBAGE 29/Jul/11 Harvest #/PLOT	CABBAGE 8/Aug/11 Harvest KG/PLOT	CABBAGE 8/Aug/11 Harvest #/PLOT	CABBAGE 15/Aug/11 Harvest KG/PLOT
	Pest Code										
	Crop Code										
	Rating Date						29/Jul/11	29/Jul/11	8/Aug/11	8/Aug/11	15/Aug/11
	Rating Type						Harvest	Harvest	Harvest	Harvest	Harvest
	Rating Unit						KG/PLOT	#/PLOT	KG/PLOT	#/PLOT	KG/PLOT
1	s-metolachlor	7.62	EC	0.95	lb ai/a	PRT	8.632	8.3	12.550	10.0	2.487
	oxyfluorfen	4	SC	0.5	lb ai/a	PRT					
2	pendimethalin	3.8	CS	1.9	lb ai/a	PRT	4.733	4.7	11.547	8.7	4.813
3	pendimethalin	3.8	CS	1.9	lb ai/a	POT	8.022	6.7	8.283	5.7	3.627
4	napropamide	50	DF	2	lb ai/a	POT	10.812	10.3	11.323	8.0	3.373
5	napropamide-UV	50	DF	2	lb ai/a	POT	10.248	8.3	10.467	8.3	2.707
6	s-metolachlor	7.62	EC	0.95	lb ai/a	PRT	9.638	8.3	7.203	5.3	3.673
	clomazone	3	ME	0.25	lb ai/a	PRT					
7	s-metolachlor	7.62	EC	0.95	lb ai/a	PRT	11.440	9.0	6.033	5.0	1.887
	sulfentrazone	4	F	0.125	lb ai/a	PRT					
8	pyroxasulfone	85	WDG	0.186	lb ai/a	PRT	4.338	4.7	4.853	4.0	1.760
9	s-metolachlor	7.62	EC	0.95	lb ai/a	PRT	8.678	7.0	18.913	11.3	0.833
	oxyfluorfen	4	SC	0.25	lb ai/a	PO1					
	clethodim	0.97	EC	0.07	lb ai/a	PO1					
10	s-metolachlor	7.62	EC	0.95	lb ai/a	PRT	4.187	3.3	12.507	8.7	4.000
	clopyralid	3	L	0.1	lb ai/a	PO1					
	clethodim	0.97	EC	0.07	lb ai/a	PO1					
11	s-metolachlor	7.62	EC	0.95	lb ai/a	PRT	14.885	11.7	9.687	6.7	1.027
	oxyfluorfen	4	SC	0.25	lb ai/a	PO1					
	clopyralid	3	L	0.1	lb ai/a	PO1					
	clethodim	0.97	EC	0.07	lb ai/a	PO1					
12	Untreated						2.148	3.3	11.003	8.7	2.140
LSD (P=.05)							7.5229	6.37	8.9881	5.53	3.3033
Standard Deviation							4.4425	3.76	5.3077	3.26	1.9507
CV							54.53	52.72	51.21	43.35	72.41

Weed Control in Broccoli & Cabbage – HTRC 2011

Dept of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	CABBAGE 15/Aug/11 Harvest #/PLOT	CABBAGE TOTAL KG/PLOT	CABBAGE TOTAL #/PLOT
	Pest Code								
	Crop Code								
	Rating Date								
	Rating Type								
	Rating Unit								
1	s-metolachlor	7.62	EC	0.95	lb ai/a	PRT	2.0	23.668	20.3
	oxyfluorfen	4	SC	0.5	lb ai/a	PRT			
2	pendimethalin	3.8	CS	1.9	lb ai/a	PRT	3.7	21.093	17.0
3	pendimethalin	3.8	CS	1.9	lb ai/a	POT	2.7	19.932	15.0
4	napropamide	50	DF	2	lb ai/a	POT	2.7	25.508	21.0
5	napropamide-UV	50	DF	2	lb ai/a	POT	2.7	23.422	19.3
6	s-metolachlor	7.62	EC	0.95	lb ai/a	PRT	3.3	20.515	17.0
	clomazone	3	ME	0.25	lb ai/a	PRT			
7	s-metolachlor	7.62	EC	0.95	lb ai/a	PRT	2.3	19.360	16.3
	sulfentrazone	4	F	0.125	lb ai/a	PRT			
8	pyroxasulfone	85	WDG	0.186	lb ai/a	PRT	1.7	10.952	10.3
9	s-metolachlor	7.62	EC	0.95	lb ai/a	PRT	0.7	28.425	19.0
	oxyfluorfen	4	SC	0.25	lb ai/a	PO1			
	clethodim	0.97	EC	0.07	lb ai/a	PO1			
10	s-metolachlor	7.62	EC	0.95	lb ai/a	PRT	4.3	20.693	16.3
	clopyralid	3	L	0.1	lb ai/a	PO1			
	clethodim	0.97	EC	0.07	lb ai/a	PO1			
11	s-metolachlor	7.62	EC	0.95	lb ai/a	PRT	1.0	25.598	19.3
	oxyfluorfen	4	SC	0.25	lb ai/a	PO1			
	clopyralid	3	L	0.1	lb ai/a	PO1			
	clethodim	0.97	EC	0.07	lb ai/a	PO1			
12	Untreated						2.0	15.292	14.0
LSD (P=.05)							3.28	8.5263	4.47
Standard Deviation							1.94	5.0350	2.64
CV							80.13	23.74	15.45

Postemergence Weed Control in Carrot – Muck Farm 2011

Project Code: 107-11-02 **Location: Laingsburg, MI**

Personnel: Bernard H. Zandstra, Rodney Tocco
Crop: Carrot **Variety: Sugar Snax**
Planting Method: Seeded **Planting Date: 6/15/2011**
Spacing: 0.5 inch **Row Spacing: 16 inch**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 5.5 ft wide x 16.7 ft long

Soil Type: Houghton Muck **OM: 78%** **pH: 6.5**
Sand: 6% **Silt: 15%** **Clay: 1%** **CEC: -**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	6/18/11	1:00 pm	90/77	F	Dry	3-6 SE	37	90% Cloudy	N
PO1	7/8/11	1:30 pm	89/78	F	Good	1-3 SE	29	0% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
6/18	CARROT			
6/18	LACG = large crabgrass			
6/18	LATH = ladysthumb			
7/8	CARROT	2″	2-4 LS	
7/8	YENS = yellow nutsedge	3-4″		Moderate
7/8	COLQ = common lambsquarters	1-2″		Many
7/8	COPU = common purslane	1″	4-6 LS	Few
7/8	RRPW = redroot pigweed	3-4″		Few

Notes and Comments
1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.

Postemergence Weed Control in Carrot – Muck Farm 2011

Postemergence Weed Control in Carrot - Muck Farm 2011

Trial ID: 107-11-02 Protocol ID: 107-11-02
Location: Laingsburg, MI Study Director: Rodney Tocco
Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage		LACG	YENS	COLQ	COPU	LATH
	Crop Code						CARROT					
	Rating Date						5/Jul/11	5/Jul/11	5/Jul/11	5/Jul/11	5/Jul/11	5/Jul/11
	Rating Type						RATING	RATING	RATING	RATING	RATING	RATING
	Rating Unit						1-10	1-10	1-10	1-10	1-10	1-10
1	linuron	50	DF	1	lb ai/a	PRE	1.0	5.3	2.7	2.3	8.0	3.0
	oxyfluorfen	4	SC	0.063	lb ai/a	PO1						
	fluazifop-p-butyl	2	EC	0.19	lb ai/a	PO1						
2	s-metolachlor	7.62	EC	1.9	lb ai/a	PRE	1.0	10.0	5.3	6.3	10.0	9.3
	linuron	50	DF	1	lb ai/a	PRE						
	metribuzin	75	DF	0.25	lb ai/a	PO1						
	fluazifop-p-butyl	2	EC	0.19	lb ai/a	PO1						
3	s-metolachlor	7.62	EC	1.9	lb ai/a	PRE	1.0	10.0	4.7	5.0	9.3	7.7
	linuron	50	DF	1	lb ai/a	PRE						
	ethofumesate	4	SC	2.0	lb ai/a	PO1						
	fluazifop-p-butyl	2	EC	0.19	lb ai/a	PO1						
	COC	100	SL	1.0	% v/v	PO1						
4	s-metolachlor	7.62	EC	1.9	lb ai/a	PRE	1.0	10.0	6.0	5.7	10.0	8.0
	linuron	50	DF	1	lb ai/a	PRE						
	prometryn	4	L	2	lb ai/a	PO1						
	COC	100	SL	1.0	% v/v	PO1						
5	s-metolachlor	7.62	EC	1.9	lb ai/a	PRE	1.3	10.0	4.3	4.0	9.7	7.3
	linuron	50	DF	1	lb ai/a	PRE						
	prometryn	4	L	1	lb ai/a	PO1						
	COC	100	SL	1.0	% v/v	PO1						
6	s-metolachlor	7.62	EC	1.9	lb ai/a	PRE	1.0	10.0	4.3	6.0	10.0	9.0
	linuron	50	DF	1	lb ai/a	PRE						
	linuron	50	DF	1	lb ai/a	PO1						
	fluazifop-p-butyl	2	EC	0.19	lb ai/a	PO1						
	COC	100	SL	1.0	% v/v	PO1						
7	s-metolachlor	7.62	EC	1.9	lb ai/a	PRE	1.3	10.0	6.0	5.7	9.0	8.3
	linuron	50	DF	1	lb ai/a	PRE						
	linuron	50	DF	1	lb ai/a	PO1						
	oxyfluorfen	4	SC	0.031	lb ai/a	PO1						
8	s-metolachlor	7.62	EC	1.9	lb ai/a	PRE	1.0	10.0	6.7	6.7	10.0	8.3
	linuron	50	DF	1	lb ai/a	PRE						
	linuron	50	DF	1	lb ai/a	PO1						
	ethofumesate	4	SC	1.0	lb ai/a	PO1						
	COC	100	SL	1.0	% v/v	PO1						
9	s-metolachlor	7.62	EC	1.9	lb ai/a	PRE	1.0	10.0	7.3	5.3	9.3	8.3
	linuron	50	DF	1	lb ai/a	PRE						
	prometryn	4	L	1	lb ai/a	PO1						
	ethofumesate	4	SC	1.0	lb ai/a	PO1						
	COC	100	SL	1.0	% v/v	PO1						
10	Untreated						1.0	1.0	1.0	1.0	1.0	1.0
LSD (P=.05)							0.42	0.31	1.63	2.63	1.05	1.22
Standard Deviation							0.24	0.18	0.95	1.53	0.61	0.71
CV							22.82	2.11	19.63	31.9	7.08	10.13

Postemergence Weed Control in Carrot – Muck Farm 2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	CARROT 15/Jul/11 RATING 1-10	YENS 15/Jul/11 RATING 1-10	COLQ 15/Jul/11 RATING 1-10	LATH 15/Jul/11 RATING 1-10	RRPW 15/Jul/11 RATING 1-10	CARROT 21/Sep/11 Harvest KG/PLOT
1	linuron	50	DF	1	lb ai/a	PRE	2.3	1.0	9.0	1.0	9.7	32.40
	oxyfluorfen	4	SC	0.063	lb ai/a	PO1						
	fluazifop-p-butyl	2	EC	0.19	lb ai/a	PO1						
2	s-metolachlor	7.62	EC	1.9	lb ai/a	PRE	1.7	2.3	10.0	8.3	10.0	34.23
	linuron	50	DF	1	lb ai/a	PRE						
	metribuzin	75	DF	0.25	lb ai/a	PO1						
	fluazifop-p-butyl	2	EC	0.19	lb ai/a	PO1						
3	s-metolachlor	7.62	EC	1.9	lb ai/a	PRE	1.3	1.3	7.7	6.3	9.0	37.57
	linuron	50	DF	1	lb ai/a	PRE						
	ethofumesate	4	SC	2.0	lb ai/a	PO1						
	fluazifop-p-butyl	2	EC	0.19	lb ai/a	PO1						
	COC	100	SL	1.0	% v/v	PO1						
4	s-metolachlor	7.62	EC	1.9	lb ai/a	PRE	1.7	8.0	10.0	9.7	10.0	35.51
	linuron	50	DF	1	lb ai/a	PRE						
	prometryn	4	L	2	lb ai/a	PO1						
	COC	100	SL	1.0	% v/v	PO1						
5	s-metolachlor	7.62	EC	1.9	lb ai/a	PRE	1.3	7.7	10.0	9.7	10.0	36.19
	linuron	50	DF	1	lb ai/a	PRE						
	prometryn	4	L	1	lb ai/a	PO1						
	COC	100	SL	1.0	% v/v	PO1						
6	s-metolachlor	7.62	EC	1.9	lb ai/a	PRE	1.3	8.7	10.0	9.7	10.0	38.37
	linuron	50	DF	1	lb ai/a	PRE						
	linuron	50	DF	1	lb ai/a	PO1						
	fluazifop-p-butyl	2	EC	0.19	lb ai/a	PO1						
	COC	100	SL	1.0	% v/v	PO1						
7	s-metolachlor	7.62	EC	1.9	lb ai/a	PRE	1.3	7.7	10.0	9.0	10.0	33.94
	linuron	50	DF	1	lb ai/a	PRE						
	linuron	50	DF	1	lb ai/a	PO1						
	oxyfluorfen	4	SC	0.031	lb ai/a	PO1						
8	s-metolachlor	7.62	EC	1.9	lb ai/a	PRE	1.0	8.7	10.0	10.0	10.0	34.55
	linuron	50	DF	1	lb ai/a	PRE						
	linuron	50	DF	1	lb ai/a	PO1						
	ethofumesate	4	SC	1.0	lb ai/a	PO1						
	COC	100	SL	1.0	% v/v	PO1						
9	s-metolachlor	7.62	EC	1.9	lb ai/a	PRE	2.0	9.0	10.0	9.7	10.0	32.26
	linuron	50	DF	1	lb ai/a	PRE						
	prometryn	4	L	1	lb ai/a	PO1						
	ethofumesate	4	SC	1.0	lb ai/a	PO1						
	COC	100	SL	1.0	% v/v	PO1						
10	Untreated						1.0	1.0	1.0	1.0	1.0	25.47
LSD (P=.05)							0.82	0.92	1.49	2.04	0.96	7.109
Standard Deviation							0.48	0.53	0.87	1.19	0.56	4.144
CV							31.69	9.65	9.92	16.02	6.22	12.17

Postemergence Weed Control in Carrot – HTRC 2011

Project Code: 107-11-03 **Location: East Lansing, MI**

Personnel: Bernard H. Zandstra, Rodney Tocco
Crop: Carrot **Variety: Carson**
Planting Method: Seeded **Planting Date: 6/1/2011**
Spacing: 1 inch **Row Spacing: 14 inch, 3 rows/plot**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 5.5 ft wide x 200 ft long

Soil Type: Capac Loam **OM: 3.3%** **pH: 5.4**
Sand: 52% **Silt: 26%** **Clay: 22%** **CEC: 7.3**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
POSDIR	7/27/11		85/95	F	Dry	5-8 N	27	0% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
7/27	CARROT			

Notes and Comments
1. Yields are mean of 3 subsamples per plot; 10 feet of row each.
2. Spray applied with shielded tractor mounted sprayer, directed between rows. DG9502 EVS nozzles.
3. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.

Postemergence Weed Control in Carrot – HTRC 2011

Postemergence Weed Control in Carrot - HTRC 2011

Trial ID: 107-11-03 Protocol ID: 107-11-03
Location: East Lansing, MI Study Director: Rodney Tocco
Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	CARROT Row A 4/Oct/11 Weight 10ft KG/PLOT	CARROT Row B 4/Oct/11 Weight 10ft KG/PLOT	CARROT Row C 4/Oct/11 Weight 10ft KG/PLOT	CARROT Total KG/PLOT
1	linuron	50	DF	1	lb ai/a	POSDIR	18.92	13.42	24.24	56.58
2	prometryn	4	L	1	lb ai/a	POSDIR	20.58	20.68	22.60	63.86
3	glyphosate	5.5	L	0.69	lb ai/a	POSDIR	18.32	17.36	26.32	62.00
4	glufosinate	2.34	L	1	lb ai/a	POSDIR	18.40	21.84	24.30	64.54
	NIS	100	SL	0.25	% v/v	POSDIR				
5	paraquat	2	L	1	lb ai/a	POSDIR	17.50	16.62	16.84	50.96
	NIS	100	SL	0.25	% v/v	POSDIR				
6	oxyfluorfen	4	SC	0.125	lb ai/a	POSDIR	20.72	19.04	24.56	64.32
7	diquat	2	L	0.5	lb ai/a	POSDIR	19.04	24.44	18.90	62.38
	NIS	100	SL	0.25	% v/v	POSDIR				
8	Untreated						16.04	25.62	23.74	65.40
LSD (P=.05)							.	.	.	.
Standard Deviation							.	.	.	.
CV							.	.	.	.

Preemergence Weed Control in Carrot – Keilen Farms 2011

Project Code: 107-11-04 **Location: East Lansing, MI**

Personnel: Bernard H. Zandstra, Rodney Tocco
Crop: Carrot **Variety: Cardiff**
Planting Method: Seeded **Planting Date: 6/7/2011**
Spacing: 0.5 inch **Row Spacing: 10 inch**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 3.0 ft wide x 30 ft long

Soil Type: Houghton Muck **OM: 60%** **pH: 6.7**
Sand: 19% **Silt: 14%** **Clay: 8%** **CEC: -**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	6/7/11	2:00 pm	97/84	F	Dry	1-3 SW	44	10% Cloudy	N
PO1	7/5/11	10:30 am	85/75	F	Dry	2-4 SW	41	0% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
6/7	CARROT		Just seeded	
7/5	COPU = common purslane	3-4″		Many
7/5	LATH = ladysthumb	2-6″		Many
7/5	RRPW = redroot pigweed	4-10″		Moderate

Notes and Comments
1. 2 rows per plot. Harvested 10 ft of 2 rows.
2. Spray applied with 2 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO_2 backpack sprayer.
3. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.

Preemergence Weed Control in Carrot – Keilen Farms 2011

Preemergence Weed Control in Carrot - Keilen Farms 2011

Trial ID: 107-11-04 Protocol ID: 107-11-04
Location: East Lansing, MI Study Director: Rodney Tocco
Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	CARROT 5/Jul/2011 RATING 1-10	COPU 5/Jul/2011 RATING 1-10	LATH 5/Jul/2011 RATING 1-10	RRPW 5/Jul/2011 RATING 1-10	CARROT 22/Sep/2011 Harvest KG/PLOT
1	pendimethalin	3.8	CS	0.95	lb ai/a	PRE, PO1	1.0	3.7	9.0	5.3	17.42
2	pendimethalin	3.8	CS	1.9	lb ai/a	PRE, PO1	1.0	4.7	6.3	1.7	15.90
3	pendimethalin	3.8	CS	3.8	lb ai/a	PRE, PO1	1.0	7.0	6.3	4.7	16.22
4	linuron	50	DF	1	lb ai/a	PRE	1.0	3.0	6.3	6.0	14.94
5	linuron	50	DF	2	lb ai/a	PRE	1.0	4.7	9.3	5.7	17.50
6	prometryn	4	L	1	lb ai/a	PRE	1.7	2.0	8.7	4.0	16.88
7	prometryn	4	L	2	lb ai/a	PRE	2.0	3.7	8.7	6.7	18.11
8	s-metolachlor	7.62	EC	1.9	lb ai/a	PRE	1.7	3.3	6.7	8.3	15.57
9	s-metolachlor	7.62	EC	3.8	lb ai/a	PRE	2.7	6.0	3.0	6.0	16.29
10	ethofumesate	4	SC	2.0	lb ai/a	PRE	1.3	1.7	7.0	6.3	13.99
11	metribuzin	75	DF	0.5	lb ai/a	PRE	1.7	4.0	8.0	5.3	15.08
12	pendimethalin	3.8	CS	0.95	lb ai/a	PRE	2.7	3.3	9.3	5.0	14.54
	linuron	50	DF	1	lb ai/a	PRE					
13	pendimethalin	3.8	CS	1.9	lb ai/a	PRE	2.0	3.3	8.0	6.0	15.51
	linuron	50	DF	1	lb ai/a	PRE					
14	s-metolachlor	7.62	EC	1.9	lb ai/a	PRE	2.0	3.0	7.7	6.3	16.85
	linuron	50	DF	1	lb ai/a	PRE					
15	pyroxasulfone	85	WDG	0.18	lb ai/a	PRE	3.0	5.0	10.0	8.3	13.71
16	Untreated						2.0	1.0	5.3	1.0	14.37
LSD (P=.05)							0.77	3.70	5.10	4.08	4.941
Standard Deviation							0.46	2.22	3.06	2.45	2.963
CV							26.83	59.85	40.87	45.14	18.75

Postemergence Weed Control in Carrot – Keilen Farms 2011

Project Code: 107-11-05 **Location: East Lansing, MI**

Personnel: Bernard H. Zandstra, Rodney Tocco
Crop: Carrot **Variety: Cardiff**
Planting Method: Seeded **Planting Date: 6/7/2011**
Spacing: **Row Spacing: 10 inch**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 3.0 ft wide x 30 ft long

Soil Type: Houghton Muck **OM: 60%** **pH: 6.7**
Sand: 19% **Silt: 14%** **Clay: 8%** **CEC: -**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	6/8/11	10:15 am	88/78	F	Dry	3-5 SW	57	0% Cloudy	N
PO1	7/5/11	10:30 am	85/75	F	Dry	2-4 SW	41	0% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
6/8	CARROT		Just seeded	
7/5	CARROT	6-8″	3-4 LS	
	LATH = ladysthumb			

Notes and Comments
1. Harvest: KG per 10 ft of 2 rows, per plot.
2. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
3. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.

Postemergence Weed Control in Carrot – Keilen Farms 2011

Postemergence Weed Control in Carrot - Keilen Farms 2011

Trial ID: 107-11-05 Protocol ID: 107-11-05
Location: East Lansing, MI Study Director: Rodney Tocco
Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage			
Pest Code								LATH	
Crop Code							CARROT		CARROT
Rating Date							14/Jul/11	14/Jul/11	22/Sep/11
Rating Type							RATING	RATING	Harvest
Rating Unit							1-10	1-10	KG/PLOT
1	linuron	50	DF	1	lb ai/a	PRE	1.7	8.7	18.35
	oxyfluorfen	4	SC	0.063	lb ai/a	PO1			
	fluazifop-p-butyl	2	EC	0.19	lb ai/a	PO1			
2	s-metolachlor	7.62	EC	1.9	lb ai/a	PRE	1.7	10.0	17.13
	linuron	50	DF	1	lb ai/a	PRE			
	metribuzin	75	DF	0.25	lb ai/a	PO1			
	fluazifop-p-butyl	2	EC	0.19	lb ai/a	PO1			
3	s-metolachlor	7.62	EC	1.9	lb ai/a	PRE	1.3	10.0	18.61
	linuron	50	DF	1	lb ai/a	PRE			
	ethofumesate	4	SC	2.0	lb ai/a	PO1			
	fluazifop-p-butyl	2	EC	0.19	lb ai/a	PO1			
	COC	100	SL	1.0	% v/v	PO1			
4	s-metolachlor	7.62	EC	1.9	lb ai/a	PRE	3.7	9.3	17.59
	linuron	50	DF	1	lb ai/a	PRE			
	prometryn	4	L	2	lb ai/a	PO1			
	COC	100	SL	1.0	% v/v	PO1			
5	s-metolachlor	7.62	EC	1.9	lb ai/a	PRE	2.7	9.0	16.99
	linuron	50	DF	1	lb ai/a	PRE			
	prometryn	4	L	1	lb ai/a	PO1			
	COC	100	SL	1.0	% v/v	PO1			
6	s-metolachlor	7.62	EC	1.9	lb ai/a	PRE	2.0	9.7	17.14
	linuron	50	DF	1	lb ai/a	PRE			
	linuron	50	DF	1	lb ai/a	PO1			
	fluazifop-p-butyl	2	EC	0.19	lb ai/a	PO1			
	COC	100	SL	1.0	% v/v	PO1			
7	s-metolachlor	7.62	EC	1.9	lb ai/a	PRE	1.7	8.7	18.80
	linuron	50	DF	1	lb ai/a	PRE			
	linuron	50	DF	1	lb ai/a	PO1			
	oxyfluorfen	4	SC	0.031	lb ai/a	PO1			
8	s-metolachlor	7.62	EC	1.9	lb ai/a	PRE	2.0	9.7	18.05
	linuron	50	DF	1	lb ai/a	PRE			
	linuron	50	DF	1	lb ai/a	PO1			
	ethofumesate	4	SC	1.0	lb ai/a	PO1			
	COC	100	SL	1.0	% v/v	PO1			
9	s-metolachlor	7.62	EC	1.9	lb ai/a	PRE	2.0	10.0	17.40
	linuron	50	DF	1	lb ai/a	PRE			
	prometryn	4	L	1	lb ai/a	PO1			
	ethofumesate	4	SC	1.0	lb ai/a	PO1			
	COC	100	SL	1.0	% v/v	PO1			
10	Untreated						1.0	10.0	19.10
LSD (P=.05)							1.22	1.32	2.195
Standard Deviation							0.71	0.77	1.279
CV							36.22	8.13	7.14

Weed Control in Celery – Muck Farm 2011

Project Code: 113-11-01 **Location: Laingsburg, MI**

Personnel: Bernard H. Zandstra, Rodney Tocco
Crop: Celery **Variety: Duchess**
Planting Method: Transplant **Planting Date: 6/14/2011**
Spacing: 6 inch **Row Spacing: 3 ft**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 5.5 ft wide x 16.7 ft long

Soil Type: Houghton Muck **OM: 78%** **pH: 6.6**
Sand: 11% **Silt: 11%** **Clay: 1%** **CEC: -**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRT	6/14/11	12:45 am	78/68	F	Dry	6-8 NE	36	5% Cloudy	N
POT	6/15/11	9:30 am	66/61	F	Moist	3 SW	63	73% Cloudy	N
PO1	7/14/11	1:30 pm	76/74	F	Dry	3 NE	41	85% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
6/14	CELERY		Not planted	
6/15	CELERY		Just planted, 6/14	
7/14	CELERY	6-10”	5-6 LS	
7/14	LACG = large crabgrass	2-4”		Moderate
7/14	YENS = yellow nutsedge	3-6”		Moderate
7/14	COLQ = common lambsquarters	1-6”		Moderate
7/14	COPU = common purslane	2-8”		Moderate
7/14	LATH = ladysthumb	4-10”		Moderate
7/14	RRPW = redroot pigweed	3-6”		Moderate

Notes and Comments
1. Harvested 10 feet of 2 rows.
2. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
3. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.

Weed Control in Celery – Muck Farm 2011

Weed Control in Celery - Muck Farm 2011

Trial ID: 113-11-01 Protocol ID: 113-11-01
Location: Laingsburg, MI Study Director: Rodney Tocco
Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	CELERY 5/Jul/11 RATING 1-10	YENS 5/Jul/11 RATING 1-10	COLQ 5/Jul/11 RATING 1-10	COPU 5/Jul/11 RATING 1-10	LATH 5/Jul/11 RATING 1-10	CELERY 18/Jul/11 RATING 1-10	COPU 18/Jul/11 RATING 1-10
1	flumioxazin	51	WDG	0.096	lb ai/a	PRT	1.0	8.3	9.3	8.3	8.0	1.3	8.3
	prometryn	4	L	2	lb ai/a	PO1							
	COC	100	SL	1.0	% v/v	PO1							
2	flumioxazin	51	WDG	0.096	lb ai/a	PRT	1.0	9.7	9.3	9.0	9.0	1.0	9.3
	s-metolachlor	7.62	EC	1.9	lb ai/a	PRT							
	prometryn	4	L	2	lb ai/a	PO1							
	COC	100	SL	1.0	% v/v	PO1							
3	pendimethalin	3.8	CS	1.9	lb ai/a	PRT	1.0	8.3	8.0	1.0	1.0	1.0	8.7
	prometryn	4	L	2	lb ai/a	PO1							
	COC	100	SL	1.0	% v/v	PO1							
4	pendimethalin	3.8	CS	1.9	lb ai/a	POT	1.0	8.3	8.7	1.0	1.0	1.0	8.0
	prometryn	4	L	2	lb ai/a	PO1							
	COC	100	SL	1.0	% v/v	PO1							
5	pyroxasulfone	85	WDG	0.186	lb ai/a	POT	1.0	8.3	9.7	9.3	8.0	1.0	10.0
	prometryn	4	L	2	lb ai/a	PO1							
	COC	100	SL	1.0	% v/v	PO1							
6	flumioxazin	51	WDG	0.096	lb ai/a	POT	1.0	8.7	9.0	9.0	8.7	1.0	9.3
	prometryn	4	L	2	lb ai/a	PO1							
	COC	100	SL	1.0	% v/v	PO1							
7	pendimethalin	3.8	CS	3.8	lb ai/a	POT	1.0	9.0	8.0	4.3	3.7	1.0	9.7
	prometryn	4	L	2	lb ai/a	PO1							
	COC	100	SL	1.0	% v/v	PO1							
8	s-metolachlor	7.62	EC	1.9	lb ai/a	PRT	1.0	9.7	10.0	9.0	9.0	1.0	10.0
	prometryn	4	L	2	lb ai/a	POT							
	linuron	50	DF	1	lb ai/a	PO1							
	COC	100	SL	1.0	% v/v	PO1							
9	s-metolachlor	7.62	EC	1.9	lb ai/a	PRT	1.0	9.3	10.0	10.0	9.0	1.0	10.0
	flumioxazin	51	WDG	0.096	lb ai/a	POT							
	prometryn	4	L	2	lb ai/a	PO1							
	COC	100	SL	1.0	% v/v	PO1							
10	s-metolachlor	7.62	EC	1.9	lb ai/a	PRT	1.0	6.0	5.7	4.0	3.7	1.0	10.0
	flumioxazin	51	WDG	0.096	lb ai/a	PO1							
11	s-metolachlor	7.62	EC	1.9	lb ai/a	PRT	1.0	9.3	1.7	2.3	3.3	1.0	9.3
	flumioxazin	51	WDG	0.096	lb ai/a	PO1							
	prometryn	4	L	1	lb ai/a	PO1							
12	s-metolachlor	7.62	EC	1.9	lb ai/a	PRT	1.0	9.3	1.3	1.7	2.7	3.0	9.7
	sulfentrazone	4	F	0.125	lb ai/a	PO1							
13	s-metolachlor	7.62	EC	1.9	lb ai/a	PRT	1.0	9.0	1.3	2.3	4.3	1.3	10.0
	flumioxazin	51	WDG	0.096	lb ai/a	PO1							
	linuron	50	DF	1	lb ai/a	PO1							
14	s-metolachlor	7.62	EC	1.9	lb ai/a	PRT	1.0	9.3	2.3	2.0	2.0	3.0	9.0
	oxyfluorfen	4	SC	0.063	lb ai/a	PO1							
	clethodim	0.97	EC	0.12	lb ai/a	PO1							

Weed Control in Celery – Muck Farm 2011

Dept of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage							
Pest Code								YENS	COLQ	COPU	LATH		COPU
Crop Code							CELERY					CELERY	
Rating Date							5/Jul/11	5/Jul/11	5/Jul/11	5/Jul/11	5/Jul/11	18/Jul/11	18/Jul/11
Rating Type							RATING	RATING	RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10	1-10	1-10
15	Untreated					PRT	1.0	1.0	1.0	1.0	1.0	1.0	7.7
	clethodim	0.97	EC	0.12	lb ai/a	PO1							
	prometryn	4	L	1	lb ai/a	PO1							
	COC	100	SL	1.0	% v/v	PO1							
16	Untreated					PRT	1.0	1.0	1.0	1.0	1.0	3.0	7.7
	prometryn	4	L	2	lb ai/a	PO1							
	clethodim	0.97	EC	0.12	lb ai/a	PO1							
	oxyfluorfen	4	SC	0.063	lb ai/a	PO1							
	COC	100	SL	1	% v/v	PO1							
17	flumioxazin	51	WDG	0.191	lb ai/a	PRT	1.0	9.0	10.0	8.7	9.0	1.0	9.7
	prometryn	4	L	2	lb ai/a	PO1							
	COC	100	SL	1.0	% v/v	PO1							
18	flumioxazin	51	WDG	0.191	lb ai/a	POT	3.0	8.3	9.0	6.3	9.0	2.0	10.0
	prometryn	4	L	2	lb ai/a	PO1							
	COC	100	SL	1.0	% v/v	PO1							
19	oxyfluorfen	2	EC	0.5	lb ai/a	PRT	2.0	8.0	6.7	8.7	7.0	1.0	9.0
	prometryn	4	L	2	lb ai/a	PO1							
	COC	100	SL	1.0	% v/v	PO1							
20	pendimethalin	3.8	CS	1.9	lb ai/a	PRT	1.0	8.7	9.0	7.7	7.3	1.0	9.0
	flumioxazin	51	WDG	0.096	lb ai/a	PRT							
	prometryn	4	L	2	lb ai/a	PO1							
	COC	100	SL	1.0	% v/v	PO1							
LSD (P=.05)							0.00	2.21	1.18	2.37	1.27	0.31	0.97
Standard Deviation							0.00	1.34	0.71	1.44	0.77	0.18	0.59
CV							0.0	16.89	10.9	26.94	14.27	13.37	6.4

Weed Control in Celery – Muck Farm 2011

Dept of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	COLQ 18/Jul/11 RATING 1-10	LATH 18/Jul/11 RATING 1-10	RRPW 18/Jul/11 RATING 1-10	CELERY 20/Sep/11 Harvest #	CELERY 20/Sep/11 Harvest KG/PLOT
1	flumioxazin	51	WDG	0.096	lb ai/a	PRT	9.7	9.7	10.0	39.7	51.473
	prometryn	4	L	2	lb ai/a	PO1					
	COC	100	SL	1.0	% v/v	PO1					
2	flumioxazin	51	WDG	0.096	lb ai/a	PRT	10.0	9.3	10.0	37.3	48.940
	s-metolachlor	7.62	EC	1.9	lb ai/a	PRT					
	prometryn	4	L	2	lb ai/a	PO1					
	COC	100	SL	1.0	% v/v	PO1					
3	pendimethalin	3.8	CS	1.9	lb ai/a	PRT	9.0	7.7	9.3	42.0	53.917
	prometryn	4	L	2	lb ai/a	PO1					
	COC	100	SL	1.0	% v/v	PO1					
4	pendimethalin	3.8	CS	1.9	lb ai/a	POT	10.0	7.3	9.0	35.0	47.727
	prometryn	4	L	2	lb ai/a	PO1					
	COC	100	SL	1.0	% v/v	PO1					
5	pyroxasulfone	85	WDG	0.186	lb ai/a	POT	10.0	9.3	9.7	35.3	48.077
	prometryn	4	L	2	lb ai/a	PO1					
	COC	100	SL	1.0	% v/v	PO1					
6	flumioxazin	51	WDG	0.096	lb ai/a	POT	10.0	9.7	10.0	34.7	49.783
	prometryn	4	L	2	lb ai/a	PO1					
	COC	100	SL	1.0	% v/v	PO1					
7	pendimethalin	3.8	CS	3.8	lb ai/a	POT	10.0	8.7	10.0	37.3	49.177
	prometryn	4	L	2	lb ai/a	PO1					
	COC	100	SL	1.0	% v/v	PO1					
8	s-metolachlor	7.62	EC	1.9	lb ai/a	PRT	10.0	9.0	10.0	35.3	45.895
	prometryn	4	L	2	lb ai/a	POT					
	linuron	50	DF	1	lb ai/a	PO1					
	COC	100	SL	1.0	% v/v	PO1					
9	s-metolachlor	7.62	EC	1.9	lb ai/a	PRT	10.0	10.0	10.0	37.3	51.512
	flumioxazin	51	WDG	0.096	lb ai/a	POT					
	prometryn	4	L	2	lb ai/a	PO1					
	COC	100	SL	1.0	% v/v	PO1					
10	s-metolachlor	7.62	EC	1.9	lb ai/a	PRT	7.3	7.7	9.0	38.3	43.387
	flumioxazin	51	WDG	0.096	lb ai/a	PO1					
11	s-metolachlor	7.62	EC	1.9	lb ai/a	PRT	10.0	8.3	9.3	39.3	44.257
	flumioxazin	51	WDG	0.096	lb ai/a	PO1					
	prometryn	4	L	1	lb ai/a	PO1					
12	s-metolachlor	7.62	EC	1.9	lb ai/a	PRT	6.7	8.3	9.7	38.7	49.492
	sulfentrazone	4	F	0.125	lb ai/a	PO1					
13	s-metolachlor	7.62	EC	1.9	lb ai/a	PRT	7.7	8.7	9.3	35.3	39.987
	flumioxazin	51	WDG	0.096	lb ai/a	PO1					
	linuron	50	DF	1	lb ai/a	PO1					
14	s-metolachlor	7.62	EC	1.9	lb ai/a	PRT	7.3	8.0	9.3	37.7	50.620
	oxyfluorfen	4	SC	0.063	lb ai/a	PO1					
	clethodim	0.97	EC	0.12	lb ai/a	PO1					

Weed Control in Celery – Muck Farm 2011

Dept of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	COLQ 18/Jul/11 RATING 1-10	LATH 18/Jul/11 RATING 1-10	RRPW 18/Jul/11 RATING 1-10	CELERY 20/Sep/11 Harvest #	CELERY 20/Sep/11 Harvest KG/PLOT
15	Untreated					PRT	7.3	7.3	7.3	29.0	33.347
	clethodim	0.97	EC	0.12	lb ai/a	PO1					
	prometryn	4	L	1	lb ai/a	PO1					
	COC	100	SL	1.0	% v/v	PO1					
16	Untreated					PRT	8.0	8.7	8.7	39.0	42.307
	prometryn	4	L	2	lb ai/a	PO1					
	clethodim	0.97	EC	0.12	lb ai/a	PO1					
	oxyfluorfen	4	SC	0.063	lb ai/a	PO1					
	COC	100	SL	1	% v/v	PO1					
17	flumioxazin	51	WDG	0.191	lb ai/a	PRT	10.0	10.0	10.0	33.7	44.598
	prometryn	4	L	2	lb ai/a	PO1					
	COC	100	SL	1.0	% v/v	PO1					
18	flumioxazin	51	WDG	0.191	lb ai/a	POT	10.0	9.7	10.0	34.0	44.913
	prometryn	4	L	2	lb ai/a	PO1					
	COC	100	SL	1.0	% v/v	PO1					
19	oxyfluorfen	2	EC	0.5	lb ai/a	PRT	9.0	9.3	10.0	37.3	44.450
	prometryn	4	L	2	lb ai/a	PO1					
	COC	100	SL	1.0	% v/v	PO1					
20	pendimethalin	3.8	CS	1.9	lb ai/a	PRT	9.7	9.3	10.0	43.3	55.373
	flumioxazin	51	WDG	0.096	lb ai/a	PRT					
	prometryn	4	L	2	lb ai/a	PO1					
	COC	100	SL	1.0	% v/v	PO1					
LSD (P=.05)							1.01	1.26	0.92	10.71	11.7902
Standard Deviation							0.61	0.77	0.55	6.49	7.1450
CV							6.74	8.7	5.82	17.55	15.21

Weed Control in Celery – Cnossen Farms 2011

Project Code: 113-11-02 **Location: Dorr, MI**

Personnel: Bernard H. Zandstra, Rodney Tocco
Crop: Celery **Variety: Variety 266**
Planting Method: Transplant **Planting Date: 7/12/2011**
Spacing: 6 inch **Row Spacing: 20 inch; 2 rows/plot**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 3.3 ft wide x 40 ft long

Soil Type: Houghton Muck **OM: 69%** **pH: 6.4**
Sand: 17% **Silt: 8%** **Clay: 6%** **CEC: -**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
POT	7/12/11	1:00 pm	89/77	F	Dry	2-4 W	49	15% Cloudy	N
PO1	8/10/11	2:30 pm	78/79	F	Dry	3-5 W	43	30% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
7/12	CELERY		3-4 LS	
8/10	CELERY	6″	4-6 LS	
8/10	ANBG = annual bluegrass			
8/10	KEBG = Kentucky bluegrass	1-2″		Many
8/10	COPU = common purslane	2-3″		Many
8/10	LATH = ladysthumb	3-5″	8-10 LS	Few
8/10	RRPW = redroot pigweed	3-5″	4-5 LS	Few

Notes and Comments
1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. Harvested 5 feet of 2 rows.

Weed Control in Celery – Cnossen Farms 2011

Weed Control in Celery - Cnossen Farms 2011

Trial ID: 113-11-02 Protocol ID: 113-11-02
Location: Dorr, MI Study Director: Rodney Tocco
Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage		KEBG	COPU	LATH	RRPW
Pest Code											
Crop Code							CELERY				
Rating Date							10/Aug/11	10/Aug/11	10/Aug/11	10/Aug/11	10/Aug/11
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	prometryn	4	L	2	lb ai/a	POT	2.0	4.3	5.3	9.0	9.7
	prometryn	4	L	2	lb ai/a	PO1					
	COC	100	SL	1.0	% v/v	PO1					
2	prometryn	4	L	2	lb ai/a	POT	2.0	5.7	4.0	9.7	10.0
	linuron	50	DF	1	lb ai/a	PO1					
	COC	100	SL	1.0	% v/v	PO1					
3	flumioxazin	51	WDG	0.096	lb ai/a	POT	1.7	8.3	9.3	10.0	10.0
	prometryn	4	L	2	lb ai/a	PO1					
	COC	100	SL	1.0	% v/v	PO1					
4	s-metolachlor	7.62	EC	1.9	lb ai/a	POT	1.3	9.3	9.0	10.0	10.0
	prometryn	4	L	2	lb ai/a	POT					
	linuron	50	DF	1	lb ai/a	PO1					
	COC	100	SL	1.0	% v/v	PO1					
5	prometryn	4	L	2	lb ai/a	POT	2.0	1.7	1.7	9.3	9.3
	oxyfluorfen	4	SC	0.063	lb ai/a	PO1					
6	pendimethalin	3.8	CS	1.9	lb ai/a	POT	1.7	4.7	6.0	9.3	8.0
	prometryn	4	L	2	lb ai/a	PO1					
	COC	100	SL	1.0	% v/v	PO1					
7	prometryn	4	L	1	lb ai/a	POT	2.3	1.3	1.0	9.3	9.3
	prometryn	4	L	2	lb ai/a	PO1					
	COC	100	SL	1.0	% v/v	PO1					
8	prometryn	4	L	1	lb ai/a	POT	1.7	1.0	1.3	7.7	8.7
	sulfentrazone	4	F	0.125	lb ai/a	PO1					
9	s-metolachlor	7.62	EC	1.9	lb ai/a	POT	1.7	9.0	9.7	10.0	10.0
	flumioxazin	51	WDG	0.064	lb ai/a	PO1					
10	pendimethalin	3.8	CS	3.8	lb ai/a	POT	2.0	7.3	9.7	10.0	9.0
	flumioxazin	51	WDG	0.064	lb ai/a	PO1					
11	pendimethalin	3.8	CS	1.9	lb ai/a	POT	1.3	2.3	6.7	7.3	8.0
	oxyfluorfen	4	SC	0.063	lb ai/a	PO1					
	flumioxazin	51	WDG	0.064	lb ai/a	PO1					
12	Untreated					POT	1.0	1.0	1.0	1.0	1.0
	prometryn	4	L	2	lb ai/a	PO1					
	COC	100	SL	1.0	% v/v	PO1					
LSD (P=.05)							0.78	1.79	2.18	1.40	1.74
Standard Deviation							0.46	1.06	1.29	0.83	1.03
CV							26.58	22.61	23.88	9.69	11.96

Weed Control in Celery – Cnossen Farms 2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	CELERY 18/Aug/11 RATING 1-10	ANBG 18/Aug/11 RATING 1-10	COPU 18/Aug/11 RATING 1-10	CELERY 6/Oct/11 Harvest # KG/PLOT	CELERY 6/Oct/11 Harvest # KG/PLOT
1	prometryn	4	L	2	lb ai/a	POT	1.3	9.0	6.7	22.0	20.937
	prometryn	4	L	2	lb ai/a	PO1					
	COC	100	SL	1.0	% v/v	PO1					
2	prometryn	4	L	2	lb ai/a	POT	1.0	8.7	3.7	21.3	21.810
	linuron	50	DF	1	lb ai/a	PO1					
	COC	100	SL	1.0	% v/v	PO1					
3	flumioxazin	51	WDG	0.096	lb ai/a	POT	1.0	10.0	9.3	24.0	23.487
	prometryn	4	L	2	lb ai/a	PO1					
	COC	100	SL	1.0	% v/v	PO1					
4	s-metolachlor	7.62	EC	1.9	lb ai/a	POT	1.3	10.0	9.3	24.3	23.143
	prometryn	4	L	2	lb ai/a	POT					
	linuron	50	DF	1	lb ai/a	PO1					
	COC	100	SL	1.0	% v/v	PO1					
5	prometryn	4	L	2	lb ai/a	POT	2.0	3.3	9.0	23.0	22.273
	oxyfluorfen	4	SC	0.063	lb ai/a	PO1					
6	pendimethalin	3.8	CS	1.9	lb ai/a	POT	1.3	10.0	9.3	24.3	25.097
	prometryn	4	L	2	lb ai/a	PO1					
	COC	100	SL	1.0	% v/v	PO1					
7	prometryn	4	L	1	lb ai/a	POT	1.7	9.0	4.7	22.3	18.840
	prometryn	4	L	2	lb ai/a	PO1					
	COC	100	SL	1.0	% v/v	PO1					
8	prometryn	4	L	1	lb ai/a	POT	3.0	3.0	9.7	21.3	19.810
	sulfentrazone	4	F	0.125	lb ai/a	PO1					
9	s-metolachlor	7.62	EC	1.9	lb ai/a	POT	2.0	10.0	10.0	22.0	22.167
	flumioxazin	51	WDG	0.064	lb ai/a	PO1					
10	pendimethalin	3.8	CS	3.8	lb ai/a	POT	2.0	6.7	10.0	23.7	21.363
	flumioxazin	51	WDG	0.064	lb ai/a	PO1					
11	pendimethalin	3.8	CS	1.9	lb ai/a	POT	3.3	2.0	10.0	20.7	18.583
	oxyfluorfen	4	SC	0.063	lb ai/a	PO1					
	flumioxazin	51	WDG	0.064	lb ai/a	PO1					
12	Untreated					POT	1.0	7.7	3.3	21.0	19.897
	prometryn	4	L	2	lb ai/a	PO1					
	COC	100	SL	1.0	% v/v	PO1					
LSD (P=.05)							0.66	2.49	2.36	3.30	5.0054
Standard Deviation							0.39	1.47	1.39	1.95	2.9558
CV							22.24	19.76	17.59	8.66	13.78

Weed Control in Sweet Corn – HTRC 2011

Project Code: 06-11-01 **Location: East Lansing, MI**

Personnel: Bernard H. Zandstra, Rodney Tocco
Crop: Sweet corn **Variety: GSS0966, WHO0809**
Planting Method: Seeded **Planting Date: 6/2/2011**
Spacing: 10 inch **Row Spacing: 28 inch**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 5.5 ft wide x 30 ft long

Soil Type: Capac Loam **OM: 2.6%** **pH: 5.5**
Sand: 49% **Silt: 38%** **Clay: 13%** **CEC: 9.2**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	6/3/11	1:30 pm	78/75	F	Dry	4-5 SE	32	30% Cloudy	N
PO1	6/27/11	7:30 pm	74/74	F	Dry	4-5 E	59	90% Cloudy	N
PO2	7/12/11	9:00 am	84/74	F	Wet	1-3 W	70	0% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
6/3	SWCO = sweet corn		Preemerge	
6/27	SWCO = sweet corn	6-8″	5-7 LS	
6/27	LACG = large crabgrass			
6/27	YENS = yellow nutsedge		4-6 LS	Few
6/27	COLQ = common lambsquarters	2-3″	6-8 LS	Moderate
6/27	COPU = common purslane		4-6 LS	Moderate
6/27	CORW = common ragweed	1-2″	4-6LS	Moderate
6/27	LATH = ladysthumb		2-4 LS	Few
6/27	RRPW = redroot pigweed	1-2″		Moderate
7/12	SWCO = sweet corn			
7/12	GRFT = green foxtail			
7/12	YENS = yellow nutsedge		6-8LS	Few
7/12	COLQ = common lambsquarters	8-10″		
7/12	COPU = common purslane	3-4″	6-8LS	Few
7/12	CORW = common ragweed			Moderate
7/12	RRPW = redroot pigweed	12-14″		Moderate

Notes and Comments
1. GSS 0966 planted in left row. WHO 0809 planted in the right row.
2. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
3. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.

Weed Control in Sweet Corn – HTRC 2011

Weed Control in Sweet Corn - HTRC 2011

Trial ID: 106-11-01 Protocol ID: 106-11-01
Location: East Lansing, MI Study Director: Rodney Tocco
Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage						
Pest Code									LACG	YENS	COLQ	COPU
Crop Code							SWCO	SWCO				
Crop Variety							GSS0966	WHO0809				
Rating Date							28/Jun/11	28/Jun/11	28/Jun/11	28/Jun/11	28/Jun/11	28/Jun/11
Rating Type							RATING	RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10	1-10
1	s-metolachlor	7.62	EC	1.9	lb ai/a	PRE	1.0	1.0	10.0	9.3	7.5	9.7
2	dimethenamid-p	6	EC	0.98	lb ai/a	PRE	1.3	1.0	10.0	9.0	8.0	9.7
3	pyroxasulfone	85	WDG	0.186	lb ai/a	PRE	1.3	1.0	10.0	8.7	9.0	10.0
4	acetochlor	6.4	EC	2	lb ai/a	PRE	1.0	1.3	9.7	9.3	10.0	10.0
5	saflufenacil	2.85	SC	0.045	lb ai/a	PRE	1.3	1.0	9.0	7.7	8.5	10.0
6	mesotrione	4	SC	0.188	lb ai/a	PRE	1.3	1.0	8.3	9.0	10.0	7.3
7	atrazine	4	F	2	lb ai/a	PRE	1.3	1.3	10.0	9.0	10.0	10.0
8	pendimethalin	3.8	CS	1.9	lb ai/a	PRE	1.3	1.0	10.0	6.3	10.0	10.0
9	s-metolachlor	2.68	L	2.04	lb ai/a	PRE	1.0	1.3	10.0	10.0	10.0	10.0
	atrazine	1	L	0.76	lb ai/a	PRE						
	mesotrione	0.27	L	.204	lb ai/a	PRE						
10	s-metolachlor	7.62	EC	1.5	lb ai/a	PRE	1.3	1.0	10.0	9.3	7.5	9.7
	halosulfuron	75	WG	0.023	lb ai/a	PO1						
11	s-metolachlor	7.62	EC	1.5	lb ai/a	PRE	1.3	1.7	10.0	8.7	8.0	9.7
	tembotrione	3.5	SC	0.082	lb ai/a	PO1						
12	s-metolachlor	7.62	EC	1.5	lb ai/a	PRE	1.0	1.0	9.7	9.0	9.0	9.3
	mesotrione	4	SC	0.09	lb ai/a	PO1						
13	s-metolachlor	7.62	EC	1.5	lb ai/a	PRE	1.0	1.0	9.7	9.3	8.5	10.0
	clopyralid	3	L	0.125	lb ai/a	PO1						
	carfentrazone	2	EC	0.008	lb ai/a	PO1						
14	s-metolachlor	7.62	EC	1.5	lb ai/a	PRE	1.0	1.3	9.7	9.7	8.0	10.0
	atrazine	4	F	0.5	lb ai/a	PO1						
	carfentrazone	2	EC	0.008	lb ai/a	PO1						
15	s-metolachlor	7.62	EC	1.5	lb ai/a	PRE	1.3	1.3	10.0	8.7	8.5	10.0
	foramsulfuron	35	WDG	0.038	lb ai/a	PO1						
	carfentrazone	2	EC	0.008	lb ai/a	PO1						
	COC	100	SL	1.0	% v/v	PO1						
16	Glufosinate	2.34	L	0.366	lb ai/a	PO1, PO2	1.0	1.3	9.3	8.3	9.5	8.3
	ammonium sulfate	100	SG	1.5	lb ai/a	PO1, PO2						
17	glufosinate	2.34	L	0.655	lb ai/a	PO1	1.3	1.3	10.0	8.0	9.0	8.0
	ammonium sulfate	100	SG	1.5	lb ai/a	PO1						
18	s-metolachlor	7.64	EC	1.2	lb ai/a	PRE	1.0	1.0	10.0	9.7	10.0	10.0
	atrazine	4	F	1.5	lb ai/a	PRE						
	glufosinate	2.34	L	0.366	lb ai/a	PO1, PO2						
	ammonium sulfate	100	SG	1.5	lb ai/a	PO1, PO2						
19	s-metolachlor	7.64	EC	1.9	lb ai/a	PRE	1.3	1.7	9.7	9.3	9.0	10.0
	glufosinate	2.34	L	0.366	lb ai/a	PO1, PO2						
	ammonium sulfate	100	SG	1.5	lb ai/a	PO1, PO2						
20	Handweeded						1.0	1.0	1.0	1.0	1.0	1.0
LSD (P=.05)							0.71	0.64	0.57	0.97	1.19	0.99
Standard Deviation							0.43	0.39	0.35	0.59	0.57	0.60
CV							36.53	32.92	3.73	6.92	6.63	6.58

Weed Control in Sweet Corn – HTRC 2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	CORW	LATH	RRPW	SWCO GSS0966	SWCO WHO0809	GRFT
Pest Code												
Crop Code												
Crop Variety												
Rating Date							28/Jun/11	28/Jun/11	28/Jun/11	5/Jul/11	5/Jul/11	5/Jul/11
Rating Type							RATING	RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10	1-10
1	s-metolachlor	7.62	EC	1.9	lb ai/a	PRE	9.7	10.0	8.7	1.0	1.0	10.0
2	dimethenamid-p	6	EC	0.98	lb ai/a	PRE	10.0	10.0	9.3	1.0	1.0	10.0
3	pyroxasulfone	85	WDG	0.186	lb ai/a	PRE	10.0	10.0	9.3	1.0	1.0	10.0
4	acetochlor	6.4	EC	2	lb ai/a	PRE	10.0	10.0	9.7	1.3	1.3	10.0
5	saflufenacil	2.85	SC	0.045	lb ai/a	PRE	10.0	10.0	9.7	1.3	1.3	9.0
6	mesotrione	4	SC	0.188	lb ai/a	PRE	10.0	10.0	9.7	1.0	1.0	7.7
7	atrazine	4	F	2	lb ai/a	PRE	10.0	10.0	10.0	1.3	1.3	10.0
8	pendimethalin	3.8	CS	1.9	lb ai/a	PRE	9.7	10.0	9.3	1.0	1.0	10.0
9	s-metolachlor	2.68	L	2.04	lb ai/a	PRE	10.0	10.0	10.0	1.0	1.0	10.0
	atrazine	1	L	0.76	lb ai/a	PRE						
	mesotrione	0.27	L	.204	lb ai/a	PRE						
10	s-metolachlor	7.62	EC	1.5	lb ai/a	PRE	10.0	10.0	8.7	1.3	1.7	9.0
	halosulfuron	75	WG	0.023	lb ai/a	PO1						
11	s-metolachlor	7.62	EC	1.5	lb ai/a	PRE	10.0	10.0	8.3	1.0	1.0	10.0
	tembotrione	3.5	SC	0.082	lb ai/a	PO1						
12	s-metolachlor	7.62	EC	1.5	lb ai/a	PRE	9.7	10.0	8.7	1.0	1.0	10.0
	mesotrione	4	SC	0.09	lb ai/a	PO1						
13	s-metolachlor	7.62	EC	1.5	lb ai/a	PRE	10.0	10.0	9.3	1.3	1.3	10.0
	clopyralid	3	L	0.125	lb ai/a	PO1						
	carfentrazone	2	EC	0.008	lb ai/a	PO1						
14	s-metolachlor	7.62	EC	1.5	lb ai/a	PRE	10.0	10.0	9.7	2.0	2.0	10.0
	atrazine	4	F	0.5	lb ai/a	PO1						
	carfentrazone	2	EC	0.008	lb ai/a	PO1						
15	s-metolachlor	7.62	EC	1.5	lb ai/a	PRE	9.7	10.0	9.7	2.7	2.3	10.0
	foramsulfuron	35	WDG	0.038	lb ai/a	PO1						
	carfentrazone	2	EC	0.008	lb ai/a	PO1						
	COC	100	SL	1.0	% v/v	PO1						
16	Glufosinate	2.34	L	0.366	lb ai/a	PO1, PO2	10.0	10.0	7.7	1.3	1.0	10.0
	ammonium sulfate	100	SG	1.5	lb ai/a	PO1, PO2						
17	glufosinate	2.34	L	0.655	lb ai/a	PO1	10.0	9.3	8.0	1.0	1.0	10.0
	ammonium sulfate	100	SG	1.5	lb ai/a	PO1						
18	s-metolachlor	7.64	EC	1.2	lb ai/a	PRE	10.0	10.0	7.0	1.0	1.0	10.0
	atrazine	4	F	1.5	lb ai/a	PRE						
	glufosinate	2.34	L	0.366	lb ai/a	PO1, PO2						
	ammonium sulfate	100	SG	1.5	lb ai/a	PO1, PO2						
19	s-metolachlor	7.64	EC	1.9	lb ai/a	PRE	9.7	9.7	9.0	1.0	1.0	10.0
	glufosinate	2.34	L	0.366	lb ai/a	PO1, PO2						
	ammonium sulfate	100	SG	1.5	lb ai/a	PO1, PO2						
20	Handweeded						1.0	1.0	1.0	1.0	1.0	3.3
LSD (P=.05)							0.42	0.30	2.10	0.57	0.64	1.64
Standard Deviation							0.26	0.18	1.27	0.35	0.39	0.99
CV							2.71	1.9	14.76	28.01	32.02	10.5

Weed Control in Sweet Corn – HTRC 2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	COLQ	CORW	LATH	RRPW	SWCO GSS0966	SWCO WHO0809
Pest Code												
Crop Code											SWCO	SWCO
Crop Variety											GSS0966	WHO0809
Rating Date							5/Jul/11	5/Jul/11	5/Jul/11	5/Jul/11	11/Jul/11	11/Jul/11
Rating Type							RATING	RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10	1-10
1	s-metolachlor	7.62	EC	1.9	lb ai/a	PRE	2.3	7.7	10.0	8.0	1.7	1.7
2	dimethenamid-p	6	EC	0.98	lb ai/a	PRE	5.7	10.0	10.0	8.7	2.3	1.7
3	pyroxasulfone	85	WDG	0.186	lb ai/a	PRE	8.3	10.0	10.0	10.0	2.0	1.7
4	acetochlor	6.4	EC	2	lb ai/a	PRE	6.7	10.0	10.0	10.0	1.7	1.7
5	saflufenacil	2.85	SC	0.045	lb ai/a	PRE	10.0	10.0	10.0	10.0	2.0	1.0
6	mesotrione	4	SC	0.188	lb ai/a	PRE	10.0	10.0	9.3	9.3	1.0	1.3
7	atrazine	4	F	2	lb ai/a	PRE	10.0	10.0	10.0	10.0	2.7	2.0
8	pendimethalin	3.8	CS	1.9	lb ai/a	PRE	10.0	7.7	10.0	10.0	1.3	1.3
9	s-metolachlor	2.68	L	2.04	lb ai/a	PRE	10.0	10.0	10.0	10.0	1.0	1.7
	atrazine	1	L	0.76	lb ai/a	PRE						
	mesotrione	0.27	L	.204	lb ai/a	PRE						
10	s-metolachlor	7.62	EC	1.5	lb ai/a	PRE	5.7	10.0	9.7	9.3	2.0	1.7
	halosulfuron	75	WG	0.023	lb ai/a	PO1						
11	s-metolachlor	7.62	EC	1.5	lb ai/a	PRE	5.3	10.0	10.0	10.0	1.3	2.0
	tembotrione	3.5	SC	0.082	lb ai/a	PO1						
12	s-metolachlor	7.62	EC	1.5	lb ai/a	PRE	9.3	10.0	10.0	10.0	1.3	1.3
	mesotrione	4	SC	0.09	lb ai/a	PO1						
13	s-metolachlor	7.62	EC	1.5	lb ai/a	PRE	9.0	10.0	10.0	10.0	2.0	2.0
	clopyralid	3	L	0.125	lb ai/a	PO1						
	carfentrazone	2	EC	0.008	lb ai/a	PO1						
14	s-metolachlor	7.62	EC	1.5	lb ai/a	PRE	10.0	10.0	10.0	10.0	2.3	2.7
	atrazine	4	F	0.5	lb ai/a	PO1						
	carfentrazone	2	EC	0.008	lb ai/a	PO1						
15	s-metolachlor	7.62	EC	1.5	lb ai/a	PRE	10.0	9.7	10.0	10.0	2.7	2.3
	foramsulfuron	35	WDG	0.038	lb ai/a	PO1						
	carfentrazone	2	EC	0.008	lb ai/a	PO1						
	COC	100	SL	1.0	% v/v	PO1						
16	Glufosinate	2.34	L	0.366	lb ai/a	PO1, PO2	10.0	10.0	10.0	10.0	1.3	1.3
	ammonium sulfate	100	SG	1.5	lb ai/a	PO1, PO2						
17	glufosinate	2.34	L	0.655	lb ai/a	PO1	10.0	10.0	10.0	10.0	1.0	2.0
	ammonium sulfate	100	SG	1.5	lb ai/a	PO1						
18	s-metolachlor	7.64	EC	1.2	lb ai/a	PRE	10.0	10.0	10.0	10.0	1.7	1.3
	atrazine	4	F	1.5	lb ai/a	PRE						
	glufosinate	2.34	L	0.366	lb ai/a	PO1, PO2						
	ammonium sulfate	100	SG	1.5	lb ai/a	PO1, PO2						
19	s-metolachlor	7.64	EC	1.9	lb ai/a	PRE	10.0	10.0	10.0	10.0	2.0	2.7
	glufosinate	2.34	L	0.366	lb ai/a	PO1, PO2						
	ammonium sulfate	100	SG	1.5	lb ai/a	PO1, PO2						
20	Handweeded						1.3	4.0	4.0	1.7	2.0	1.7
LSD (P=.05)							2.22	2.75	1.99	1.06	0.91	1.06
Standard Deviation							1.34	1.66	1.21	0.64	0.55	0.64
CV							16.43	17.62	12.52	6.89	31.27	36.73

Weed Control in Sweet Corn – HTRC 2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	COLQ	COPU	CORW	LATH	RRPW	SWCO
Crop Variety												GSS0966
Rating Date							11/Jul/11	11/Jul/11	11/Jul/11	11/Jul/11	11/Jul/11	25/Jul/11
Rating Type							RATING	RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10	1-10
1	s-metolachlor	7.62	EC	1.9	lb ai/a	PRE	5.0	9.3	8.7	9.7	8.7	1.7
2	dimethenamid-p	6	EC	0.98	lb ai/a	PRE	6.7	7.3	10.0	10.0	9.0	1.7
3	pyroxasulfone	85	WDG	0.186	lb ai/a	PRE	9.0	10.0	10.0	10.0	9.7	2.0
4	acetochlor	6.4	EC	2	lb ai/a	PRE	8.3	10.0	9.7	10.0	10.0	1.7
5	saflufenacil	2.85	SC	0.045	lb ai/a	PRE	8.3	9.0	10.0	10.0	9.7	1.7
6	mesotrione	4	SC	0.188	lb ai/a	PRE	10.0	1.0	10.0	10.0	9.7	1.0
7	atrazine	4	F	2	lb ai/a	PRE	10.0	10.0	10.0	10.0	10.0	1.7
8	pendimethalin	3.8	CS	1.9	lb ai/a	PRE	10.0	10.0	9.0	10.0	10.0	1.0
9	s-metolachlor	2.68	L	2.04	lb ai/a	PRE	10.0	10.0	10.0	10.0	10.0	1.7
	atrazine	1	L	0.76	lb ai/a	PRE						
	mesotrione	0.27	L	.204	lb ai/a	PRE						
10	s-metolachlor	7.62	EC	1.5	lb ai/a	PRE	6.7	9.0	10.0	10.0	9.7	1.7
	halosulfuron	75	WG	0.023	lb ai/a	PO1						
11	s-metolachlor	7.62	EC	1.5	lb ai/a	PRE	7.7	9.3	10.0	9.7	9.3	2.3
	tembotrione	3.5	SC	0.082	lb ai/a	PO1						
12	s-metolachlor	7.62	EC	1.5	lb ai/a	PRE	9.3	8.3	10.0	7.0	10.0	1.3
	mesotrione	4	SC	0.09	lb ai/a	PO1						
13	s-metolachlor	7.62	EC	1.5	lb ai/a	PRE	8.7	10.0	9.7	10.0	9.7	2.0
	clopyralid	3	L	0.125	lb ai/a	PO1						
	carfentrazone	2	EC	0.008	lb ai/a	PO1						
14	s-metolachlor	7.62	EC	1.5	lb ai/a	PRE	9.7	10.0	9.7	7.0	10.0	1.0
	atrazine	4	F	0.5	lb ai/a	PO1						
	carfentrazone	2	EC	0.008	lb ai/a	PO1						
15	s-metolachlor	7.62	EC	1.5	lb ai/a	PRE	9.7	10.0	9.7	10.0	10.0	2.0
	foramsulfuron	35	WDG	0.038	lb ai/a	PO1						
	carfentrazone	2	EC	0.008	lb ai/a	PO1						
	COC	100	SL	1.0	% v/v	PO1						
16	Glufosinate	2.34	L	0.366	lb ai/a	PO1, PO2	10.0	9.7	10.0	10.0	10.0	1.3
	ammonium sulfate	100	SG	1.5	lb ai/a	PO1, PO2						
17	glufosinate	2.34	L	0.655	lb ai/a	PO1	10.0	10.0	10.0	10.0	10.0	1.0
	ammonium sulfate	100	SG	1.5	lb ai/a	PO1						
18	s-metolachlor	7.64	EC	1.2	lb ai/a	PRE	10.0	10.0	10.0	10.0	10.0	1.7
	atrazine	4	F	1.5	lb ai/a	PRE						
	glufosinate	2.34	L	0.366	lb ai/a	PO1, PO2						
	ammonium sulfate	100	SG	1.5	lb ai/a	PO1, PO2						
19	s-metolachlor	7.64	EC	1.9	lb ai/a	PRE	10.0	10.0	10.0	10.0	10.0	1.7
	glufosinate	2.34	L	0.366	lb ai/a	PO1, PO2						
	ammonium sulfate	100	SG	1.5	lb ai/a	PO1, PO2						
20	Handweeded						1.0	1.0	1.0	4.0	1.0	2.7
LSD (P=.05)							1.32	1.72	0.71	3.39	0.79	1.36
Standard Deviation							0.80	1.04	0.43	2.05	0.48	0.82
CV							9.43	12.0	4.61	21.93	5.12	50.28

Weed Control in Sweet Corn – HTRC 2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	SWCO WHO0809 25/Jul/11 RATING 1-10	SWCO GSS0966 17/Aug/11 Count #	SWCO GSS0966 17/Aug/11 Weight KG/PLOT	SWCO WHO0809 19/Aug/11 Count #	SWCO WHO0809 19/Aug/11 Weight KG/PLOT
1	s-metolachlor	7.62	EC	1.9	lb ai/a	PRE	1.7	40.0	10.95	37.3	12.53
2	dimethenamid-p	6	EC	0.98	lb ai/a	PRE	1.7	36.3	10.29	39.3	12.73
3	pyroxasulfone	85	WDG	0.186	lb ai/a	PRE	2.0	42.7	11.45	37.0	12.58
4	acetochlor	6.4	EC	2	lb ai/a	PRE	1.3	41.3	11.77	37.7	12.77
5	saflufenacil	2.85	SC	0.045	lb ai/a	PRE	1.7	33.7	9.62	43.0	13.75
6	mesotrione	4	SC	0.188	lb ai/a	PRE	1.0	44.7	12.83	42.7	14.63
7	atrazine	4	F	2	lb ai/a	PRE	2.0	36.7	10.19	44.0	14.23
8	pendimethalin	3.8	CS	1.9	lb ai/a	PRE	1.0	38.0	11.27	41.0	14.63
9	s-metolachlor	2.68	L	2.04	lb ai/a	PRE	1.7	39.3	11.19	39.0	12.77
	atrazine	1	L	0.76	lb ai/a	PRE					
	mesotrione	0.27	L	.204	lb ai/a	PRE					
10	s-metolachlor	7.62	EC	1.5	lb ai/a	PRE	2.0	38.3	10.71	36.7	12.17
	halosulfuron	75	WG	0.023	lb ai/a	PO1					
11	s-metolachlor	7.62	EC	1.5	lb ai/a	PRE	2.0	39.0	10.55	31.7	10.48
	tembotrione	3.5	SC	0.082	lb ai/a	PO1					
12	s-metolachlor	7.62	EC	1.5	lb ai/a	PRE	1.3	41.3	11.56	40.7	13.55
	mesotrione	4	SC	0.09	lb ai/a	PO1					
13	s-metolachlor	7.62	EC	1.5	lb ai/a	PRE	2.0	39.3	10.46	39.0	11.84
	clopyralid	3	L	0.125	lb ai/a	PO1					
	carfentrazone	2	EC	0.008	lb ai/a	PO1					
14	s-metolachlor	7.62	EC	1.5	lb ai/a	PRE	1.0	40.0	10.96	40.7	13.96
	atrazine	4	F	0.5	lb ai/a	PO1					
	carfentrazone	2	EC	0.008	lb ai/a	PO1					
15	s-metolachlor	7.62	EC	1.5	lb ai/a	PRE	1.7	36.3	9.49	35.3	11.22
	foramsulfuron	35	WDG	0.038	lb ai/a	PO1					
	carfentrazone	2	EC	0.008	lb ai/a	PO1					
	COC	100	SL	1.0	% v/v	PO1					
16	Glufosinate	2.34	L	0.366	lb ai/a	PO1, PO2	1.3	38.0	10.96	39.3	13.29
	ammonium sulfate	100	SG	1.5	lb ai/a	PO1, PO2					
17	glufosinate	2.34	L	0.655	lb ai/a	PO1	1.0	41.0	11.87	41.7	14.25
	ammonium sulfate	100	SG	1.5	lb ai/a	PO1					
18	s-metolachlor	7.64	EC	1.2	lb ai/a	PRE	2.0	40.3	11.31	39.7	13.55
	atrazine	4	F	1.5	lb ai/a	PRE					
	glufosinate	2.34	L	0.366	lb ai/a	PO1, PO2					
	ammonium sulfate	100	SG	1.5	lb ai/a	PO1, PO2					
19	s-metolachlor	7.64	EC	1.9	lb ai/a	PRE	2.3	34.3	9.53	33.0	11.20
	glufosinate	2.34	L	0.366	lb ai/a	PO1, PO2					
	ammonium sulfate	100	SG	1.5	lb ai/a	PO1, PO2					
20	Handweeded						3.0	25.3	6.45	27.3	8.75
LSD (P=.05)							1.50	9.64	2.695	9.36	3.437
Standard Deviation							0.91	5.84	1.633	5.67	2.083
CV							54.06	15.25	15.31	14.8	16.35

Weed Control in Pickling Cucumber – HTRC 2011

Project Code: 108-11-01 **Location: East Lansing, MI**

Personnel: Bernard H. Zandstra, Rodney Tocco
Crop: Cucumber **Variety: Journey**
Planting Method: Seeded **Planting Date: 6/8/2011**
Spacing: 3 inch **Row Spacing: 14 inch**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 16 ft wide x 40 ft long, 3 rows/plot

Soil Type: Capac Loam **OM: 3.3%** **pH: 5.4**
Sand: 52% **Silt: 26%** **Clay: 22%** **CEC: 7.3**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	6/9/11	3:00 pm	77/	F	Good	5 NW	58	100%Cloudy	N
PO1	6/28/11	2:00 pm	74/83	F	Dry	6-7 NW	49	75% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
6/9	CUKE = cucumber			
6/14	CUKE = cucumber			
6/28	CUKE = cucumber		1-2 LS	
6/28	LACG = large crabgrass	1-3″		Few
6/28	COLQ = common lambsquarters		2-4 LS	Few
6/28	COPU = common purslane		2-4 LS	Few
6/28	CORW = common ragweed			
6/28	RRPW = redroot pigweed	1-2″	3-6 LS	Few
6/28	WIRA = wild radish			

Notes and Comments
1. Treatment 4 is Strategy 6 pt/acre (1.2 lb ethalfluralin + 0.37 lb clomazone/acre).
2. Spray applied with tractor sprayer, 16 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 tanks.
3. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.

Weed Control in Pickling Cucumber – HTRC 2011

Weed Control in Pickling Cucumber - HTRC 2011

Trial ID: 108-11-01 Protocol ID: 108-11-01
Location: East Lansing, MI Study Director: Rodney Tocco
Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
Pest Code									COLQ	CORW	
Crop Code							CUKE	CUKE			CUKE
Rating Date							28/Jun/11	6/Jul/11	6/Jul/11	6/Jul/11	18/Jul/11
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	ethalfluralin	3	EC	1.13	lb ai/a	PRE	1.7	1.7	9.7	9.7	1.7
2	ethalfluralin	3	EC	1.13	lb ai/a	PRE	2.0	1.7	9.7	10.0	1.3
	clomazone	3	ME	0.25	lb ai/a	PRE					
3	ethalfluralin	3	EC	0.75	lb ai/a	PRE	1.7	1.3	10.0	6.7	1.3
	clomazone	3	ME	0.25	lb ai/a	PRE					
	halosulfuron	75	WG	0.023	lb ai/a	PRE					
4	ethalfluralin	1.61	SE	4.6	pt/a	PRE	1.3	1.0	10.0	10.0	1.0
	clomazone	0.49	SE	1.41	pt/a	PRE					
5	ethalfluralin	3	EC	0.75	lb ai/a	PRE	2.7	2.0	8.7	9.3	1.7
	s-metolachlor	7.62	EC	0.67	lb ai/a	PRE					
6	ethalfluralin	3	EC	0.75	lb ai/a	PRE	3.3	1.7	10.0	10.0	2.3
	s-metolachlor	7.62	EC	0.67	lb ai/a	PRE					
	clomazone	3	ME	0.25	lb ai/a	PRE					
7	s-metolachlor	7.62	EC	0.67	lb ai/a	PRE	2.7	1.7	10.0	10.0	1.7
	clomazone	3	ME	0.25	lb ai/a	PRE					
8	s-metolachlor	7.62	EC	0.67	lb ai/a	PRE	4.0	2.7	10.0	8.7	2.3
	clomazone	3	ME	0.25	lb ai/a	PRE					
	halosulfuron	75	WG	0.023	lb ai/a	PRE					
9	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	3.7	2.7	10.0	10.0	3.0
	clomazone	3	ME	0.25	lb ai/a	PRE					
10	clomazone	3	ME	0.25	lb ai/a	PRE	2.0	3.7	10.0	10.0	3.0
	s-metolachlor	7.62	EC	0.67	lb ai/a	PO1					
11	clomazone	3	ME	0.25	lb ai/a	PRE	3.7	3.0	10.0	10.0	3.0
	s-metolachlor	7.62	EC	0.67	lb ai/a	PRE					
	halosulfuron	75	WG	0.023	lb ai/a	PO1					
12	Untreated					PRE	1.0	1.0	3.3	3.3	1.0
	Handweeded					PO1					
LSD (P=.05)							1.16	1.07	2.10	3.68	0.93
Standard Deviation							0.68	0.63	1.24	2.17	0.55
CV							27.65	31.68	13.39	24.21	28.19

Weed Control in Pickling Cucumber – HTRC 2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	COLQ	COPU	CORW	RRPW	WIRA
Pest Code							COLQ	COPU	CORW	RRPW	WIRA
Crop Code											
Rating Date							18/Jul/11	18/Jul/11	18/Jul/11	18/Jul/11	18/Jul/11
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	ethalfluralin	3	EC	1.13	lb ai/a	PRE	5.7	7.7	7.7	8.7	9.0
2	ethalfluralin	3	EC	1.13	lb ai/a	PRE	8.3	9.3	9.3	8.7	7.7
	clomazone	3	ME	0.25	lb ai/a	PRE					
3	ethalfluralin	3	EC	0.75	lb ai/a	PRE	9.3	9.7	10.0	10.0	10.0
	clomazone	3	ME	0.25	lb ai/a	PRE					
	halosulfuron	75	WG	0.023	lb ai/a	PRE					
4	ethalfluralin	1.61	SE	4.6	pt/a	PRE	9.0	10.0	5.0	9.3	9.0
	clomazone	0.49	SE	1.41	pt/a	PRE					
5	ethalfluralin	3	EC	0.75	lb ai/a	PRE	4.7	8.0	5.3	9.3	7.0
	s-metolachlor	7.62	EC	0.67	lb ai/a	PRE					
6	ethalfluralin	3	EC	0.75	lb ai/a	PRE	10.0	9.7	8.3	10.0	10.0
	s-metolachlor	7.62	EC	0.67	lb ai/a	PRE					
	clomazone	3	ME	0.25	lb ai/a	PRE					
7	s-metolachlor	7.62	EC	0.67	lb ai/a	PRE	9.0	10.0	9.0	9.3	9.3
	clomazone	3	ME	0.25	lb ai/a	PRE					
8	s-metolachlor	7.62	EC	0.67	lb ai/a	PRE	10.0	10.0	10.0	10.0	10.0
	clomazone	3	ME	0.25	lb ai/a	PRE					
	halosulfuron	75	WG	0.023	lb ai/a	PRE					
9	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	9.7	10.0	10.0	10.0	10.0
	clomazone	3	ME	0.25	lb ai/a	PRE					
10	clomazone	3	ME	0.25	lb ai/a	PRE	9.7	10.0	10.0	9.3	8.7
	s-metolachlor	7.62	EC	0.67	lb ai/a	PO1					
11	clomazone	3	ME	0.25	lb ai/a	PRE	10.0	10.0	10.0	10.0	10.0
	s-metolachlor	7.62	EC	0.67	lb ai/a	PRE					
	halosulfuron	75	WG	0.023	lb ai/a	PO1					
12	Untreated					PRE	1.0	1.0	3.3	1.7	1.0
	Handweeded					PO1					
LSD (P=.05)							2.26	1.27	4.03	1.99	3.17
Standard Deviation							1.34	0.75	2.38	1.18	1.87
CV							16.64	8.51	29.17	13.28	22.1

Weed Control in Pickling Cucumber – HTRC 2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	CUKE 25/Jul/11 Total: Plant KG/PLOT	CUKE 25/Jul/11 Total: Fruit KG/PLOT	CUKE 25/Jul/11 Grade 1 KG/PLOT	CUKE 25/Jul/11 Grade 2 KG/PLOT	CUKE 25/Jul/11 Grade 3 KG/PLOT	CUKE 25/Jul/11 Grade 4 KG/PLOT
1	ethalfluralin	3	EC	1.13	lb ai/a	PRE	26.71	33.29	1.388	6.437	20.367	4.455
2	ethalfluralin	3	EC	1.13	lb ai/a	PRE	28.23	41.71	1.075	4.892	26.297	8.553
	clomazone	3	ME	0.25	lb ai/a	PRE						
3	ethalfluralin	3	EC	0.75	lb ai/a	PRE	26.20	37.74	1.378	5.447	24.870	4.967
	clomazone	3	ME	0.25	lb ai/a	PRE						
	halosulfuron	75	WG	0.023	lb ai/a	PRE						
4	ethalfluralin	1.61	SE	4.6	pt/a	PRE	30.75	48.87	1.155	5.007	32.703	9.048
	clomazone	0.49	SE	1.41	pt/a	PRE						
5	ethalfluralin	3	EC	0.75	lb ai/a	PRE	23.72	26.46	1.708	6.688	16.202	1.197
	s-metolachlor	7.62	EC	0.67	lb ai/a	PRE						
6	ethalfluralin	3	EC	0.75	lb ai/a	PRE	19.53	18.96	1.692	6.665	9.478	0.678
	s-metolachlor	7.62	EC	0.67	lb ai/a	PRE						
	clomazone	3	ME	0.25	lb ai/a	PRE						
7	s-metolachlor	7.62	EC	0.67	lb ai/a	PRE	23.98	26.22	1.743	6.670	15.922	1.413
	clomazone	3	ME	0.25	lb ai/a	PRE						
8	s-metolachlor	7.62	EC	0.67	lb ai/a	PRE	23.75	21.97	2.042	8.597	9.847	0.982
	clomazone	3	ME	0.25	lb ai/a	PRE						
	halosulfuron	75	WG	0.023	lb ai/a	PRE						
9	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	23.30	19.83	2.667	6.472	8.493	1.165
	clomazone	3	ME	0.25	lb ai/a	PRE						
10	clomazone	3	ME	0.25	lb ai/a	PRE	21.19	21.18	1.428	3.318	14.325	1.340
	s-metolachlor	7.62	EC	0.67	lb ai/a	PO1						
11	clomazone	3	ME	0.25	lb ai/a	PRE	20.23	16.37	2.522	6.833	6.247	0.172
	s-metolachlor	7.62	EC	0.67	lb ai/a	PRE						
	halosulfuron	75	WG	0.023	lb ai/a	PO1						
12	Untreated					PRE	22.60	32.02	1.033	4.620	21.655	4.282
	Handweeded					PO1						
LSD (P=.05)							8.291	17.576	0.4324	2.1735	12.3656	5.4531
Standard Deviation							4.896	10.379	0.2553	1.2835	7.3022	3.2202
CV							20.25	36.14	15.45	21.5	42.45	101.02

Weed Control in Basil – Van Drunen Farms 2011

Project Code: 117-11-02 **Location: Momence, IL**

Personnel: Bernard H. Zandstra, Rodney Tocco
Crop: Basil **Variety: See notes.**
Planting Method: Seeded **Planting Date: 6/7/11**
Spacing: 2 inch **Row Spacing: 10 inch**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 5.5 ft wide x 30 ft long

Soil Type: Sandy Loam **OM: 2.2%** **pH: 5.2**
Sand: 64% **Silt: 18%** **Clay: 18%** **CEC: 5.0**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	6/8/11	11:00 am	97/94	F	Dry	3-4 SW	31	50% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
6/8	BASIL		Just seeded 6/7	
6/8	FAPA = fall panicum			
6/8	GRFT = green foxtail			
6/8	CAWE = carpetweed			
6/8	COPU = common purslane			
6/8	RRPW = redroot pigweed			

Notes and Comments
1. Varieties west to east: Genovese, Baldur, Mozarella, and Luna.
2. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
3. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.

Weed Control in Basil – Van Drunen Farms 2011

Weed Control in Basil - Van Drunen Farms 2011

Trial ID: 117-11-02 Protocol ID: 117-11-02
Location: Momence, IL Study Director: Rodney Tocco
Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	BASIL Genovese	BASIL Baldur	BASIL Mozzarella	BASIL Luna	GRFT	CAWE
Pest Code											GRFT	CAWE
Crop Code							BASIL	BASIL	BASIL	BASIL		
Crop Variety							Genovese	Baldur	Mozzarella	Luna		
Rating Date							7/Jul/11	7/Jul/11	7/Jul/11	7/Jul/11	7/Jul/11	7/Jul/11
Rating Type							RATING	RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10	1-10
1	napropamide	50	DF	1	lb ai/a	PRE	2.3	2.3	2.0	6.0	8.7	4.3
2	napropamide-UV	50	DF	1	lb ai/a	PRE	1.3	1.0	1.3	4.0	9.3	9.3
3	napropamide-UV	50	DF	2	lb ai/a	PRE	4.0	3.3	4.3	7.7	10.0	8.7
4	sulfentrazone	4	F	0.094	lb ai/a	PRE	9.0	7.0	7.0	9.0	9.3	10.0
5	linuron	50	DF	0.25	lb ai/a	PRE	3.0	6.7	7.3	9.7	3.3	3.3
6	clomazone	3	ME	0.25	lb ai/a	PRE	9.0	9.3	8.7	9.7	9.3	1.0
7	carfentrazone	2	EC	0.1	lb ai/a	PRE	1.7	2.3	1.0	5.7	4.0	7.3
8	carfentrazone	2	EC	0.2	lb ai/a	PRE	2.3	2.0	1.7	6.3	3.7	9.7
9	pyroxasulfone	85	WDG	0.08	lb ai/a	PRE	10.0	10.0	10.0	10.0	9.7	10.0
10	Untreated						1.0	1.0	1.0	1.0	1.0	1.0
LSD (P=.05)							3.03	2.46	3.15	3.32	3.23	1.96
Standard Deviation							1.77	1.43	1.84	1.94	1.89	1.14
CV							40.47	31.83	41.48	28.07	27.59	17.68

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	COPU	RRPW	BASIL Genovese	BASIL Baldor	BASIL Mozarella
Pest Code							COPU	RRPW			
Crop Code									BASIL	BASIL	BASIL
Crop Variety									Genovese	Baldor	Mozarella
Rating Date							7/Jul/11	7/Jul/11	1/Aug/11	1/Aug/11	1/Aug/11
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	napropamide	50	DF	1	lb ai/a	PRE	3.7	3.7	3.3	3.7	2.3
2	napropamide-UV	50	DF	1	lb ai/a	PRE	2.3	6.7	2.0	1.7	1.0
3	napropamide-UV	50	DF	2	lb ai/a	PRE	4.7	5.7	4.0	4.3	4.0
4	sulfentrazone	4	F	0.094	lb ai/a	PRE	9.3	10.0	6.0	4.0	5.3
5	linuron	50	DF	0.25	lb ai/a	PRE	8.3	3.7	2.7	5.3	2.3
6	clomazone	3	ME	0.25	lb ai/a	PRE	10.0	5.3	4.3	7.0	5.3
7	carfentrazone	2	EC	0.1	lb ai/a	PRE	10.0	9.7	1.7	2.0	1.0
8	carfentrazone	2	EC	0.2	lb ai/a	PRE	9.3	9.7	3.0	2.7	1.3
9	pyroxasulfone	85	WDG	0.08	lb ai/a	PRE	9.3	10.0	10.0	10.0	10.0
10	Untreated						1.0	1.0	4.3	4.0	3.0
LSD (P=.05)							1.83	4.07	4.26	3.00	2.89
Standard Deviation							1.07	2.37	2.48	1.75	1.68
CV							15.68	36.33	60.1	39.09	47.22

Weed Control in Basil – Van Drunen Farms 2011

Dept. of Horticulture, MSU

Pest Code								FAPA	CAWE	COPU	RRPW
Crop Code							BASIL				
Crop Variety							Luna				
Rating Date							1/Aug/11	1/Aug/11	1/Aug/11	1/Aug/11	1/Aug/11
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
1	napropamide	50	DF	1	lb ai/a	PRE	5.7	8.7	7.7	7.0	8.7
2	napropamide-UV	50	DF	1	lb ai/a	PRE	5.0	9.0	9.0	9.3	9.0
3	napropamide-UV	50	DF	2	lb ai/a	PRE	7.3	8.3	8.0	8.0	8.7
4	sulfentrazone	4	F	0.094	lb ai/a	PRE	6.7	6.7	9.7	10.0	9.7
5	linuron	50	DF	0.25	lb ai/a	PRE	5.3	9.3	8.7	9.3	9.0
6	clomazone	3	ME	0.25	lb ai/a	PRE	7.3	9.7	7.3	9.7	9.0
7	carfentrazone	2	EC	0.1	lb ai/a	PRE	4.3	9.3	9.7	9.3	9.7
8	carfentrazone	2	EC	0.2	lb ai/a	PRE	4.3	7.7	9.7	9.3	9.7
9	pyroxasulfone	85	WDG	0.08	lb ai/a	PRE	10.0	8.3	9.0	9.3	9.7
10	Untreated						6.0	3.0	4.0	3.3	7.3
LSD (P=.05)							3.63	4.02	2.82	2.32	1.84
Standard Deviation							2.11	2.34	1.65	1.35	1.07
CV							34.1	29.28	19.9	15.99	11.84

Pest Code											
Crop Code							BASIL	BASIL	BASIL	BASIL	BASIL
Crop Variety							Genovese	Baldor	Mozarella	Luna	
Rating Date							11/Aug/11	11/Aug/11	11/Aug/11	11/Aug/11	
Rating Type							Harvest	Harvest	Harvest	Harvest	Total
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	napropamide	50	DF	1	lb ai/a	PRE	8.013	7.060	8.787	3.247	27.107
2	napropamide-UV	50	DF	1	lb ai/a	PRE	6.353	8.693	11.820	3.553	30.420
3	napropamide-UV	50	DF	2	lb ai/a	PRE	8.220	6.127	8.313	0.753	23.413
4	sulfentrazone	4	F	0.094	lb ai/a	PRE	2.580	7.727	6.000	3.273	19.580
5	linuron	50	DF	0.25	lb ai/a	PRE	11.073	4.373	9.560	2.747	27.753
6	clomazone	3	ME	0.25	lb ai/a	PRE	5.947	2.633	6.273	1.967	16.820
7	carfentrazone	2	EC	0.1	lb ai/a	PRE	10.587	4.833	15.533	2.013	32.967
8	carfentrazone	2	EC	0.2	lb ai/a	PRE	10.547	7.127	13.373	3.460	34.507
9	pyroxasulfone	85	WDG	0.08	lb ai/a	PRE	2.533	0.880	1.633	0.000	5.047
10	Untreated						5.607	2.707	7.793	0.787	16.893
LSD (P=.05)							8.0965	5.3229	5.8232	2.8263	13.9011
Standard Deviation							4.7197	3.1029	3.3946	1.6476	8.1034
CV							66.05	59.49	38.1	75.58	34.56

Weed Control in Cilantro, Dill, Fennel, & Parsley – Van Drunen Farms 2011

Project Code: 117-11-03 **Location: Momence, IL**

Personnel: Bernard H. Zandstra, Rodney Tocco
Crop: See notes **Variety: See notes**
Planting Method: Seeded **Planting Date: 6/7/2011**
Spacing: 3 inch **Row Spacing: 12 inch**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 5.5 ft wide x 30 ft long, 4 rows/plot

Soil Type: Sandy Loam **OM: 2.1%** **pH: 6.6**
Sand: 74% **Silt: 19%** **Clay: 7%** **CEC: 7.0**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	6/8/11	1:40 pm	97/94	F	Dry	3-4 SW	31	50% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
6/8	CILANTRO		Just planted	
6/8	DILL		Just planted	
6/8	FENNEL		Just planted	
6/8	PARSLEY		Just planted	

CAWE = carpetweed
COPU = common purslane
GRFT = green foxtail
RRPW = redroot pigweed

Notes and Comments
1. Crops: Cilantro, dill, fennel, and parsley.
2. Varieties: Slobolt Longstanding, Greensleeves, Zepha Fino, Double Curl Moss.
3. Fennel and parsley had poor stand so they were not harvested.
4. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
5. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.

Weed Control in Cilantro, Dill, Fennel, & Parsley – Van Drunen Farms 2011

Weed Control in Cilantro, Dill, Fennel & Parsley - Van Drunen Farms 2011

Trial ID: 117-11-03 Protocol ID: 117-11-03
Location: Momence, IL Study Director: Rodney Tocco
Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	DILL	FENNEL	PARSLEY	CILANTRO	GRFT	CAWE
Pest Code											GRFT	CAWE
Crop Code							DILL	FENNEL	PARSLEY	CILANTRO		
Rating Date							7/Jul/11	7/Jul/11	7/Jul/11	7/Jul/11	7/Jul/11	7/Jul/11
Rating Type							RATING	RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10	1-10
1	linuron	50	DF	0.5	lb ai/a	PRE	3.3	9.7	9.3	2.7	10.0	9.7
2	trifluralin	4	EC	0.5	lb ai/a	PRE	2.3	6.0	8.3	1.7	10.0	9.3
3	prometryn	4	L	1	lb ai/a	PRE	2.3	8.3	10.0	1.7	9.7	10.0
4	s-metolachlor	7.62	EC	0.5	lb ai/a	PRE	5.3	9.7	9.3	1.3	10.0	9.7
5	pendimethalin	3.8	CS	0.5	lb ai/a	PRE	2.3	7.0	7.0	1.7	9.7	10.0
6	ethofumesate	4	SC	0.5	lb ai/a	PRE	4.7	10.0	10.0	4.0	9.7	4.7
7	clomazone	3	ME	0.25	lb ai/a	PRE	2.3	10.0	10.0	3.3	10.0	2.7
8	pyroxasulfone	85	WDG	0.08	lb ai/a	PRE	7.7	10.0	10.0	6.7	10.0	10.0
9	carfentrazone	2	EC	0.031	lb ai/a	PRE	3.7	10.0	10.0	3.3	4.0	2.7
10	Untreated						1.0	9.3	9.7	1.7	1.0	1.0
LSD (P=.05)							3.95	3.79	3.32	3.69	1.74	2.03
Standard Deviation							2.30	2.21	1.94	2.15	1.02	1.18
CV							65.78	24.55	20.66	76.88	12.1	16.96

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	COPU	RRPW	DILL	CILANTRO	CAWE	RRPW
Pest Code							COPU	RRPW			CAWE	RRPW
Crop Code									DILL	CILANTRO		
Rating Date							7/Jul/11	7/Jul/11	1/Aug/11	1/Aug/11	1/Aug/11	1/Aug/11
Rating Type							RATING	RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10	1-10
1	linuron	50	DF	0.5	lb ai/a	PRE	9.0	9.3	3.3	4.0	8.7	8.0
2	trifluralin	4	EC	0.5	lb ai/a	PRE	7.3	7.0	3.0	3.7	10.0	9.3
3	prometryn	4	L	1	lb ai/a	PRE	10.0	9.0	1.7	1.3	10.0	9.3
4	s-metolachlor	7.62	EC	0.5	lb ai/a	PRE	9.0	9.7	6.0	2.7	9.3	10.0
5	pendimethalin	3.8	CS	0.5	lb ai/a	PRE	9.0	4.0	1.7	1.7	9.7	9.3
6	ethofumesate	4	SC	0.5	lb ai/a	PRE	8.0	8.0	4.7	4.3	7.7	8.7
7	clomazone	3	ME	0.25	lb ai/a	PRE	10.0	3.3	3.7	2.7	7.7	8.7
8	pyroxasulfone	85	WDG	0.08	lb ai/a	PRE	9.7	9.3	8.3	6.7	10.0	9.3
9	carfentrazone	2	EC	0.031	lb ai/a	PRE	7.7	7.0	3.0	2.7	8.7	8.7
10	Untreated						1.0	1.0	2.3	4.3	8.3	7.7
LSD (P=.05)							1.19	2.47	4.43	4.47	1.81	2.74
Standard Deviation							0.70	1.44	2.58	2.61	1.06	1.60
CV							8.63	21.3	68.49	76.63	11.73	17.95

Weed Control in Cilantro, Dill, Fennel, & Parsley – Van Drunen Farms 2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	DILL 1/Aug/11 Harvest KG/PLOT	CILANTRO 1/Aug/11 Harvest KG/PLOT
Pest Code								
Crop Code							DILL	CILANTRO
Rating Date							1/Aug/11	1/Aug/11
Rating Type							Harvest	Harvest
Rating Unit							KG/PLOT	KG/PLOT
1	linuron	50	DF	0.5	lb ai/a	PRE	0.82	1.32
2	trifluralin	4	EC	0.5	lb ai/a	PRE	0.95	1.78
3	prometryn	4	L	1	lb ai/a	PRE	1.72	1.65
4	s-metolachlor	7.62	EC	0.5	lb ai/a	PRE	0.55	1.66
5	pendimethalin	3.8	CS	0.5	lb ai/a	PRE	1.49	1.94
6	ethofumesate	4	SC	0.5	lb ai/a	PRE	0.83	1.12
7	clomazone	3	ME	0.25	lb ai/a	PRE	1.14	1.30
8	pyroxasulfone	85	WDG	0.08	lb ai/a	PRE	0.55	1.33
9	carfentrazone	2	EC	0.031	lb ai/a	PRE	1.43	1.53
10	Untreated						0.88	0.83
LSD (P=.05)							1.304	1.685
Standard Deviation							0.760	0.983
CV							73.37	67.95

Weed Control in Lettuce – Van Dyk Farms 2011

Project Code: 116-11-01 **Location: Imlay City, MI**

Personnel: Bernard H. Zandstra, Rodney Tocco
Crop: Lettuce **Variety: Solid King**
Planting Method: Seeded **Planting Date: 6/3/2011**
Spacing: 12 inch **Row Spacing: 24 inch**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 3 ft wide x 30 ft long

Soil Type: Muck **OM: 78%** **pH: 6.4**
Sand: 7% **Silt: 15%** **Clay: 1%** **CEC: -**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	6/3/11	1:30 pm	75/68	F	Damp	5 SW	32	50% Cloudy	N
PO1	6/13/11	10:30 am	66/62	F	Dry	5-7 NW	61	0% Cloudy	N
PO2	6/24/11	12:00 pm	65/68	F	Damp	7 SW	66	100%Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
6/3	LETTUCE		Just seeded	
6/13	LETTUCE	0.5″	Cotyledon	
6/13	BARL = barley	2-3″		Moderate
6/13	COPU = common purslane	0.5″		Many
6/24	LETTUCE	3-4″	4-6 LS	Good

Notes and Comments
1. Spray applied with 2 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.

Weed Control in Lettuce – Van Dyk Farms 2011

Weed Control in Lettuce - Van Dyk Farms 2011

Trial ID: 116-11-01 Protocol ID: 116-11-01
Location: Imlay City, MI Study Director: Rodney Tocco
Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
Pest Code								COPU			
Crop Code							LETTUCE		LETTUCE	LETTUCE	LETTUCE
Crop Variety							Romaine		Romaine	Romaine	Romaine
Rating Date							24/Jun/11	24/Jun/11	7/Jul/11	18/Jul/11	18/Jul/11
Rating Type							RATING	RATING	RATING	Stand	Vigor
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	pronamide	50	WP	6	lb ai/a	PRE	1.3	6.7	1.3	3.3	1.0
2	sulfentrazone	4	F	0.125	lb ai/a	PRE	1.3	5.7	1.7	1.7	1.3
3	pendimethalin	3.8	CS	0.95	lb ai/a	PRE	2.3	2.0	3.7	4.3	1.3
4	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	4.7	6.7	5.3	3.7	2.3
5	pendimethalin	3.8	CS	0.95	lb ai/a	PO1	3.3	6.0	6.3	6.7	3.0
6	pendimethalin	3.8	CS	1.9	lb ai/a	PO1	4.3	7.0	7.7	8.0	4.7
7	s-metolachlor	7.62	EC	0.95	lb ai/a	PO1	2.3	2.3	4.0	4.7	2.0
8	s-metolachlor	7.62	EC	1.9	lb ai/a	PO1	2.3	2.7	3.7	4.0	2.7
9	pendimethalin	3.8	CS	0.95	lb ai/a	PO2				6.3	1.7
10	s-metolachlor	7.62	EC	0.95	lb ai/a	PO2				6.0	1.3
11	imazamox	1	AS	0.031	lb ai/a	PO2				4.0	3.3
LSD (P=.05)							1.95	1.08	1.37	3.79	1.49
Standard Deviation							1.11	0.62	0.78	2.22	0.87
CV							40.46	12.66	18.61	46.42	38.97

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage			
Pest Code							COPU		
Crop Code								LETTUCE	LETTUCE
Crop Variety								Romaine	Romaine
Rating Date							18/Jul/11	26/Jul/11	26/Jul/11
Rating Type							RATING	Harvest	Harvest
Rating Unit							1-10	#	KG/PLOT
1	pronamide	50	WP	6	lb ai/a	PRE	7.3	54.7	64.93
2	sulfentrazone	4	F	0.125	lb ai/a	PRE	6.7	59.3	66.29
3	pendimethalin	3.8	CS	0.95	lb ai/a	PRE	5.0	44.0	53.27
4	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	2.7	46.0	37.53
5	pendimethalin	3.8	CS	0.95	lb ai/a	PO1	3.3	24.3	16.29
6	pendimethalin	3.8	CS	1.9	lb ai/a	PO1	3.3	13.3	6.54
7	s-metolachlor	7.62	EC	0.95	lb ai/a	PO1	2.7	44.3	46.77
8	s-metolachlor	7.62	EC	1.9	lb ai/a	PO1	2.3	61.0	45.43
9	pendimethalin	3.8	CS	0.95	lb ai/a	PO2	7.7	42.0	50.14
10	s-metolachlor	7.62	EC	0.95	lb ai/a	PO2	6.7	52.7	53.43
11	imazamox	1	AS	0.031	lb ai/a	PO2	4.7	54.3	31.29
LSD (P=.05)							2.53	11.14	10.835
Standard Deviation							1.48	6.54	6.361
CV							31.2	14.5	14.83

Weed Control in Lettuce – Muck Farm 2011

Project Code: 116-11-02 **Location: Laingsburg, MI**

Personnel: Bernard H. Zandstra, Rodney Tocco
Crop: Lettuce **Variety: See notes**
Planting Method: Seeded **Planting Date: 6/16/11**
Spacing: 6 inch **Row Spacing: 16 inch**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 5.5 ft wide x 16.7 ft long

Soil Type: Houghton Muck **OM: 78%** **pH: 6.5**
Sand: 11% **Silt: 10%** **Clay: 1%** **CEC: -**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	6/18/11	2:00 pm	90/77	F	Good	3-6 SE	37	20% Cloudy	N
PO1	7/15/11	2:00 pm	87/77	F	Dry	1-3 NE	40	10% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
6/18	LETTUCE		Preemerge	
6/18	RRPW = redroot pigweed	0.25″	2 LS	Many
7/15	LETTUCE	2-5″	6-8 LS	
7/15	LACG = large crabgrass	2-4″		Moderate
7/15	YENS = yellow nutsedge	2-3″		Few
7/15	COLQ = common lambsquarters	4-8″, 2-5″		Many
7/15	COPU = common purslane	3-8″		Many
7/15	LATH = ladysthumb	2-5″		Many
7/15	RRPW = redroot pigweed	2-6″		Moderate

Notes and Comments
1. 1 row of each: Leaf – Black Seeded Simpson, Head – Great Lakes 659, Romaine – Paris Island.
2. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
3. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
4. Head and leaf lettuce had poor stand and were not harvested.

Weed Control in Lettuce – Muck Farm 2011

Weed Control in Lettuce - Muck Farm 2011

Trial ID: 116-11-02 Protocol ID: 116-11-02
Location: Laingsburg, MI Study Director: Rodney Tocco
Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage						
Pest Code										YENS	COLQ	COPU
Crop Code							LETTUCE	LETTUCE	LETTUCE			
Crop Variety							Romaine	Head	Leaf			
Rating Date							5/Jul/11	5/Jul/11	5/Jul/11	5/Jul/11	5/Jul/11	5/Jul/11
Rating Type							RATING	RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10	1-10
1	pronamide	50	WP	6	lb ai/a	PRE	1.0	7.0	1.0	6.3	5.0	9.7
2	pronamide	3.3	SC	6	lb ai/a	PRE	1.0	7.0	1.3	5.3	4.7	10.0
3	sulfentrazone	4	F	0.125	lb ai/a	PRE	1.3	7.0	4.7	6.3	3.0	1.0
4	pendimethalin	3.8	CS	0.95	lb ai/a	PRE	1.0	7.0	1.3	6.0	2.0	2.0
5	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	10.0	10.0	10.0	9.3	1.0	9.7
6	pyroxasulfone	85	WDG	0.186	lb ai/a	PRE	10.0	10.0	10.0	8.0	4.0	9.0
7	pendimethalin	3.8	CS	0.95	lb ai/a	PO1	1.0	1.0	1.0	1.0	1.0	1.0
8	pendimethalin	3.8	CS	1.9	lb ai/a	PO1	1.0	1.0	1.0	1.0	1.0	1.0
9	s-metolachlor	7.62	EC	0.95	lb ai/a	PO1	1.0	1.0	1.0	1.0	1.0	1.0
10	s-metolachlor	7.62	EC	1.9	lb ai/a	PO1	1.0	1.0	1.0	1.0	1.0	1.0
11	pronamide	50	WP	4	lb ai/a	PRE	1.0	10.0	7.0	6.7	2.3	9.0
	imazamox	1	AS	0.063	lb ai/a	PO1						
12	pronamide	50	WP	4	lb ai/a	PRE	1.0	7.0	4.3	7.7	2.7	10.0
	imazethapyr	2	EC	0.063	lb ai/a	PO1						
13	pronamide	50	WP	4	lb ai/a	PRE	1.0	10.0	1.0	7.3	2.7	9.3
	ethofumesate	4	SC	1.0	lb ai/a	PO1						
14	bensulide	4	EC	6	lb ai/a	PRE	1.0	10.0	4.3	8.3	1.0	5.0
15	Untreated						1.0	1.0	1.0	1.0	1.0	1.0
LSD (P=.05)							0.25	5.05	4.40	1.95	0.81	0.76
Standard Deviation							0.15	3.02	2.63	1.17	0.49	0.46
CV							6.71	50.36	78.89	22.92	21.88	8.59

Weed Control in Lettuce – Muck Farm 2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	LETTUCE Romaine % Stand	LETTUCE Romaine Vigor	LACG RATING	COPU RATING	COLQ RATING
	Pest Code								LACG	COPU	COLQ
	Crop Code						LETTUCE	LETTUCE			
	Crop Variety						Romaine	Romaine			
	Rating Date						15/Jul/2011	15/Jul/2011	15/Jul/2011	15/Jul/2011	15/Jul/2011
	Rating Type						% Stand	Vigor	RATING	RATING	RATING
	Rating Unit						%	1-10	1-10	1-10	1-10
1	pronamide	50	WP	6	lb ai/a	PRE	78.3	1.3	10.0	8.7	5.7
2	pronamide	3.3	SC	6	lb ai/a	PRE	71.7	1.3	10.0	8.7	5.7
3	sulfentrazone	4	F	0.125	lb ai/a	PRE	65.0	1.7	7.7	3.0	6.3
4	pendimethalin	3.8	CS	0.95	lb ai/a	PRE	50.0	1.7	9.3	4.3	5.0
5	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	5.3	7.3	10.0	2.7	4.3
6	pyroxasulfone	85	WDG	0.186	lb ai/a	PRE	8.3	5.1	9.3	8.0	4.7
7	pendimethalin	3.8	CS	0.95	lb ai/a	PO1	56.7	2.0	6.7	2.3	7.0
8	pendimethalin	3.8	CS	1.9	lb ai/a	PO1	51.7	2.3	9.7	3.3	8.0
9	s-metolachlor	7.62	EC	0.95	lb ai/a	PO1	45.0	2.3	4.3	3.3	8.0
10	s-metolachlor	7.62	EC	1.9	lb ai/a	PO1	51.7	2.3	6.3	5.0	8.0
11	pronamide	50	WP	4	lb ai/a	PRE	86.7	1.0	9.3	7.0	4.3
	imazamox	1	AS	0.063	lb ai/a	PO1					
12	pronamide	50	WP	4	lb ai/a	PRE	73.3	1.0	9.7	8.3	5.3
	imazethapyr	2	EC	0.063	lb ai/a	PO1					
13	pronamide	50	WP	4	lb ai/a	PRE	60.0	1.3	9.3	7.0	5.3
	ethofumesate	4	SC	1.0	lb ai/a	PO1					
14	bensulide	4	EC	6	lb ai/a	PRE	68.3	1.3	9.0	3.0	5.0
15	Untreated						25.0	1.0	1.0	1.0	1.0
LSD (P=.05)							36.12	1.50	1.96	3.21	3.83
Standard Deviation							21.60	0.90	1.17	1.92	2.29
CV							40.66	40.59	14.45	38.03	41.1

Weed Control in Lettuce – Muck Farm 2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage		
Pest Code								
Crop Code							LETTUCE	LETTUCE
Crop Variety							Romaine	Romaine
Rating Date							5/Aug/2011	5/Aug/2011
Rating Type							Count	Weight
Rating Unit							#	KG/PLOT
1	pronamide	50	WP	6	lb ai/a	PRE	42.7	9.145
2	pronamide	3.3	SC	6	lb ai/a	PRE	41.7	9.932
3	sulfentrazone	4	F	0.125	lb ai/a	PRE	33.0	7.968
4	pendimethalin	3.8	CS	0.95	lb ai/a	PRE	37.7	5.820
5	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	5.7	0.551
6	pyroxasulfone	85	WDG	0.186	lb ai/a	PRE	9.0	0.753
7	pendimethalin	3.8	CS	0.95	lb ai/a	PO1	28.3	5.483
8	pendimethalin	3.8	CS	1.9	lb ai/a	PO1	29.0	7.388
9	s-metolachlor	7.62	EC	0.95	lb ai/a	PO1	20.3	3.548
10	s-metolachlor	7.62	EC	1.9	lb ai/a	PO1	29.0	4.476
11	pronamide	50	WP	4	lb ai/a	PRE	50.7	6.822
	imazamox	1	AS	0.063	lb ai/a	PO1		
12	pronamide	50	WP	4	lb ai/a	PRE	40.3	8.253
	imazethapyr	2	EC	0.063	lb ai/a	PO1		
13	pronamide	50	WP	4	lb ai/a	PRE	35.3	7.401
	ethofumesate	4	SC	1.0	lb ai/a	PO1		
14	bensulide	4	EC	6	lb ai/a	PRE	43.7	7.548
15	Untreated						17.3	3.313
LSD (P=.05)							26.27	4.1163
Standard Deviation							15.71	2.4616
CV							50.83	41.77

Weed Control in Lettuce on Mineral Soil – HTRC 2011

Project Code: 116-11-03 **Location: East Lansing, MI**

Personnel: Bernard H. Zandstra, Rodney Tocco
Crop: Lettuce **Variety: See notes**
Planting Method: Seeded **Planting Date: 5/11/2011**
Spacing: 3 inch **Row Spacing: 14 inch**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 5.5 ft wide x 40 ft long

Soil Type: Marlette Fine Sandy Loam **OM: 2.5%** **pH: 5.3**
Sand: 46% **Silt: 32%** **Clay: 22%** **CEC: 8.4**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	5/11/11	6:00 pm	80/69	F	Good	5-8 S	35	60% Cloudy	N
PO1	5/27/11	11:30 am	58/53	F	Wet	3-5 NW	78	100%Cloudy	N
PO2	6/9/11	11:15 am	72/75	F	Dry	5-7 W	70	100%Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
5/11	LETTUCE		Just seeded	
5/27	LETTUCE			
5/27	LACG = large crabgrass	1″	2 LS	Few
5/27	CORW = common ragweed	0.5″	4 LS	Many
5/27	RRPW = redroot pigweed	0.5-1″	2 LS	Many
5/27	WIRA = wild radish			Few
6/9	LETTUCE			
6/9	GRFT = green foxtail			
6/9	COLQ = common lambsquarters			

Notes and Comments
1. 1 row of each: Leaf - Black Seeded Simpson, Romaine - Paris Island, Head – Great Lakes 659.
2. Yields not taken because of heavy weed presence and poor stand.
3. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
4. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.

Weed Control in Lettuce on Mineral Soil – HTRC 2011

Weed Control in Lettuce on Mineral Soil - HTRC 2011

Trial ID: 116-11-03 Protocol ID: 116-11-03
Location: East Lansing, MI Study Director: Rodney Tocco
Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	LETTUCE Leaf 8/Jun/11 RATING 1-10	LETTUCE Head 8/Jun/11 RATING 1-10	LETTUCE Romaine 8/Jun/11 RATING 1-10	GRFT 8/Jun/11 RATING 1-10	COLQ 8/Jun/11 RATING 1-10
1	pronamide	50	WP	2	lb ai/a	PRE	6.3	5.0	5.7	9.3	10.0
2	pronamide	3.3	SC	2	lb ai/a	PRE	2.3	1.0	1.7	9.7	10.0
3	sulfentrazone	4	F	0.125	lb ai/a	PRE	10.0	9.7	9.7	8.0	10.0
4	bensulide	4	EC	6	lb ai/a	PRE	8.7	5.7	5.0	8.7	8.7
5	pendimethalin	3.8	CS	0.75	lb ai/a	PRE	2.7	4.0	4.0	6.3	9.3
6	s-metolachlor	7.62	EC	0.75	lb ai/a	PRE	9.7	9.7	10.0	10.0	7.7
7	ethofumesate	4	SC	1.0	lb ai/a	PRE	8.3	7.0	7.3	8.7	7.0
8	pyroxasulfone	85	WDG	0.1	lb ai/a	PRE	10.0	10.0	10.0	10.0	10.0
9	pendimethalin	3.8	CS	0.95	lb ai/a	PO1	4.3	4.3	3.7	1.0	9.3
10	s-metolachlor	7.62	EC	0.95	lb ai/a	PO1	9.0	10.0	9.3	10.0	5.3
11	imazamox	1	AS	0.031	lb ai/a	PO1	6.7	5.7	5.3	9.7	10.0
12	imazethapyr	2	EC	0.063	lb ai/a	PO1	6.7	4.3	4.0	10.0	10.0
13	Untreated						1.0	1.0	1.0	1.0	1.0
LSD (P=.05)							3.65	4.21	4.25	2.14	2.56
Standard Deviation							2.17	2.50	2.52	1.27	1.52
CV							32.86	42.04	42.8	16.1	18.21

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	CORW 8/Jun/11 RATING 1-10	RRPW 8/Jun/2011 RATING 1-10
1	pronamide	50	WP	2	lb ai/a	PRE	4.0	8.7
2	pronamide	3.3	SC	2	lb ai/a	PRE	4.0	8.7
3	sulfentrazone	4	F	0.125	lb ai/a	PRE	4.3	10.0
4	bensulide	4	EC	6	lb ai/a	PRE	4.7	9.3
5	pendimethalin	3.8	CS	0.75	lb ai/a	PRE	2.3	7.0
6	s-metolachlor	7.62	EC	0.75	lb ai/a	PRE	3.0	9.3
7	ethofumesate	4	SC	1.0	lb ai/a	PRE	2.7	8.7
8	pyroxasulfone	85	WDG	0.1	lb ai/a	PRE	8.0	10.0
9	pendimethalin	3.8	CS	0.95	lb ai/a	PO1	1.3	6.0
10	s-metolachlor	7.62	EC	0.95	lb ai/a	PO1	4.3	9.0
11	imazamox	1	AS	0.031	lb ai/a	PO1	8.3	9.7
12	imazethapyr	2	EC	0.063	lb ai/a	PO1	8.3	9.3
13	Untreated						1.0	1.7
LSD (P=.05)							1.78	3.31
Standard Deviation							1.05	1.97
CV							24.33	23.82

Weed Control in Mint – Irrer Farms 2011

Project Code: 121-11-01 **Location: St. Johns, MI**

Personnel: Bernard H. Zandstra, Rodney Tocco
Crop: Mint **Variety: Row Native Spearmint**
Planting Method: Seeded **Planting Date: Fall 2010**
Spacing: 6 inch **Row Spacing: 36 inch**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 6 ft wide x 50 ft long

Soil Type: Gilford Loam **OM: 4.4%** **pH: 6.7**
Sand: 42% **Silt: 43%** **Clay: 15%** **CEC: 12.3**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	4/12/11	12:00 pm	57/25	F	Good	5-6 NW	28	0% Cloudy	N
POST	5/31/11	2:30 pm	96/76	F	Damp	10 SW	50	50% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
4/12	MINT		Dormant	100%
5/31	MINT	1-3″		10% coverage

Notes and Comments
1. The experiment suffered stand loss and injury from flooding in June.
2. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
3. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.

Weed Control in Mint – Irrer Farms 2011

Weed Control in Mint - Irrer Farms 2011

Trial ID: 121-11-01 Protocol ID: 121-11-01
Location: St. Johns, MI Study Director: Rodney Tocco
Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	
Crop Code							MINT
Rating Date							21Jul/11
Rating Type							RATING
Rating Unit							1-10
1	terbacil	80	WP	0.8	lb ai/a	PRE	1.7
2	terbacil	80	WP	1.6	lb ai/a	PRE	3.0
3	flumioxazin	51	WDG	0.064	lb ai/a	PRE	3.0
4	flumioxazin	51	WDG	0.128	lb ai/a	PRE	4.0
5	flumioxazin	51	WDG	0.064	lb ai/a	PRE	4.8
	flumioxazin	51	WDG	0.064	lb ai/a	POST	
6	flumioxazin	51	WDG	0.128	lb ai/a	PRE	6.0
	flumioxazin	51	WDG	0.128	lb ai/a	POST	
7	sulfentrazone	4	F	0.188	lb ai/a	PRE	2.3
8	sulfentrazone	4	F	0.25	lb ai/a	PRE	4.2
9	sulfentrazone	4	F	0.188	lb ai/a	PRE	3.2
	sulfentrazone	4	F	0.125	lb ai/a	POST	
10	sulfentrazone	4	F	0.25	lb ai/a	PRE	3.7
	sulfentrazone	4	F	0.125	lb ai/a	POST	
11	terbacil	80	WDG	0.8	lb ai/a	PRE	6.0
	clomazone	3	ME	0.5	lb ai/a	PRE	
12	s-metolachlor	7.62	EC	0.48	lb ai/a	PRE	4.0
13	pendimethalin	3.8	CS	0.71	lb ai/a	PRE	4.5
14	oxyfluorfen	2	EC	0.5	lb ai/a	PRE	3.0
LSD (P=.05)							2.08
Standard Deviation							1.22
CV							32.03

Preemergence Weed Control in Onion – Muck Farm 2011

Project Code: 112-11-02 **Location: Laingsburg, MI**

Personnel: Bernard H. Zandstra, Rodney Tocco
Crop: Onion **Variety: Nebula, T-439**
Planting Method: Seeded **Planting Date: 6/15/2011**
Spacing: 1 inch **Row Spacing: 16 inch**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 5.5 ft wide x 16.7 ft long

Soil Type: Houghton Muck **OM: 77%** **pH: 6.7**
Sand: 13% **Silt: 11%** **Clay: 0.3%** **CEC: -**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	6/17/11	3:00 pm	75/69	F	Wet	1 W	65	100%Cloudy	N
PO1	7/14/11	1:00 pm	76/74	F	Dry	3 NE	44	75% Cloudy	N
MAINT	7/18/11	12:00 pm	91/80	F	Dry	1-2 NE	60	100%Cloudy	N
PO2	8/2/11	2:00 pm	90/82	F	Moist	2 N	65	60% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
6/17	ONION		Just seeded	
7/14	ONION		1-2 LS	
7/14	COLQ = common lambsquarters	3-6″		Many
7/14	COPU = common purslane	4-10″		Many
7/14	LATH = ladysthumb	4-8″		Many
7/14	RRPW = redroot pigweed	2-4″		Many
8/2	ONION		3-6 LS	
8/2	YENS = yellow nutsedge	2-5″		Few
8/2	COLQ = common lambsquarters	6-12″		Many
8/2	COPU = common purslane	1-2″		Many
8/2	LATH = ladysthumb	3-6″		Many
8/2	RRPW = redroot pigweed	4-6″		Moderate

Notes and Comments
1. Harvest: Whole onion plants, including leaves were collected from the whole plot and weighed (onion bulbs had not matured).
2. July 5: onions just emerging; no visual differences at this stage.
3. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
4. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.

Preemergence Weed Control in Onion – Muck Farm 2011

Preemergence Weed Control in Onion – Muck Farm 2011

Trial ID: 112-11-02 Protocol ID: 112-11-02
Location: Laingsburg, MI Study Director: Rodney Tocco
Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	YENS	COLQ	COPU	LATH	RRPW
Crop Code							ONION				
Crop Variety							Nebula				
Rating Date							5/Jul/11	5/Jul/11	5/Jul/11	5/Jul/11	5/Jul/11	5/Jul/11
Rating Type							RATING	RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10	1-10
1	pendimethalin	3.8	CS	1.9	lb ai/a	PRE	1.0	8.0	10.0	7.3	6.3	10.0
	pendimethalin	3.8	CS	1.9	lb ai/a	PO1						
	pendimethalin	3.8	CS	1.9	lb ai/a	PO2						
2	pendimethalin	3.8	CS	3.8	lb ai/a	PRE	1.0	8.3	10.0	8.3	7.3	9.7
	pendimethalin	3.8	CS	3.8	lb ai/a	PO1						
	pendimethalin	3.8	CS	3.8	lb ai/a	PO2						
3	pendimethalin	3.8	CS	3.8	lb ai/a	PRE	1.0	8.0	10.0	7.0	7.3	10.0
	pendimethalin	3.8	CS	2.2	lb ai/a	PO1						
	s-metolachlor	7.62	EC	2.67	lb ai/a	PO1						
	dimethenamid-p	6	EC	0.98	lb ai/a	PO2						
4	pendimethalin	3.8	CS	1.9	lb ai/a	PRE	1.0	8.0	10.0	9.7	7.0	10.0
	flumioxazin	51	WDG	0.032	lb ai/a	PRE						
	pendimethalin	3.8	CS	1.9	lb ai/a	PO1						
	flumioxazin	51	WDG	0.064	lb ai/a	PO1						
	dimethenamid-p	6	EC	0.98	lb ai/a	PO2						
5	pendimethalin	3.8	CS	3.8	lb ai/a	PRE	1.0	7.7	10.0	7.7	7.0	9.7
	flumioxazin	51	WDG	0.032	lb ai/a	PRE						
	pendimethalin	3.8	CS	2.2	lb ai/a	PO1						
	flumioxazin	51	WDG	0.064	lb ai/a	PO1						
	s-metolachlor	7.62	EC	2.67	lb ai/a	PO2						
6	pendimethalin	3.8	CS	3.8	lb ai/a	PRE	1.0	8.7	10.0	7.7	7.3	10.0
	pendimethalin	3.8	CS	2.2	lb ai/a	PO1						
	flumioxazin	51	WDG	0.064	lb ai/a	PO1						
	acetochlor	6.4	EC	1	lb ai/a	PO2						
7	dimethenamid-p	6	EC	0.98	lb ai/a	PRE	1.0	8.7	3.0	9.7	7.3	8.0
	dimethenamid-p	6	EC	0.98	lb ai/a	PO1,PO2						
8	s-metolachlor	7.62	EC	1.3	lb ai/a	PRE	1.0	9.3	1.0	9.0	1.0	9.0
	s-metolachlor	7.62	EC	2.66	lb ai/a	PO1,PO2						
9	pendimethalin	3.8	CS	3.8	lb ai/a	PRE	1.0	7.7	10.0	7.0	8.0	9.3
	s-metolachlor	7.62	EC	2.66	lb ai/a	PO1						
	dimethenamid-p	6	EC	0.98	lb ai/a	PO2						
10	pendimethalin	3.8	CS	3.8	lb ai/a	PRE	1.0	8.3	10.0	7.3	6.7	9.7
	s-metolachlor	7.62	EC	2.66	lb ai/a	PO1						
	acetochlor	6.4	EC	1	lb ai/a	PO2						
11	pendimethalin	3.8	CS	3.8	lb ai/a	PRE	1.0	8.0	10.0	7.0	8.0	9.0
	flumioxazin	51	WDG	0.096	lb ai/a	PO1						
	dimethenamid-p	6	EC	0.098	lb ai/a	PO2						
12	pyroxasulfone	85	WDG	0.09	lb ai/a	PRE, PO1	1.0	8.7	7.7	8.0	1.0	8.7
13	pyroxasulfone	85	WDG	0.18	lb ai/a	PRE, PO1	1.0	8.3	7.3	7.3	5.7	9.3
14	Untreated						1.0	1.0	1.0	1.0	1.0	1.0
LSD (P=.05)							0.00	1.56	0.59	0.91	1.20	0.71
Standard Deviation							0.00	0.93	0.35	0.54	0.72	0.42
CV							0.0	11.99	4.46	7.29	12.4	4.81

Preemergence Weed Control in Onion – Muck Farm 2011

Dept of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	ONION	COLQ	COPU	LATH	ONION
Pest Code											
Crop Code							ONION				ONION
Crop Variety											
Rating Date							19/Jul/11	19/Jul/11	19/Jul/11	19/Jul/11	5/Oct/11
Rating Type							RATING	RATING	RATING	RATING	Harvest
Rating Unit							1-10	1-10	1-10	1-10	KG/PLOT
1	pendimethalin	3.8	CS	1.9	lb ai/a	PRE	2.0	10.0	9.0	5.3	33.07
	pendimethalin	3.8	CS	1.9	lb ai/a	PO1					
	pendimethalin	3.8	CS	1.9	lb ai/a	PO2					
2	pendimethalin	3.8	CS	3.8	lb ai/a	PRE	1.3	10.0	9.3	7.7	36.02
	pendimethalin	3.8	CS	3.8	lb ai/a	PO1					
	pendimethalin	3.8	CS	3.8	lb ai/a	PO2					
3	pendimethalin	3.8	CS	3.8	lb ai/a	PRE	2.0	10.0	10.0	7.7	40.84
	pendimethalin	3.8	CS	2.2	lb ai/a	PO1					
	s-metolachlor	7.62	EC	2.67	lb ai/a	PO1					
	dimethenamid-p	6	EC	0.98	lb ai/a	PO2					
4	pendimethalin	3.8	CS	1.9	lb ai/a	PRE	1.7	9.3	10.0	7.0	41.57
	flumioxazin	51	WDG	0.032	lb ai/a	PRE					
	pendimethalin	3.8	CS	1.9	lb ai/a	PO1					
	flumioxazin	51	WDG	0.064	lb ai/a	PO1					
	dimethenamid-p	6	EC	0.98	lb ai/a	PO2					
5	pendimethalin	3.8	CS	3.8	lb ai/a	PRE	1.7	10.0	10.0	7.3	36.67
	flumioxazin	51	WDG	0.032	lb ai/a	PRE					
	pendimethalin	3.8	CS	2.2	lb ai/a	PO1					
	flumioxazin	51	WDG	0.064	lb ai/a	PO1					
	s-metolachlor	7.62	EC	2.67	lb ai/a	PO2					
6	pendimethalin	3.8	CS	3.8	lb ai/a	PRE	1.3	10.0	10.0	7.7	44.35
	pendimethalin	3.8	CS	2.2	lb ai/a	PO1					
	flumioxazin	51	WDG	0.064	lb ai/a	PO1					
	acetochlor	6.4	EC	1	lb ai/a	PO2					
7	dimethenamid-p	6	EC	0.98	lb ai/a	PRE	2.0	6.3	10.0	4.3	27.82
	dimethenamid-p	6	EC	0.98	lb ai/a	PO1,PO2					
8	s-metolachlor	7.62	EC	1.3	lb ai/a	PRE	1.3	1.0	10.0	4.3	18.46
	s-metolachlor	7.62	EC	2.66	lb ai/a	PO1,PO2					
9	pendimethalin	3.8	CS	3.8	lb ai/a	PRE	1.0	10.0	9.7	7.3	37.98
	s-metolachlor	7.62	EC	2.66	lb ai/a	PO1					
	dimethenamid-p	6	EC	0.98	lb ai/a	PO2					
10	pendimethalin	3.8	CS	3.8	lb ai/a	PRE	2.7	10.0	10.0	8.3	36.75
	s-metolachlor	7.62	EC	2.66	lb ai/a	PO1					
	acetochlor	6.4	EC	1	lb ai/a	PO2					
11	pendimethalin	3.8	CS	3.8	lb ai/a	PRE	1.7	10.0	10.0	8.7	46.53
	flumioxazin	51	WDG	0.096	lb ai/a	PO1					
	dimethenamid-p	6	EC	0.098	lb ai/a	PO2					
12	pyroxasulfone	85	WDG	0.09	lb ai/a	PRE, PO1	2.3	1.7	8.3	1.0	23.95
13	pyroxasulfone	85	WDG	0.18	lb ai/a	PRE, PO1	2.0	4.7	9.7	2.0	32.26
14	Untreated						1.0	1.0	1.0	1.0	6.88
LSD (P=.05)							0.66	1.15	0.49	1.47	13.287
Standard Deviation							0.39	0.69	0.29	0.87	7.915
CV							23.02	9.24	3.23	15.38	23.92

Preemergence Weed Control in Onion on Mineral Soil – Vogel Farms 2011

Project Code: 112-11-03 **Location: Fremont, MI**

Personnel: Bernard H. Zandstra, Rodney Tocco
Crop: Onion **Variety: Braddock**
Planting Method: Seeded **Planting Date: 4/12/2011**
Spacing: 1.5 inch **Row Spacing: 10 inch, 4 rows/plot**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 5.5 ft wide x 25 ft long

Soil Type: Pipestone Sand **OM: 3.1%** **pH: 6.5**
Sand: 79% **Silt: 4%** **Clay: 17%** **CEC: 5.1**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	4/29/11	2:30 pm	57/59	F	Good	5-7 W	30	0% Cloudy	N
PO1	5/31/11	10:00 am	83/72	F	Good	10 SW	60	11% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
4/29	ONION		Preemerge	
5/31	ONION		2-3 LS	
5/31	COLQ = common lambsquarters	1-3”, 1-3”	4-8 LS	Many
5/31	RRPW = redroot pigweed	2”, 2”	4-6 LS	Many

Notes and Comments
1. Harvest: all onions in each plot.
2. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
3. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.

Preemergence Weed Control in Onion on Mineral Soil – Vogel Farms 2011

Preemergence Weed Control in Onion on Mineral Soil - Vogel Farms 2011

Trial ID: 112-11-03 Protocol ID: 112-11-03
Location: Fremont, MI Study Director: Rodney Tocco
Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
Pest Code								RRPW	COLQ		
Crop Code							ONION			ONION	POTATO
Rating Date							31/May/11	31/May/11	31/May/11	20/Jun/11	20/Jun/11
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	pendimethalin	3.8	CS	0.75	lb ai/a	PRE, PO1	1.3	2.7	10.0	1.7	2.0
2	pendimethalin	3.8	CS	0.95	lb ai/a	PRE, PO1	1.3	4.3	10.0	1.7	2.7
3	pendimethalin	3.8	CS	1.5	lb ai/a	PRE, PO1	1.7	4.0	10.0	2.0	4.7
4	DCPA	75	WP	8	lb ai/a	PRE, PO1	1.3	6.3	10.0	1.7	1.0
5	ethofumesate	4	SC	1.0	lb ai/a	PRE, PO1	1.3	5.0	8.3	2.7	2.7
6	ethofumesate	4	SC	2.0	lb ai/a	PRE, PO1	1.7	9.0	8.3	4.3	8.0
7	pyroxasulfone	85	WDG	0.09	lb ai/a	PRE, PO1	1.7	8.3	8.0	2.0	1.0
8	pyroxasulfone	85	WDG	0.18	lb ai/a	PRE, PO1	2.0	7.3	8.7	3.0	3.0
9	pendimethalin	3.8	CS	0.75	lb ai/a	PRE	1.3	6.3	9.0	2.0	1.0
	flumioxazin	51	WDG	0.032	lb ai/a	PO1					
10	pendimethalin	3.8	CS	0.75	lb ai/a	PRE	1.3	3.7	9.3	1.7	5.7
	s-metolachlor	7.62	EC	0.95	lb ai/a	PO1					
11	ethofumesate	4	SC	1.0	lb ai/a	PRE	1.0	4.0	6.3	1.0	1.7
	flumioxazin	51	WDG	0.032	lb ai/a	PO1					
12	Untreated						1.3	1.7	4.3	1.3	4.0
LSD (P=.05)							1.12	4.69	3.66	1.54	4.07
Standard Deviation							0.66	2.77	2.16	0.91	2.40
CV							45.76	53.06	25.37	43.62	77.26

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage				
Pest Code							COLQ	RRPW		
Crop Code									ONION	ONION
Rating Date							20/Jun/11	20/Jun/11	11/Jul/11	29/Aug/11
Rating Type							RATING	RATING	RATING	Harvest
Rating Unit							1-10	1-10	1-10	KG/PLOT
1	pendimethalin	3.8	CS	0.75	lb ai/a	PRE, PO1	10.0	7.0	1.3	75.77
2	pendimethalin	3.8	CS	0.95	lb ai/a	PRE, PO1	9.0	5.3	2.0	68.71
3	pendimethalin	3.8	CS	1.5	lb ai/a	PRE, PO1	10.0	7.3	1.7	76.44
4	DCPA	75	WP	8	lb ai/a	PRE, PO1	9.7	8.3	1.7	72.20
5	ethofumesate	4	SC	1.0	lb ai/a	PRE, PO1	9.7	7.3	2.7	62.69
6	ethofumesate	4	SC	2.0	lb ai/a	PRE, PO1	8.7	8.3	4.0	44.99
7	pyroxasulfone	85	WDG	0.09	lb ai/a	PRE, PO1	4.0	8.7	1.7	75.80
8	pyroxasulfone	85	WDG	0.18	lb ai/a	PRE, PO1	6.0	9.7	3.0	63.74
9	pendimethalin	3.8	CS	0.75	lb ai/a	PRE	7.7	5.3	3.0	60.43
	flumioxazin	51	WDG	0.032	lb ai/a	PO1				
10	pendimethalin	3.8	CS	0.75	lb ai/a	PRE	8.3	5.7	1.7	59.94
	s-metolachlor	7.62	EC	0.95	lb ai/a	PO1				
11	ethofumesate	4	SC	1.0	lb ai/a	PRE	4.0	2.7	4.0	56.21
	flumioxazin	51	WDG	0.032	lb ai/a	PO1				
12	Untreated						1.3	6.7	2.0	69.56
LSD (P=.05)							3.25	2.58	1.18	14.157
Standard Deviation							1.92	1.52	0.69	8.360
CV							26.08	22.18	29.07	12.76

Preemergence Weed Control in Onion – Keilen Farms 2011

Project Code: 112-11-06 **Location: East Lansing, MI**

Personnel: Bernard H. Zandstra, Rodney Tocco
Crop: Onion **Variety: Hamlet**
Planting Method: Seeded **Planting Date: 5/2/2011**
Spacing: 1.5 inch **Row Spacing: 10 inch**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 3.3 ft wide x 35 ft long, 2 rows/ plot

Soil Type: Houghton Muck **OM: 70.4%** **pH: 6.2**
Sand: 12% **Silt: 16%** **Clay: 2%** **CEC: -**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	5/3/11		43/50	F	Good	3-5	43	% Cloudy	N
PO1	6/2/11	10:00 am	66/64	F	Dry	3-5 N	42	15% Cloudy	N
PO2	6/21/11	3:30 pm	90/80	F	Dry	4 SE	63	40% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
5/3	ONION		Preemerge	
6/2	ONION		2 LS	
6/2	COLQ = common lambsquarters	0.5″	2-4 LS	Few
6/2	PESW = Pennsylvania smartweed	1″	4-6 LS	Many
6/2	RRPW = redroot pigweed	0.5″	2-4 LS	Many
6/21	ONION		3-4 LS	

Notes and Comments
1. Handweeded all plots 6/21.
2. Spray applied with 2 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
3. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.

Preemergence Weed Control in Onion – Keilen Farms 2011

Preemergence Weed Control in Onion - Keilen Farms 2011

Trial ID: 112-11-06 Protocol ID: 112-11-06
Location: East Lansing, MI Study Director: Rodney Tocco
Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	LATH ONION 16/Jun/11 RATING 1-10	ONION 16/Jun/11 RATING 1-10	ONION 5/Jul/11 RATING 1-10	ONION 7/Sep/11 Harvest KG/PLOT
1	pendimethalin	3.8	CS	1.9	lb ai/a	PRE	2.0	5.3	2.0	49.24
	pendimethalin	3.8	CS	1.9	lb ai/a	PO1				
	pendimethalin	3.8	CS	1.9	lb ai/a	PO2				
2	pendimethalin	3.8	CS	1.9	lb ai/a	PRE	1.0	5.0	1.3	59.11
	pendimethalin	3.8	CS	1.9	lb ai/a	PO1				
	pendimethalin	3.8	CS	1.9	lb ai/a	PO2				
3	pendimethalin	3.8	CS	1.9	lb ai/a	PRE	2.0	6.3	2.0	51.04
	pendimethalin	3.8	CS	2.2	lb ai/a	PO1				
	s-metolachlor	7.62	EC	2.67	lb ai/a	PO1				
	dimethenamid-p	6	EC	0.98	lb ai/a	PO2				
4	pendimethalin	3.8	CS	1.9	lb ai/a	PRE	1.7	6.7	2.3	51.29
	flumioxazin	51	WDG	0.032	lb ai/a	PRE				
	pendimethalin	3.8	CS	1.9	lb ai/a	PO1				
	flumioxazin	51	WDG	0.064	lb ai/a	PO1				
	dimethenamid-p	6	EC	0.98	lb ai/a	PO2				
5	pendimethalin	3.8	CS	1.9	lb ai/a	PRE	1.3	6.3	2.0	49.35
	flumioxazin	51	WDG	0.032	lb ai/a	PRE				
	pendimethalin	3.8	CS	2.2	lb ai/a	PO1				
	flumioxazin	51	WDG	0.064	lb ai/a	PO1				
	s-metolachlor	7.62	EC	2.67	lb ai/a	PO2				
6	pendimethalin	3.8	CS	1.9	lb ai/a	PRE	2.0	6.3	3.0	47.33
	pendimethalin	3.8	CS	2.2	lb ai/a	PO1				
	flumioxazin	51	WDG	0.064	lb ai/a	PO1				
	acetochlor	6.4	EC	1	lb ai/a	PO2				
7	pendimethalin	3.8	CS	1.9	lb ai/a	PRE	1.3	4.8	2.3	51.00
	dimethenamid-p	6	EC	0.98	lb ai/a	PO1,PO2				
8	pendimethalin	3.8	CS	1.9	lb ai/a	PRE	1.7	5.7	1.7	47.53
	s-metolachlor	7.62	EC	2.66	lb ai/a	PO1,PO2				
9	pendimethalin	3.8	CS	1.9	lb ai/a	PRE	1.3	5.0	2.0	52.51
	s-metolachlor	7.62	EC	2.66	lb ai/a	PO1				
	dimethenamid-p	6	EC	0.98	lb ai/a	PO2				
10	pendimethalin	3.8	CS	1.9	lb ai/a	PRE	1.7	7.3	1.7	55.05
	s-metolachlor	7.62	EC	2.66	lb ai/a	PO1				
	acetochlor	6.4	EC	1	lb ai/a	PO2				
11	pendimethalin	3.8	CS	1.9	lb ai/a	PRE	1.7	6.3	2.0	47.86
	flumioxazin	51	WDG	0.096	lb ai/a	PO1				
	dimethenamid-p	6	EC	0.098	lb ai/a	PO2				
12	pendimethalin	3.8	CS	1.9	lb ai/a	PRE, PO1	1.3	4.7	1.7	51.28
LSD (P=.05)							1.18	2.90	1.44	9.961
Standard Deviation							0.70	1.71	0.85	5.882
CV							43.98	29.42	42.42	11.52

Postemergence Weed Control in Onion – Keilen Farms 2011

Project Code: 112-11-07 **Location: East Lansing, MI**

Personnel: Bernard H. Zandstra, Rodney Tocco
Crop: Onion **Variety: Hamlet**
Planting Method: Seeded **Planting Date: 5/2/2011**
Spacing: 1.5 inch **Row Spacing: 10 inch**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 3.3 ft wide x 35 ft long, 2 rows/plot

Soil Type: Houghton Muck **OM: 70.4%** **pH: 6.2**
Sand: 12% **Silt: 16%** **Clay: 2%** **CEC: -**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	5/3/11		43/50	F	Good	3-5	43	% Cloudy	N
PO1	6/1/11	2:00 pm	78/67	F	Moist	5-10 W	30	0% Cloudy	N
PO2	6/8/11	11:00 am	91/78	F	Dry	6-8 SW	50	10% Cloudy	N
PO3	6/27/11	3:30 pm	77/71	F	Dry	2-4 SE	59	100%Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
5/3	ONION		Preemerge	
6/1	ONION		2 LS	
6/1	COLQ = common lambsquarters	0.5″	2-4 LS	Few
6/1	PESW = Pennsylvania smartweed	1″	4-6 LS	Many
6/1	RRPW = redroot pigweed	0.5″	2-4 LS	Many
6/8	ONION	4-5″	2 LS	
6/27	ONION	8-10″	4-5 LS	
6/27	LATH = ladysthumb		4-6 LS	Few
6/27	PESW = Pennsylvania smartweed		4-6 LS	Few

Notes and Comments
1. Handweeded all plots 6/21.
2. The whole field was sprayed with Prowl 1.9 lb PRE.
3. Spray applied with 2 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
4. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.

Postemergence Weed Control in Onion – Keilen Farms 2011

Postemergence Weed Control in Onion - Keilen Farms 2011

Trial ID: 112-11-07 Protocol ID: 112-11-07
Location: East Lansing, MI Study Director: Rodney Tocco
Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	LATH ONION Rating Date 8/Jun/11 RATING 1-10	LATH ONION Rating Date 8/Jun/11 RATING 1-10	LATH ONION Rating Date 16/Jun/11 RATING 1-10	LATH ONION Rating Date 16/Jun/11 RATING 1-10	ONION Rating Date 5/Jul/11 RATING 1-10	ONION Rating Date 7/Sep/11 Harvest KG/PLOT
1	oxyfluorfen	2	EC	0.063	lb ai/a	PO1, 2, 3	1.7	6.0	2.0	6.0	1.3	37.75
2	oxyfluorfen	4	SC	0.063	lb ai/a	PO1, 2, 3	1.7	6.0	2.3	5.7	1.3	40.25
3	oxyfluorfen	4	SC	0.125	lb ai/a	PO1, 2, 3	1.3	5.7	2.0	7.3	1.3	47.94
4	flumioxazin	51	WDG	0.032	lb ai/a	PO1, 2, 3	1.7	5.3	1.7	4.7	1.7	32.76
5	flumioxazin	51	WDG	0.064	lb ai/a	PO1, 2, 3	2.3	6.0	1.3	6.0	3.7	29.71
6	ethofumesate	4	SC	1.0	lb ai/a	PO1, 2, 3	2.0	4.7	1.7	7.7	1.3	36.10
7	ethofumesate	4	SC	2.0	lb ai/a	PO1, 2, 3	3.0	7.0	1.0	8.7	3.0	34.81
8	bromoxynil	4	EC	0.125	lb ai/a	PO2, 3	1.7	5.7	1.7	5.7	1.7	43.29
9	bromoxynil	4	EC	0.25	lb ai/a	PO2, 3	2.0	4.0	1.0	4.0	1.7	42.24
10	fluroxypyr	2.8	L	0.063	lb ai/a	PO2, 3	1.7	6.0	1.7	5.3	2.0	46.89
11	oxyfluorfen	4	SC	0.063	lb ai/a	PO2, 3	1.7	3.7	1.0	3.7	3.7	35.07
	bromoxynil	4	EC	0.125	lb ai/a	PO2, 3						
12	oxyfluorfen	4	SC	0.063	lb ai/a	PO2, 3	1.7	5.0	1.0	7.0	3.0	33.34
	flumioxazin	51	WDG	0.032	lb ai/a	PO2, 3						
13	oxyfluorfen	4	SC	0.063	lb ai/a	PO1, 2, 3	1.3	6.0	2.3	8.0	2.3	45.32
	flumioxazin	51	WDG	0.032	lb ai/a	PO1, 2, 3						
14	oxyfluorfen	4	SC	0.063	lb ai/a	PO2, 3	1.3	3.7	1.3	4.7	1.7	42.48
	fluroxypyr	2.8	L	0.063	lb ai/a	PO2, 3						
15	oxyfluorfen	4	SC	0.125	lb ai/a	PO2, 3	1.7	6.0	3.0	7.3	3.7	43.39
	flumioxazin	51	WDG	0.032	lb ai/a	PO2, 3						
	clethodim	0.97	EC	0.1	lb ai/a	PO2, 3						
16	oxyfluorfen	4	SC	0.125	lb ai/a	PO2, 3	3.0	5.7	1.3	7.0	3.3	38.99
	ethofumesate	4	SC	1.0	lb ai/a	PO2, 3						
LSD (P=.05)							1.19	1.87	1.49	2.19	2.62	18.288
Standard Deviation							0.71	1.12	0.89	1.31	1.57	10.969
CV							38.4	20.82	54.16	21.27	68.59	27.84

Preemergence Weed Control in Established Chives – Van Drunen Farms 2011

Project Code: 117-11-01 **Location: Momence, IL**

Personnel: Bernard H. Zandstra, Rodney Tocco
Crop: Chives **Variety: Purly**
Planting Method: Seeded **Planting Date: May 2010**
Spacing: 1 inch **Row Spacing: 2 ft**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 5.5 ft wide x 35 ft long; 2 rows/ plot

Soil Type: Loamy Sand **OM: 2.8%** **pH: 5.2**
Sand: 81% **Silt: 16%** **Clay: 3%** **CEC: 8.0**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	5/3/11	12:00 pm	57/55	F	Dry	3-5 N	39	10% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
5/3	CHIVES		Flowers Formed	80-90%
5/3	LACG = large crabgrass			
5/3	CAWE = carpetweed			
5/3	COPU = common purslane			

Notes and Comments
1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. Harvested 35 feet of 2 rows per plot.

Preemergence Weed Control in Established Chives – Van Drunen Farms 2011

Preemergence Weed Control in Established Chives - Van Drunen Farms 2011

Trial ID: 117-11-01 Protocol ID: 117-11-01
Location: Momence, IL Study Director: Rodney Tocco
Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	CHIVE 8/Jun/11 RATING 1-10	CHIVE 11/Aug/11 RATING 1-10	LACG 11/Aug/11 RATING 1-10	CAWE 11/Aug/11 RATING 1-10	COPU 11/Aug/11 RATING 1-10	CHIVE 7/Jul/11 Harvest KG/PLOT
1	pendimethalin	3.8	CS	0.095	lb ai/a	PRE	1.0	1.0	10.0	10.0	9.7	3.48
2	pendimethalin	3.8	CS	1.9	lb ai/a	PRE	1.0	1.0	10.0	10.0	10.0	4.23
3	s-metolachlor	7.62	EC	0.64	lb ai/a	PRE	1.0	1.0	10.0	9.7	9.0	3.99
4	s-metolachlor	7.62	EC	1.27	lb ai/a	PRE	1.0	1.0	10.0	9.7	9.3	4.00
5	dimethenamid-p	6	EC	0.65	lb ai/a	PRE	1.0	1.0	10.0	9.7	9.0	3.21
6	oxyfluorfen	4	SC	0.25	lb ai/a	PRE	1.0	1.0	10.0	10.0	9.7	4.38
7	ethofumesate	4	SC	1.0	lb ai/a	PRE	1.0	1.0	10.0	8.3	8.3	4.03
8	pyroxasulfone	85	WDG	0.18	lb ai/a	PRE	1.0	1.0	10.0	10.0	10.0	3.69
9	acetochlor	6.4	EC	0.5	lb ai/a	PRE	1.0	1.0	10.0	10.0	9.3	3.99
10	Untreated						1.0	1.0	8.7	8.3	8.0	3.56
LSD (P=.05)							0.00	0.00	0.83	1.03	1.16	1.282
Standard Deviation							0.00	0.00	0.48	0.60	0.68	0.747
CV							0.0	0.0	4.9	6.27	7.34	19.37

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	CHIVE 1/Aug/11 Harvest KG/PLOT	CHIVE Total KG/PLOT
1	pendimethalin	3.8	CS	0.095	lb ai/a	PRE	2.49	5.97
2	pendimethalin	3.8	CS	1.9	lb ai/a	PRE	2.61	6.84
3	s-metolachlor	7.62	EC	0.64	lb ai/a	PRE	2.41	6.40
4	s-metolachlor	7.62	EC	1.27	lb ai/a	PRE	2.57	6.57
5	dimethenamid-p	6	EC	0.65	lb ai/a	PRE	2.34	5.55
6	oxyfluorfen	4	SC	0.25	lb ai/a	PRE	2.69	7.08
7	ethofumesate	4	SC	1.0	lb ai/a	PRE	2.37	6.40
8	pyroxasulfone	85	WDG	0.18	lb ai/a	PRE	2.20	5.90
9	acetochlor	6.4	EC	0.5	lb ai/a	PRE	2.56	6.55
10	Untreated						2.66	6.21
LSD (P=.05)							0.627	1.721
Standard Deviation							0.366	1.003
CV							14.68	15.8

Weed Control in Green Onion & Leek – Muck Farm 2011

Project Code: 112-11-05 **Location: Laingsburg, MI**

Personnel: Bernard H. Zandstra, Rodney Tocco
Crop: Green onion, Leek **Variety: See notes**
Planting Method: Seeded **Planting Date: 6/15/2011**
Spacing: 1 inch **Row Spacing: 16 inch**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 5.5 ft wide x 16.7 ft long

Soil Type: Houghton Muck **OM: 78%** **pH: 6.5**
Sand: 12% **Silt: 9%** **Clay: 1%** **CEC: -**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	6/17/11	4:00 pm	77/69	F	Wet	1 W	65	100%Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
6/17	GRONION, LEEK = green onion, leek		Just seeded	
	LACG = large crabgrass			
	YENS = yellow nutsedge			
	COLQ = common lambsquarters			
	COPU = common purslane			
	LATH = ladysthumb			
	RRPW = redroot pigweed			

Notes and Comments
1. Varieties: White lisbon, Tokyo long white, American flag.
2. Leeks did not survive.
3. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
4. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.

Weed Control in Green Onion & Leek – Muck Farm 2011

Weed Control in Green Onion & Leek - Muck Farm 2011

Trial ID: 112-11-05 Protocol ID: 112-11-05
Location: Laingsburg, MI Study Director: Rodney Tocco
Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage						
Pest Code										LACG	YENS	COLQ
Crop Code							GRONION	GRONION	LEEK			
Crop Variety							White Lisbon	TLW	Am. Flag			
Rating Date							5/Jul/11	5/Jul/11	5/Jul/11	5/Jul/11	5/Jul/11	5/Jul/11
Rating Type							RATING	RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10	1-10
1	Untreated						1.0	1.0	1.0	1.0	1.0	1.0
2	pendimethalin	3.8	CS	1.9	lb ai/a	PRE	1.3	1.3	1.0	8.3	7.0	7.7
3	pendimethalin	3.8	CS	3.8	lb ai/a	PRE	1.3	1.7	1.0	9.7	7.0	10.0
4	flumioxazin	51	WDG	0.032	lb ai/a	PRE	1.3	2.0	1.0	5.0	6.3	5.0
5	s-metolachlor	7.62	EC	1.3	lb ai/a	PRE	2.0	1.7	1.0	10.0	8.7	1.3
6	dimethenamid-p	6	EC	0.98	lb ai/a	PRE	1.7	1.7	1.0	10.0	7.7	2.0
7	propachlor	4	F	2	lb ai/a	PRE	1.3	1.3	1.0	10.0	8.7	1.7
8	acetochlor	6.4	EC	1	lb ai/a	PRE	1.3	1.3	1.0	9.7	8.0	2.3
9	ethofumesate	4	SC	2.0	lb ai/a	PRE	2.0	2.3	1.0	9.7	8.3	1.7
10	pyroxasulfone	85	WDG	0.186	lb ai/a	PRE	1.3	1.7	1.0	9.7	7.3	5.3
LSD (P=.05)							1.10	1.11	0.00	1.67	1.96	1.99
Standard Deviation							0.64	0.65	0.00	0.98	1.14	1.16
CV							43.72	40.43	0.0	11.75	16.29	30.51

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
Pest Code							COPU	LATH	RRPW		
Crop Code										GRONION	GRONION
Crop Variety										White Lisbon	TLW
Rating Date							5/Jul/11	5/Jul/11	5/Jul/11	22/Aug/11	22/Aug/11
Rating Type							RATING	RATING	RATING	Harvest	Harvest
Rating Unit							1-10	1-10	1-10	KG/PLOT	KG/PLOT
1	Untreated						1.0	1.0	1.0	0.23	0.29
2	pendimethalin	3.8	CS	1.9	lb ai/a	PRE	9.0	6.7	7.7	0.99	3.21
3	pendimethalin	3.8	CS	3.8	lb ai/a	PRE	9.7	8.3	9.0	1.19	1.59
4	flumioxazin	51	WDG	0.032	lb ai/a	PRE	4.0	8.7	9.3	1.05	1.51
5	s-metolachlor	7.62	EC	1.3	lb ai/a	PRE	9.3	8.3	10.0	0.81	1.05
6	dimethenamid-p	6	EC	0.98	lb ai/a	PRE	9.3	9.3	10.0	0.53	0.73
7	propachlor	4	F	2	lb ai/a	PRE	9.0	8.7	10.0	0.82	1.74
8	acetochlor	6.4	EC	1	lb ai/a	PRE	10.0	9.7	10.0	0.37	1.09
9	ethofumesate	4	SC	2.0	lb ai/a	PRE	10.0	10.0	9.3	0.51	0.67
10	pyroxasulfone	85	WDG	0.186	lb ai/a	PRE	10.0	8.3	9.7	0.85	1.64
LSD (P=.05)							1.61	1.86	1.16	0.601	0.960
Standard Deviation							0.94	1.08	0.68	0.350	0.560
CV							11.57	13.72	7.88	47.66	41.37

Weed Control in Banana & Jalapeno Pepper – HTRC 2011

Project Code: 101-11-01 **Location: East Lansing, MI**

Personnel: Bernard H. Zandstra, Rodney Tocco
Crop: Banana pepper, Jalapeno **Variety: Hungarian yellow wax, Jalapeno M**
Planting Method: Transplant **Planting Date: 5/18/2011**
Spacing: 22 inch **Row Spacing: 3 ft**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 5.5 ft wide x 35 ft long

Soil Type: Marlette Fine Sandy Loam **OM: 2.2%** **pH: 6.5**
Sand: 72% **Silt: 17%** **Clay: 11%** **CEC: 4.3**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRT	5/24/11	11:30 am	71/67	F	Good	1 S	61	8% Cloudy	N
POT	5/24/11	3:00 pm	86/74	F	Good	2 NW	37	44% Cloudy	N
PO1	6/20/11	1:00 pm	66/74	F	Dry	1-3 S	66	100% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
5/24	BANANA, JALAPENO		PRT, 100%	
5/24	BANANA, JALAPENO		Just planted	
6/20	BANANA, JALAPENO			
6/20	GRFT = green foxtail			
6/20	LACG = large crabgrass	2-5″	2-6 LS	Many
6/20	COLQ = common lambsquarters	1-2″	4-6 LS	Many
6/20	COPU = common purslane	1″	4-8 LS	Moderate
6/20	CORW = common ragweed	1-2″	4-6 LS	Many
6/20	RRPW = redroot pigweed	1-2″	4-6 LS	Many
6/20	WIRA = wild radish	1-4″	6-8 LS	Many

Notes and Comments
1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
3. Most of rep 3 drowned out. Figures for most ratings and yields are means of 2 reps.

Weed Control in Banana & Jalapeno Pepper – HTRC 2011

Weed Control in Banana & Jalapeno Pepper - HTRC 2011

Trial ID: 101-11-01 Protocol ID: 101-11-01
Location: East Lansing, MI Study Director: Rodney Tocco
Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	BANANA 21/Jun/11 RATING 1-10	JALAPENO 21/Jun/11 RATING 1-10	GRFT 21/Jun/11 RATING 1-10	COLQ 21/Jun/11 RATING 1-10	CORW 21/Jun/11 RATING 1-10
1	napropamide	50	DF	2	lb ai/a	PRT	1.0	1.3	6.3	7.7	7.0
2	napropamide-UV	50	DF	2	lb ai/a	PRT	1.3	1.0	9.7	10.0	10.0
3	s-metolachlor	7.62	EC	0.95	lb ai/a	PRT	1.3	2.0	10.0	8.3	5.3
4	s-metolachlor	7.62	EC	0.95	lb ai/a	POT	1.3	1.0	10.0	9.3	7.7
5	pendimethalin	3.8	CS	1.4	lb ai/a	PRT	1.3	1.0	8.0	10.0	5.3
6	pendimethalin	3.8	CS	1.4	lb ai/a	POT	1.0	1.0	7.3	10.0	7.0
7	fomesafen	2	SL	0.5	lb ai/a	PRT	2.0	1.7	8.7	9.7	10.0
8	fomesafen	2	SL	0.75	lb ai/a	PRT	3.0	1.7	9.7	10.0	10.0
9	clomazone	3	ME	1	lb ai/a	PRT	1.0	1.0	10.0	10.0	10.0
10	clomazone	3	ME	1	lb ai/a	POT	1.0	1.3	9.7	10.0	10.0
11	pyroxasulfone	85	WDG	0.18	lb ai/a	POT	4.0	4.0	10.0	10.0	10.0
12	pendimethalin	3.8	CS	1.4	lb ai/a	PRT	1.0	1.0	7.3	10.0	7.7
	halosulfuron	75	WG	0.023	lb ai/a	PO1					
	clethodim	0.97	EC	0.12	lb ai/a	PO1					
	NIS	100	SL	0.25	% v/v	PO1					
13	pendimethalin	3.8	CS	1.4	lb ai/a	PRT	1.7	2.0	9.0	10.0	5.3
	rimsulfuron (M)	25	DF	0.031	lb ai/a	PO1					
	clethodim	0.97	EC	0.12	lb ai/a	PO1					
	NIS	100	SL	0.25	% v/v	PO1					
14	carfentrazone	0.35	SE	0.021	lb ai/a	PRT	5.0	5.7	8.0	10.0	8.7
	sulfentrazone	3.15	SE	0.189	lb ai/a	PRT					
	clethodim	0.97	EC	0.12	lb ai/a	PO1					
	NIS	100	SL	0.25	% v/v	PO1					
15	Untreated					PRT	1.0	1.3	1.0	1.0	1.0
	clethodim	0.97	EC	0.12	lb ai/a	PO1					
	NIS	100	SL	0.25	% v/v	PO1					
16	Untreated					PRT	2.0	2.0	1.7	1.0	1.0
	halosulfuron	75	WG	0.047	lb ai/a	PO1					
	clethodim	0.97	EC	0.12	lb ai/a	PO1					
	NIS	100	SL	0.25	% v/v	PO1					
LSD (P=.05)							0.77	0.60	2.17	1.80	4.03
Standard Deviation							0.46	0.36	1.30	1.08	2.42
CV							25.6	19.83	16.52	12.62	33.35

Weed Control in Banana & Jalapeno Pepper – HTRC 2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage			GRFT	COLQ	CORW
Pest Code									GRFT	COLQ	CORW
Crop Code							BANANA	JALAPENO			
Rating Date							29/Jun/11	29/Jun/11	29/Jun/11	29/Jun/11	29/Jun/11
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	napropamide	50	DF	2	lb ai/a	PRT	1.0	1.0	1.7	1.0	1.0
2	napropamide-UV	50	DF	2	lb ai/a	PRT	1.0	1.0	9.7	10.0	5.7
3	s-metolachlor	7.62	EC	0.95	lb ai/a	PRT	2.0	2.0	10.0	10.0	1.0
4	s-metolachlor	7.62	EC	0.95	lb ai/a	POT	1.0	1.0	10.0	10.0	2.0
5	pendimethalin	3.8	CS	1.4	lb ai/a	PRT	1.0	1.0	8.7	10.0	1.0
6	pendimethalin	3.8	CS	1.4	lb ai/a	POT	1.0	1.0	5.7	10.0	1.3
7	fomesafen	2	SL	0.5	lb ai/a	PRT	3.7	2.0	8.7	10.0	10.0
8	fomesafen	2	SL	0.75	lb ai/a	PRT	2.3	1.7	9.0	10.0	10.0
9	clomazone	3	ME	1	lb ai/a	PRT	1.0	1.0	10.0	10.0	10.0
10	clomazone	3	ME	1	lb ai/a	POT	1.7	1.3	10.0	10.0	10.0
11	pyroxasulfone	85	WDG	0.18	lb ai/a	POT	4.7	5.7	10.0	10.0	10.0
12	pendimethalin	3.8	CS	1.4	lb ai/a	PRT	3.0	3.3	9.7	10.0	10.0
	halosulfuron	75	WG	0.023	lb ai/a	PO1					
	clethodim	0.97	EC	0.12	lb ai/a	PO1					
	NIS	100	SL	0.25	% v/v	PO1					
13	pendimethalin	3.8	CS	1.4	lb ai/a	PRT	1.7	2.3	10.0	9.7	6.7
	rimsulfuron (M)	25	DF	0.031	lb ai/a	PO1					
	clethodim	0.97	EC	0.12	lb ai/a	PO1					
	NIS	100	SL	0.25	% v/v	PO1					
14	carfentrazone	0.35	SE	0.021	lb ai/a	PRT	4.3	6.0	9.7	10.0	9.0
	sulfentrazone	3.15	SE	0.189	lb ai/a	PRT					
	clethodim	0.97	EC	0.12	lb ai/a	PO1					
	NIS	100	SL	0.25	% v/v	PO1					
15	Untreated					PRT	1.3	1.3	9.3	1.0	1.0
	clethodim	0.97	EC	0.12	lb ai/a	PO1					
	NIS	100	SL	0.25	% v/v	PO1					
16	Untreated					PRT	2.3	2.0	8.7	6.3	10.0
	halosulfuron	75	WG	0.047	lb ai/a	PO1					
	clethodim	0.97	EC	0.12	lb ai/a	PO1					
	NIS	100	SL	0.25	% v/v	PO1					
LSD (P=.05)							1.39	1.41	2.13	0.35	1.33
Standard Deviation							0.83	0.84	1.28	0.21	0.79
CV							40.28	40.08	14.53	2.44	12.89

Weed Control in Banana & Jalapeno Pepper – HTRC 2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage						
Pest Code							WIRA					
Crop Code								BANANA	BANANA	BANANA	BANANA	JALAPENO
Rating Date							29/Jun/11	25/Jul/11	8/Aug/11	6/Sep/11		8/Aug/11
Rating Type							RATING	Harvest	Harvest	Harvest	Total	Harvest
Rating Unit							1-10	KG/PLOT	KG/PLOT	KG/PLOT	KG/PLOT	KG/PLOT
1	napropamide	50	DF	2	lb ai/a	PRT	1.0	2.453	5.610	7.075	15.138	5.710
2	napropamide-UV	50	DF	2	lb ai/a	PRT	1.0	2.380	4.812	6.942	14.133	5.300
3	s-metolachlor	7.62	EC	0.95	lb ai/a	PRT	1.0	1.700	2.020	2.960	6.680	2.833
4	s-metolachlor	7.62	EC	0.95	lb ai/a	POT	1.0	2.427	4.188	5.297	11.912	4.152
5	pendimethalin	3.8	CS	1.4	lb ai/a	PRT	2.0	2.650	4.907	10.912	18.468	4.943
6	pendimethalin	3.8	CS	1.4	lb ai/a	POT	1.0	1.113	3.448	6.053	10.615	2.042
7	fomesafen	2	SL	0.5	lb ai/a	PRT	10.0	1.230	1.137	2.103	4.470	7.735
8	fomesafen	2	SL	0.75	lb ai/a	PRT	10.0	0.780	1.345	3.515	5.640	6.200
9	clomazone	3	ME	1	lb ai/a	PRT	2.0	3.610	5.747	8.808	18.165	5.942
10	clomazone	3	ME	1	lb ai/a	POT	1.0	3.387	8.163	10.228	21.778	6.820
11	pyroxasulfone	85	WDG	0.18	lb ai/a	POT	9.0	0.360	0.903	1.757	3.020	1.737
12	pendimethalin	3.8	CS	1.4	lb ai/a	PRT	9.7	2.213	5.122	10.253	17.588	3.143
	halosulfuron	75	WG	0.023	lb ai/a	PO1						
	clethodim	0.97	EC	0.12	lb ai/a	PO1						
	NIS	100	SL	0.25	% v/v	PO1						
13	pendimethalin	3.8	CS	1.4	lb ai/a	PRT	9.7	0.747	3.338	9.552	13.637	1.866
	rimsulfuron (M)	25	DF	0.031	lb ai/a	PO1						
	clethodim	0.97	EC	0.12	lb ai/a	PO1						
	NIS	100	SL	0.25	% v/v	PO1						
14	carfentrazone	0.35	SE	0.021	lb ai/a	PRT	5.7	0.160	0.277	0.805	1.242	0.263
	sulfentrazone	3.15	SE	0.189	lb ai/a	PRT						
	clethodim	0.97	EC	0.12	lb ai/a	PO1						
	NIS	100	SL	0.25	% v/v	PO1						
15	Untreated					PRT	1.7	0.400	0.323	2.683	3.407	0.840
	clethodim	0.97	EC	0.12	lb ai/a	PO1						
	NIS	100	SL	0.25	% v/v	PO1						
16	Untreated					PRT	9.3	0.927	1.852	4.113	6.892	1.223
	halosulfuron	75	WG	0.047	lb ai/a	PO1						
	clethodim	0.97	EC	0.12	lb ai/a	PO1						
	NIS	100	SL	0.25	% v/v	PO1						
LSD (P=.05)							1.42	1.5389	3.8334	6.0210	10.9819	4.0313
Standard Deviation							0.85	0.9230	2.2992	3.6113	6.5867	2.4179
CV							18.2	55.65	69.16	62.09	60.99	63.68

Weed Control in Banana & Jalapeno Pepper – HTRC 2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	JALAPENO 6/Sep/11 Harvest KG/PLOT	JALAPENO Total KG/PLOT
	Pest Code							
	Crop Code						JALAPENO	JALAPENO
	Rating Date						6/Sep/11	
	Rating Type						Harvest	Total
	Rating Unit						KG/PLOT	KG/PLOT
1	napropamide	50	DF	2	lb ai/a	PRT	6.327	12.037
2	napropamide-UV	50	DF	2	lb ai/a	PRT	6.502	11.802
3	s-metolachlor	7.62	EC	0.95	lb ai/a	PRT	3.475	6.308
4	s-metolachlor	7.62	EC	0.95	lb ai/a	POT	6.072	10.223
5	pendimethalin	3.8	CS	1.4	lb ai/a	PRT	7.010	11.953
6	pendimethalin	3.8	CS	1.4	lb ai/a	POT	5.818	7.860
7	fomesafen	2	SL	0.5	lb ai/a	PRT	8.593	16.328
8	fomesafen	2	SL	0.75	lb ai/a	PRT	10.695	16.895
9	clomazone	3	ME	1	lb ai/a	PRT	10.223	16.165
10	clomazone	3	ME	1	lb ai/a	POT	9.183	16.003
11	pyroxasulfone	85	WDG	0.18	lb ai/a	POT	4.372	6.108
12	pendimethalin	3.8	CS	1.4	lb ai/a	PRT	10.365	13.508
	halosulfuron	75	WG	0.023	lb ai/a	PO1		
	clethodim	0.97	EC	0.12	lb ai/a	PO1		
	NIS	100	SL	0.25	% v/v	PO1		
13	pendimethalin	3.8	CS	1.4	lb ai/a	PRT	9.532	11.397
	rimsulfuron (M)	25	DF	0.031	lb ai/a	PO1		
	clethodim	0.97	EC	0.12	lb ai/a	PO1		
	NIS	100	SL	0.25	% v/v	PO1		
14	carfentrazone	0.35	SE	0.021	lb ai/a	PRT	0.852	1.115
	sulfentrazone	3.15	SE	0.189	lb ai/a	PRT		
	clethodim	0.97	EC	0.12	lb ai/a	PO1		
	NIS	100	SL	0.25	% v/v	PO1		
15	Untreated					PRT	2.935	3.775
	clethodim	0.97	EC	0.12	lb ai/a	PO1		
	NIS	100	SL	0.25	% v/v	PO1		
16	Untreated					PRT	2.595	3.818
	halosulfuron	75	WG	0.047	lb ai/a	PO1		
	clethodim	0.97	EC	0.12	lb ai/a	PO1		
	NIS	100	SL	0.25	% v/v	PO1		
LSD (P=.05)							6.0581	9.8568
Standard Deviation							3.6335	5.9119
CV							55.61	57.22

Weed Control in Bell Pepper & Tomato – HTRC 2011

Project Code: 101-11-02 **Location: East Lansing, MI**

Personnel: Bernard H. Zandstra, Rodney Tocco
Crop: Bell pepper, Tomato **Variety: King Arthur, Sunbrite**
Planting Method: Transplant **Planting Date: 5/24/11**
Spacing: 22 inch **Row Spacing: 3 ft**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 5.5 ft wide x 35 ft long

Soil Type: Marlette Fine Sandy Loam **OM: 2.0%** **pH: 7.5**
Sand: 56% **Silt: 19%** **Clay: 25%** **CEC: 8.8**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRT	5/24/11	2:00 pm	74/74	F	Good	3 NW	55	17% Cloudy	N
POT	5/24/11	4:45 pm	75/75	F	Good	1-3 W	45	65% Cloudy	N
PO1	6/20/11	1:30 pm	66/74	F	Dry	1-3 S	66	100%Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
5/24	BELL PEPPER, TOMATO		PRT, 100%	
5/24	BELL PEPPER, TOMATO		Just planted	
6/20	BELL PEPPER, TOMATO			
6/20	GRFT = green foxtail			
6/20	LACG = large crabgrass	2-5″	2-6 LS	Many
6/20	COLQ = common lambsquarters	1-2″	4-6 LS	Many
6/20	COPU = common purslane	1″	4-8 LS	Moderate
6/20	CORW = common ragweed	1-2″	4-6 LS	Many
6/20	RRPW = redroot pigweed	1-2″	4-6 LS	Many
6/20	WIRA = wild radish	1-4″	6-8 LS	Many

Notes and Comments
1. Spray applied with 4 nozzle boom. FF8002, 20 qpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.

Weed Control in Bell Pepper & Tomato – HTRC 2011

Weed Control in Bell Pepper & Tomato - HTRC 2011

Trial ID: 101-11-02 Protocol ID: 101-11-02
Location: East Lansing, MI Study Director: Rodney Tocco
Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	PEPPER 21/Jun/11 RATING 1-10	TOMATO 21/Jun/11 RATING 1-10	GRFT 21/Jun/11 RATING 1-10	COLQ 21/Jun/11 RATING 1-10	CORW 21/Jun/11 RATING 1-10	WIRA 21/Jun/11 RATING 1-10	PEPPER 29/Jun/11 RATING 1-10
1	napropamide	50	DF	2	lb ai/a	PRT	1.7	1.0	10.0	9.7	10.0	9.0	2.3
2	napropamide-UV	50	DF	2	lb ai/a	PRT	1.7	1.0	9.7	10.0	10.0	7.0	1.7
3	s-metolachlor	7.62	EC	0.95	lb ai/a	PRT	4.3	2.0	10.0	10.0	10.0	9.7	4.7
4	s-metolachlor	7.62	EC	0.95	lb ai/a	POT	3.0	4.0	10.0	9.3	9.3	9.0	3.7
5	s-metolachlor	7.62	EC	0.95	lb ai/a	PRT	4.7	2.7	10.0	10.0	10.0	10.0	4.3
	metribuzin	75	DF	0.25	lb ai/a	PRT							
6	pendimethalin	3.8	CS	1.4	lb ai/a	PRT	1.0	1.3	9.7	10.0	9.7	8.3	1.0
7	fomesafen	2	SL	0.5	lb ai/a	PRT	1.3	1.3	9.3	10.0	10.0	10.0	1.3
8	pendimethalin	3.8	CS	1.4	lb ai/a	PRT	2.3	3.3	10.0	10.0	10.0	9.0	1.3
	clomazone	3	ME	0.5	lb ai/a	PRT							
9	clomazone	3	ME	1	lb ai/a	PRT	2.0	4.3	10.0	10.0	10.0	9.7	1.3
10	carfentrazone	0.35	SE	0.021	lb ai/a	PRT	3.7	3.7	9.3	10.0	9.7	8.3	3.7
	sulfentrazone	3.15	SE	0.189	lb ai/a	PRT							
11	carfentrazone	0.35	SE	0.021	lb ai/a	PRT	5.0	2.7	10.0	10.0	9.3	9.0	3.3
	sulfentrazone	3.15	SE	0.189	lb ai/a	PRT							
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1							
	NIS	100	SL	0.25	% v/v	PO1							
12	sulfentrazone	18	DF	0.156	lb ai/a	PRT	5.7	2.7	10.0	10.0	10.0	10.0	4.3
	metribuzin	27	DF	0.234	lb ai/a	PRT							
13	sulfentrazone	18	DF	0.156	lb ai/a	PRT	4.0	3.0	10.0	10.0	10.0	10.0	3.3
	metribuzin	27	DF	0.234	lb ai/a	PRT							
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1							
	NIS	100	SL	0.25	% v/v	PO1							
14	sulfentrazone	4	F	0.25	lb ai/a	PRT	2.0	1.0	6.0	10.0	5.0	6.3	2.0
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1							
	NIS	100	SL	0.25	% v/v	PO1							
15	pendimethalin	3.8	CS	1.4	lb ai/a	PRT	1.7	1.0	9.0	10.0	7.0	7.0	1.3
	rimsulfuron (M)	25	DF	0.031	lb ai/a	PO1							
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1							
	NIS	100	SL	0.25	% v/v	PO1							
16	pendimethalin	3.8	CS	1.4	lb ai/a	PRT	1.0	1.0	9.0	10.0	6.0	4.7	1.0
	halosulfuron	75	WG	0.023	lb ai/a	PO1							
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1							
	NIS	100	SL	0.25	% v/v	PO1							
17	carfentrazone	2	EC	0.2	lb ai/a	PRT	2.7	3.0	1.3	10.0	5.0	6.0	2.3
	halosulfuron	75	WG	0.023	lb ai/a	PO1							
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1							
	NIS	100	SL	0.25	% v/v	PO1							
18	Untreated					PRT	1.0	1.0	1.0	1.0	3.7	3.3	1.0
	halosulfuron	75	WG	0.023	lb ai/a	PO1							
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1							
	NIS	100	SL	0.25	% v/v	PO1							
LSD (P=.05)							2.21	1.51	1.59	0.51	3.89	3.30	1.83
Standard Deviation							1.33	0.91	0.95	0.31	2.34	1.98	1.10
CV							49.03	40.76	11.11	3.26	27.19	24.31	44.92

Weed Control in Bell Pepper & Tomato – HTRC 2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	TOMATO 29/Jun/11 RATING 1-10	GRFT 29/Jun/11 RATING 1-10	COLQ 29/Jun/11 RATING 1-10	CORW 29/Jun/11 RATING 1-10	WIRA 29/Jun/11 RATING 1-10	TOMATO 9/Aug/11 PlantCount #	PEPPER 8/Aug/11 Harvest #
1	napropamide	50	DF	2	lb ai/a	PRT	1.0	10.0	10.0	10.0	9.3	20.0	13.0
2	napropamide-UV	50	DF	2	lb ai/a	PRT	1.0	10.0	10.0	8.7	9.0	19.0	12.3
3	s-metolachlor	7.62	EC	0.95	lb ai/a	PRT	2.0	10.0	9.0	9.7	9.7	18.0	3.7
4	s-metolachlor	7.62	EC	0.95	lb ai/a	POT	2.7	10.0	9.0	9.0	9.0	11.7	6.0
5	s-metolachlor	7.62	EC	0.95	lb ai/a	PRT	2.7	10.0	10.0	10.0	10.0	15.7	3.7
	metribuzin	75	DF	0.25	lb ai/a	PRT							
6	pendimethalin	3.8	CS	1.4	lb ai/a	PRT	1.0	10.0	10.0	10.0	9.7	19.7	15.7
7	fomesafen	2	SL	0.5	lb ai/a	PRT	1.3	8.7	10.0	8.7	10.0	19.0	10.0
8	pendimethalin	3.8	CS	1.4	lb ai/a	PRT	1.7	10.0	10.0	10.0	9.3	17.7	11.0
	clomazone	3	ME	0.5	lb ai/a	PRT							
9	clomazone	3	ME	1	lb ai/a	PRT	3.3	10.0	10.0	10.0	9.7	19.0	11.7
10	carfentrazone	0.35	SE	0.021	lb ai/a	PRT	3.7	9.0	10.0	10.0	9.7	14.7	1.7
	sulfentrazone	3.15	SE	0.189	lb ai/a	PRT							
11	carfentrazone	0.35	SE	0.021	lb ai/a	PRT	2.3	10.0	10.0	8.3	8.7	18.0	2.0
	sulfentrazone	3.15	SE	0.189	lb ai/a	PRT							
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1							
	NIS	100	SL	0.25	% v/v	PO1							
12	sulfentrazone	18	DF	0.156	lb ai/a	PRT	2.7	10.0	10.0	10.0	10.0	17.7	3.7
	metribuzin	27	DF	0.234	lb ai/a	PRT							
13	sulfentrazone	18	DF	0.156	lb ai/a	PRT	1.7	10.0	10.0	10.0	10.0	17.0	4.3
	metribuzin	27	DF	0.234	lb ai/a	PRT							
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1							
	NIS	100	SL	0.25	% v/v	PO1							
14	sulfentrazone	4	F	0.25	lb ai/a	PRT	1.3	9.3	10.0	5.3	5.3	19.3	13.0
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1							
	NIS	100	SL	0.25	% v/v	PO1							
15	pendimethalin	3.8	CS	1.4	lb ai/a	PRT	1.0	9.7	10.0	8.3	9.7	20.7	4.3
	rimsulfuron (M)	25	DF	0.031	lb ai/a	PO1							
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1							
	NIS	100	SL	0.25	% v/v	PO1							
16	pendimethalin	3.8	CS	1.4	lb ai/a	PRT	1.0	9.7	10.0	9.7	9.3	19.7	10.3
	halosulfuron	75	WG	0.023	lb ai/a	PO1							
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1							
	NIS	100	SL	0.25	% v/v	PO1							
17	carfentrazone	2	EC	0.2	lb ai/a	PRT	2.3	6.3	9.3	9.7	9.3	13.0	4.0
	halosulfuron	75	WG	0.023	lb ai/a	PO1							
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1							
	NIS	100	SL	0.25	% v/v	PO1							
18	Untreated					PRT	1.0	7.7	2.3	9.7	8.7	19.3	4.3
	halosulfuron	75	WG	0.023	lb ai/a	PO1							
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1							
	NIS	100	SL	0.25	% v/v	PO1							
LSD (P=.05)							1.02	1.74	1.18	2.49	1.86	4.60	6.73
Standard Deviation							0.61	1.04	0.71	1.49	1.11	2.76	4.04
CV							32.73	11.03	7.52	16.1	12.05	15.56	53.96

Weed Control in Bell Pepper & Tomato – HTRC 2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	PEPPER 8/Aug/11 Harvest KG/PLOT	PEPPER 15/Aug/11 Harvest #	PEPPER 15/Aug/11 Harvest KG/PLOT	PEPPER 31/Aug/11 Harvest #	PEPPER 31/Aug/11 Harvest KG/PLOT	PEPPER 13/Sep/11 Harvest:Big #
	Pest Code											
	Crop Code											
	Rating Date						8/Aug/11	15/Aug/11	15/Aug/11	31/Aug/11	31/Aug/11	13/Sep/11
	Rating Type						Harvest	Harvest	Harvest	Harvest	Harvest	Harvest:Big
	Rating Unit						KG/PLOT	#	KG/PLOT	#	KG/PLOT	#
1	napropamide	50	DF	2	lb ai/a	PRT	1.897	7.3	1.047	7.7	0.953	33.3
2	napropamide-UV	50	DF	2	lb ai/a	PRT	1.967	14.3	2.060	11.3	1.607	18.3
3	s-metolachlor	7.62	EC	0.95	lb ai/a	PRT	0.468	3.0	0.420	5.7	0.807	13.0
4	s-metolachlor	7.62	EC	0.95	lb ai/a	POT	0.988	4.0	0.573	5.7	0.887	29.0
5	s-metolachlor	7.62	EC	0.95	lb ai/a	PRT	0.533	4.0	0.527	3.7	0.567	13.7
	metribuzin	75	DF	0.25	lb ai/a	PRT						
6	pendimethalin	3.8	CS	1.4	lb ai/a	PRT	2.408	8.0	1.187	15.3	2.380	38.7
7	fomesafen	2	SL	0.5	lb ai/a	PRT	1.660	10.3	1.480	6.3	0.840	33.7
8	pendimethalin	3.8	CS	1.4	lb ai/a	PRT	1.647	7.3	1.080	7.3	1.247	33.7
	clomazone	3	ME	0.5	lb ai/a	PRT						
9	clomazone	3	ME	1	lb ai/a	PRT	2.010	6.0	0.940	12.7	2.147	39.3
10	carfentrazone	0.35	SE	0.021	lb ai/a	PRT	0.253	4.3	0.567	8.3	1.067	16.3
	sulfentrazone	3.15	SE	0.189	lb ai/a	PRT						
11	carfentrazone	0.35	SE	0.021	lb ai/a	PRT	0.297	3.0	0.413	5.0	0.820	21.0
	sulfentrazone	3.15	SE	0.189	lb ai/a	PRT						
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1						
	NIS	100	SL	0.25	% v/v	PO1						
12	sulfentrazone	18	DF	0.156	lb ai/a	PRT	0.555	3.7	0.553	9.3	1.260	22.0
	metribuzin	27	DF	0.234	lb ai/a	PRT						
13	sulfentrazone	18	DF	0.156	lb ai/a	PRT	0.733	3.0	0.387	10.7	1.573	18.0
	metribuzin	27	DF	0.234	lb ai/a	PRT						
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1						
	NIS	100	SL	0.25	% v/v	PO1						
14	sulfentrazone	4	F	0.25	lb ai/a	PRT	2.050	9.3	1.227	11.3	1.900	32.3
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1						
	NIS	100	SL	0.25	% v/v	PO1						
15	pendimethalin	3.8	CS	1.4	lb ai/a	PRT	0.678	14.0	1.867	20.7	2.627	28.3
	rimsulfuron (M)	25	DF	0.031	lb ai/a	PO1						
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1						
	NIS	100	SL	0.25	% v/v	PO1						
16	pendimethalin	3.8	CS	1.4	lb ai/a	PRT	1.780	11.7	1.813	16.7	2.393	40.0
	halosulfuron	75	WG	0.023	lb ai/a	PO1						
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1						
	NIS	100	SL	0.25	% v/v	PO1						
17	carfentrazone	2	EC	0.2	lb ai/a	PRT	0.667	3.0	0.473	4.7	0.620	17.3
	halosulfuron	75	WG	0.023	lb ai/a	PO1						
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1						
	NIS	100	SL	0.25	% v/v	PO1						
18	Untreated					PRT	0.645	8.0	1.007	5.7	0.713	16.7
	halosulfuron	75	WG	0.023	lb ai/a	PO1						
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1						
	NIS	100	SL	0.25	% v/v	PO1						
LSD (P=.05)							1.0839	9.12	1.3023	9.28	1.2689	21.52
Standard Deviation							0.6501	5.47	0.7811	5.57	0.7610	12.91
CV							55.1	79.16	79.79	59.63	56.13	50.0

Weed Control in Bell Pepper & Tomato – HTRC 2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	PEPPER 13/Sep/11 Harvest:Sml #	PEPPER 13/Sep/11 Harvest KG/PLOT	PEPPER Total #	PEPPER Total KG/PLOT	TOMATO 8/Aug/11 Harvest KG/PLOT	TOMATO 18/Aug/11 Harvest KG/PLOT
	Pest Code											
	Crop Code											
	Rating Date											
	Rating Type											
	Rating Unit											
1	napropamide	50	DF	2	lb ai/a	PRT	13.7	2.410	75.0	6.3067	0.067	2.947
2	napropamide-UV	50	DF	2	lb ai/a	PRT	7.3	1.770	63.7	7.4033	0.000	2.588
3	s-metolachlor	7.62	EC	0.95	lb ai/a	PRT	5.0	1.363	30.3	3.0583	0.190	1.293
4	s-metolachlor	7.62	EC	0.95	lb ai/a	POT	5.0	2.633	49.7	5.0817	0.148	0.730
5	s-metolachlor	7.62	EC	0.95	lb ai/a	PRT	8.0	1.187	33.0	2.8133	0.000	0.938
	metribuzin	75	DF	0.25	lb ai/a	PRT						
6	pendimethalin	3.8	CS	1.4	lb ai/a	PRT	13.7	3.313	91.3	9.2883	0.625	3.433
7	fomesafen	2	SL	0.5	lb ai/a	PRT	9.0	2.930	69.3	6.9100	0.087	1.672
8	pendimethalin	3.8	CS	1.4	lb ai/a	PRT	8.0	2.890	67.3	6.8633	0.058	1.575
	clomazone	3	ME	0.5	lb ai/a	PRT						
9	clomazone	3	ME	1	lb ai/a	PRT	20.0	3.713	89.7	8.8100	0.070	0.523
10	carfentrazone	0.35	SE	0.021	lb ai/a	PRT	5.7	1.593	36.3	3.4800	0.052	0.923
	sulfentrazone	3.15	SE	0.189	lb ai/a	PRT						
11	carfentrazone	0.35	SE	0.021	lb ai/a	PRT	1.7	1.933	32.7	3.4633	0.152	0.587
	sulfentrazone	3.15	SE	0.189	lb ai/a	PRT						
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1						
	NIS	100	SL	0.25	% v/v	PO1						
12	sulfentrazone	18	DF	0.156	lb ai/a	PRT	6.3	2.347	45.0	4.7150	0.015	1.222
	metribuzin	27	DF	0.234	lb ai/a	PRT						
13	sulfentrazone	18	DF	0.156	lb ai/a	PRT	5.0	1.553	41.0	4.2467	0.147	2.038
	metribuzin	27	DF	0.234	lb ai/a	PRT						
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1						
	NIS	100	SL	0.25	% v/v	PO1						
14	sulfentrazone	4	F	0.25	lb ai/a	PRT	10.0	2.630	76.0	7.8067	0.123	2.277
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1						
	NIS	100	SL	0.25	% v/v	PO1						
15	pendimethalin	3.8	CS	1.4	lb ai/a	PRT	7.0	3.083	74.3	8.2550	0.203	5.097
	rimsulfuron (M)	25	DF	0.031	lb ai/a	PO1						
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1						
	NIS	100	SL	0.25	% v/v	PO1						
16	pendimethalin	3.8	CS	1.4	lb ai/a	PRT	6.3	3.250	85.0	9.2367	0.417	4.765
	halosulfuron	75	WG	0.023	lb ai/a	PO1						
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1						
	NIS	100	SL	0.25	% v/v	PO1						
17	carfentrazone	2	EC	0.2	lb ai/a	PRT	3.7	1.460	32.7	3.2200	0.363	1.932
	halosulfuron	75	WG	0.023	lb ai/a	PO1						
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1						
	NIS	100	SL	0.25	% v/v	PO1						
18	Untreated					PRT	4.7	1.240	39.3	3.6050	0.540	4.465
	halosulfuron	75	WG	0.023	lb ai/a	PO1						
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1						
	NIS	100	SL	0.25	% v/v	PO1						
LSD (P=.05)							9.84	2.0667	40.15	4.02685	0.5315	2.8695
Standard Deviation							5.90	1.2396	24.08	2.41521	0.3188	1.7210
CV							75.91	54.02	42.01	41.58	176.21	79.42

Weed Control in Bell Pepper & Tomato – HTRC 2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	TOMATO 25/Aug/11 Harvest KG/PLOT	TOMATO 31/Aug/11 Harvest KG/PLOT	TOMATO 12/Sep/11 Harvest KG/PLOT	TOMATO Total KG/PLOT
1	napropamide	50	DF	2	lb ai/a	PRT	11.300	8.893	35.070	58.277
2	napropamide-UV	50	DF	2	lb ai/a	PRT	14.720	11.193	36.323	64.825
3	s-metolachlor	7.62	EC	0.95	lb ai/a	PRT	5.753	8.120	34.750	50.107
4	s-metolachlor	7.62	EC	0.95	lb ai/a	POT	2.453	4.640	24.143	32.115
5	s-metolachlor	7.62	EC	0.95	lb ai/a	PRT	6.433	6.707	36.977	51.055
	metribuzin	75	DF	0.25	lb ai/a	PRT				
6	pendimethalin	3.8	CS	1.4	lb ai/a	PRT	13.640	10.753	32.680	61.132
7	fomesafen	2	SL	0.5	lb ai/a	PRT	7.067	5.233	35.303	49.362
8	pendimethalin	3.8	CS	1.4	lb ai/a	PRT	7.327	6.273	31.640	46.873
	clomazone	3	ME	0.5	lb ai/a	PRT				
9	clomazone	3	ME	1	lb ai/a	PRT	4.373	9.327	32.720	47.013
10	carfentrazone	0.35	SE	0.021	lb ai/a	PRT	3.607	3.087	24.363	32.032
	sulfentrazone	3.15	SE	0.189	lb ai/a	PRT				
11	carfentrazone	0.35	SE	0.021	lb ai/a	PRT	5.713	9.627	39.990	56.068
	sulfentrazone	3.15	SE	0.189	lb ai/a	PRT				
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1				
	NIS	100	SL	0.25	% v/v	PO1				
12	sulfentrazone	18	DF	0.156	lb ai/a	PRT	8.100	4.987	38.330	52.653
	metribuzin	27	DF	0.234	lb ai/a	PRT				
13	sulfentrazone	18	DF	0.156	lb ai/a	PRT	9.747	9.987	34.953	56.872
	metribuzin	27	DF	0.234	lb ai/a	PRT				
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1				
	NIS	100	SL	0.25	% v/v	PO1				
14	sulfentrazone	4	F	0.25	lb ai/a	PRT	13.640	10.100	27.700	53.840
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1				
	NIS	100	SL	0.25	% v/v	PO1				
15	pendimethalin	3.8	CS	1.4	lb ai/a	PRT	18.367	15.120	33.160	71.947
	rimsulfuron (M)	25	DF	0.031	lb ai/a	PO1				
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1				
	NIS	100	SL	0.25	% v/v	PO1				
16	pendimethalin	3.8	CS	1.4	lb ai/a	PRT	19.340	12.920	31.760	69.202
	halosulfuron	75	WG	0.023	lb ai/a	PO1				
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1				
	NIS	100	SL	0.25	% v/v	PO1				
17	carfentrazone	2	EC	0.2	lb ai/a	PRT	6.220	4.247	27.050	39.812
	halosulfuron	75	WG	0.023	lb ai/a	PO1				
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1				
	NIS	100	SL	0.25	% v/v	PO1				
18	Untreated					PRT	14.100	8.920	26.747	54.772
	halosulfuron	75	WG	0.023	lb ai/a	PO1				
	sethoxydim	1.53	EC	0.19	lb ai/a	PO1				
	NIS	100	SL	0.25	% v/v	PO1				
LSD (P=.05)							7.8544	6.9336	14.7798	19.1635
Standard Deviation							4.7109	4.1586	8.8646	11.4938
CV							49.33	49.86	27.34	21.82

Weed Control in Pumpkin & Squash – HTRC 2011

Project Code: 108-11-02 **Location: East Lansing, MI**

Personnel: Bernard H. Zandstra, Rodney Tocco
Crop: Pumpkin, Squash **Variety: See notes**
Planting Method: Seeded **Planting Date: 6/7/2011**
Spacing: 1 ft **Row Spacing: 28 inch**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 16 ft wide x 50 ft long

Soil Type: Marlette Fine Sandy Loam **OM: 2.1%** **pH: 5.4**
Sand: 54% **Silt: 30%** **Clay: 16%** **CEC: 4.4**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	6/9/11	11:30 am	72/74	F	Good	7 W	67	100%Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
6/9	PUMPKIN, SQUASH		Just planted 6/7	
	COLQ = common lambsquarters			
	COPU = common purslane			
	RRPW = redroot pigweed			
	WIRA = wild radish			

Notes and Comments
1. Varieties: Ultra butternut, Howden pumpkin, Golden Hubbard.
2. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO_2 backpack sprayer.
3. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.

Weed Control in Pumpkin & Squash – HTRC 2011

Weed Control in Pumpkin & Squash - HTRC 2011

Trial ID: 108-11-02 Protocol ID: 108-11-02
Location: East Lansing, MI Study Director: Rodney Tocco
Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	SQUASH	PUMPKIN	SQUASH	COLQ	COPU	RRPW	WIRA
Pest Code										COLQ	COPU	RRPW	WIRA
Crop Code							SQUASH	PUMPKIN	SQUASH				
Crop Variety							Ultra	Howden	Hubbard				
Rating Date							29/Jun/11	29/Jun/11	29/Jun/11	29/Jun/11	29/Jun/11	29/Jun/11	29/Jun/11
Rating Type							RATING	RATING	RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10	1-10	1-10
1	ethalfluralin	3	EC	1.13	lb ai/a	PRE	7.3	1.0	4.0	10.0	10.0	10.0	4.7
	clomazone	3	ME	0.25	lb ai/a	PRE							
2	ethalfluralin	3	EC	1.13	lb ai/a	PRE	8.0	2.3	4.0	10.0	10.0	10.0	8.7
	clomazone	3	ME	0.25	lb ai/a	PRE							
	halosulfuron	75	WG	0.023	lb ai/a	PRE							
3	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	8.0	5.0	2.3	6.3	10.0	8.3	5.3
4	s-metolachlor	7.62	EC	1.27	lb ai/a	PRE	8.0	3.3	3.7	8.3	10.0	9.3	4.0
5	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	8.0	1.0	4.0	10.0	10.0	9.7	7.7
	clomazone	3	ME	0.25	lb ai/a	PRE							
6	ethalfluralin	3	EC	0.75	lb ai/a	PRE	6.3	5.3	2.3	8.7	9.7	9.0	8.0
	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE							
7	ethalfluralin	3	EC	0.75	lb ai/a	PRE	7.3	4.0	4.3	10.0	10.0	10.0	9.7
	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE							
	halosulfuron	75	WG	0.023	lb ai/a	PRE							
8	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	7.7	4.7	3.3	10.0	10.0	10.0	10.0
	fomesafen	2	SL	0.25	lb ai/a	PRE							
9	ethalfluralin	3	EC	0.75	lb ai/a	PRE	7.7	2.3	4.0	9.7	9.3	9.7	10.0
	fomesafen	2	SL	0.25	lb ai/a	PRE							
10	clomazone	3	ME	0.25	lb ai/a	PRE	8.0	2.3	4.3	10.0	10.0	10.0	10.0
	fomesafen	2	SL	0.25	lb ai/a	PRE							
11	fomesafen	2	SL	0.5	lb ai/a	PRE	9.3	8.7	3.7	10.0	10.0	10.0	6.7
12	fomesafen	2	SL	0.25	lb ai/a	PRE	8.3	5.7	6.3	10.0	10.0	10.0	10.0
	halosulfuron	75	WG	0.023	lb ai/a	PRE							
13	ethalfluralin	3	EC	0.75	lb ai/a	PRE	8.3	7.0	2.3	10.0	10.0	10.0	9.7
	s-metolachlor	7.62	EC	0.067	lb ai/a	PRE							
	fomesafen	2	SL	0.25	lb ai/a	PRE							
14	clomazone	3	ME	0.25	lb ai/a	PRE	8.7	4.3	6.0	10.0	10.0	10.0	10.0
	s-metolachlor	7.62	EC	0.67	lb ai/a	PRE							
	fomesafen	2	SL	0.25	lb ai/a	PRE							
	halosulfuron	75	WG	0.023	lb ai/a	PRE							
15	Untreated Cultivated						8.0	5.3	1.0	1.0	1.0	1.0	1.0
LSD (P=.05)							1.62	4.20	2.79	0.99	0.57	1.14	3.31
Standard Deviation							0.97	2.51	1.67	0.59	0.34	0.68	1.98
CV							12.21	60.44	45.04	6.6	3.62	7.44	25.71

Weed Control in Pumpkin & Squash – HTRC 2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage							
Pest Code													WIRA
Crop Code							SQUASH	PUMPKIN	SQUASH	SQUASH	PUMPKIN	SQUASH	
Crop Variety							Ultra	Howden	Hubbard	Ultra	Howden	Hubbard	
Rating Date							19/Jul/11	19/Jul/11	19/Jul/11	19/Jul/11	19/Jul/11	19/Jul/11	19/Jul/11
Rating Type							Stand	Stand	Stand	Vigor	Vigor	Vigor	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10	1-10	1-10
1	ethalfluralin	3	EC	1.13	lb ai/a	PRE	6.7	1.0	2.0	1.2	2.0	2.0	5.3
	clomazone	3	ME	0.25	lb ai/a	PRE							
2	ethalfluralin	3	EC	1.13	lb ai/a	PRE	6.3	1.0	1.3	1.3	2.0	2.7	10.0
	clomazone	3	ME	0.25	lb ai/a	PRE							
	halosulfuron	75	WG	0.023	lb ai/a	PRE							
3	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	6.3	1.0	1.3	3.0	1.7	1.3	4.7
4	s-metolachlor	7.62	EC	1.27	lb ai/a	PRE	7.3	1.3	1.7	3.7	2.0	2.0	2.3
5	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	5.0	1.3	1.3	2.7	1.7	1.7	6.3
	clomazone	3	ME	0.25	lb ai/a	PRE							
6	ethalfluralin	3	EC	0.75	lb ai/a	PRE	2.3	1.0	1.0	2.0	1.7	1.3	6.0
	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE							
7	ethalfluralin	3	EC	0.75	lb ai/a	PRE	3.3	1.0	1.7	2.7	2.3	2.3	10.0
	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE							
	halosulfuron	75	WG	0.023	lb ai/a	PRE							
8	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	3.7	1.0	1.3	1.7	2.0	1.7	9.7
	fomesafen	2	SL	0.25	lb ai/a	PRE							
9	ethalfluralin	3	EC	0.75	lb ai/a	PRE	5.3	1.3	1.7	2.3	2.7	2.3	9.0
	fomesafen	2	SL	0.25	lb ai/a	PRE							
10	clomazone	3	ME	0.25	lb ai/a	PRE	5.0	1.3	1.3	2.0	2.0	2.0	9.3
	fomesafen	2	SL	0.25	lb ai/a	PRE							
11	fomesafen	2	SL	0.5	lb ai/a	PRE	8.3	2.3	1.3	6.0	2.7	2.3	10.0
12	fomesafen	2	SL	0.25	lb ai/a	PRE	5.0	1.0	1.7	2.3	2.7	2.3	10.0
	halosulfuron	75	WG	0.023	lb ai/a	PRE							
13	ethalfluralin	3	EC	0.75	lb ai/a	PRE	4.7	1.0	1.0	2.3	2.3	2.0	10.0
	s-metolachlor	7.62	EC	0.067	lb ai/a	PRE							
	fomesafen	2	SL	0.25	lb ai/a	PRE							
14	clomazone	3	ME	0.25	lb ai/a	PRE	5.7	1.3	1.7	2.7	2.7	2.3	10.0
	s-metolachlor	7.62	EC	0.67	lb ai/a	PRE							
	fomesafen	2	SL	0.25	lb ai/a	PRE							
	halosulfuron	75	WG	0.023	lb ai/a	PRE							
15	Untreated Cultivated						3.0	2.5	1.0	1.7	3.2	1.7	5.0
LSD (P=.05)							2.86	1.38	1.19	2.00	1.56	1.66	2.94
Standard Deviation							1.71	0.82	0.71	1.20	0.93	0.99	1.76
CV							32.86	63.16	49.88	47.72	41.8	49.64	22.44

Weed Control in Pumpkin & Squash – HTRC 2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	SQUASH Ultra 27/Sep/11 Harvest #	SQUASH Ultra 27/Sep/11 Harvest KG/PLOT	GRN.PUMP Howden 27/Sep/11 Harvest #	GRN.PUMP Howden 27/Sep/11 Harvest KG/PLOT	ORG.PUMP Howden 27/Sep/11 Harvest #	ORG.PUMP Howden 27/Sep/11 Harvest KG/PLOT
1	ethalfluralin	3	EC	1.13	lb ai/a	PRE	24.7	65.09	22.7	132.85	19.3	131.32
	clomazone	3	ME	0.25	lb ai/a	PRE						
2	ethalfluralin	3	EC	1.13	lb ai/a	PRE	32.0	78.03	25.7	162.49	19.3	145.53
	clomazone	3	ME	0.25	lb ai/a	PRE						
	halosulfuron	75	WG	0.023	lb ai/a	PRE						
3	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	28.7	56.88	21.7	131.97	20.0	126.57
4	s-metolachlor	7.62	EC	1.27	lb ai/a	PRE	16.0	45.66	21.7	122.64	17.7	112.30
5	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	36.3	43.17	23.0	128.85	15.7	115.19
	clomazone	3	ME	0.25	lb ai/a	PRE						
6	ethalfluralin	3	EC	0.75	lb ai/a	PRE	49.0	95.36	19.7	109.17	17.7	105.00
	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE						
7	ethalfluralin	3	EC	0.75	lb ai/a	PRE	53.7	95.45	16.7	81.37	14.7	100.79
	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE						
	halosulfuron	75	WG	0.023	lb ai/a	PRE						
8	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	39.7	93.21	18.0	99.58	17.7	118.08
	fomesafen	2	SL	0.25	lb ai/a	PRE						
9	ethalfluralin	3	EC	0.75	lb ai/a	PRE	38.7	84.03	21.0	134.63	18.3	120.00
	fomesafen	2	SL	0.25	lb ai/a	PRE						
10	clomazone	3	ME	0.25	lb ai/a	PRE	33.0	82.67	17.0	129.96	19.3	174.46
	fomesafen	2	SL	0.25	lb ai/a	PRE						
11	fomesafen	2	SL	0.5	lb ai/a	PRE	10.7	14.80	17.3	116.26	14.3	152.85
12	fomesafen	2	SL	0.25	lb ai/a	PRE	39.7	52.81	15.3	88.40	16.3	121.24
	halosulfuron	75	WG	0.023	lb ai/a	PRE						
13	ethalfluralin	3	EC	0.75	lb ai/a	PRE	38.0	94.77	14.0	73.97	13.7	114.31
	s-metolachlor	7.62	EC	0.067	lb ai/a	PRE						
	fomesafen	2	SL	0.25	lb ai/a	PRE						
14	clomazone	3	ME	0.25	lb ai/a	PRE	37.0	93.22	24.7	169.90	18.3	167.04
	s-metolachlor	7.62	EC	0.67	lb ai/a	PRE						
	fomesafen	2	SL	0.25	lb ai/a	PRE						
	halosulfuron	75	WG	0.023	lb ai/a	PRE						
15	Untreated Cultivated						37.3	108.85	13.0	90.51	10.0	88.06
LSD (P=.05)							22.37	57.707	10.53	83.010	8.20	78.710
Standard Deviation							13.38	34.510	6.30	49.642	4.90	47.070
CV							39.01	46.89	32.42	42.01	29.14	37.3

Weed Control in Pumpkin & Squash – HTRC 2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage		
Pest Code								
Crop Code							SQUASH	SQUASH
Crop Variety							Hubbard	Hubbard
Rating Date							27/Sep/11	27/Sep/11
Rating Type							Harvest	Harvest
Rating Unit							#	KG/PLOT
1	ethalfluralin	3	EC	1.13	lb ai/a	PRE	33.0	76.17
	clomazone	3	ME	0.25	lb ai/a	PRE		
2	ethalfluralin	3	EC	1.13	lb ai/a	PRE	33.7	74.85
	clomazone	3	ME	0.25	lb ai/a	PRE		
	halosulfuron	75	WG	0.023	lb ai/a	PRE		
3	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	36.7	83.72
4	s-metolachlor	7.62	EC	1.27	lb ai/a	PRE	38.3	88.59
5	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	35.3	72.04
	clomazone	3	ME	0.25	lb ai/a	PRE		
6	ethalfluralin	3	EC	0.75	lb ai/a	PRE	40.0	80.19
	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE		
7	ethalfluralin	3	EC	0.75	lb ai/a	PRE	42.0	90.38
	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE		
	halosulfuron	75	WG	0.023	lb ai/a	PRE		
8	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	40.0	80.77
	fomesafen	2	SL	0.25	lb ai/a	PRE		
9	ethalfluralin	3	EC	0.75	lb ai/a	PRE	36.0	66.81
	fomesafen	2	SL	0.25	lb ai/a	PRE		
10	clomazone	3	ME	0.25	lb ai/a	PRE	40.0	96.23
	fomesafen	2	SL	0.25	lb ai/a	PRE		
11	fomesafen	2	SL	0.5	lb ai/a	PRE	45.3	114.06
12	fomesafen	2	SL	0.25	lb ai/a	PRE	42.0	97.74
	halosulfuron	75	WG	0.023	lb ai/a	PRE		
13	ethalfluralin	3	EC	0.75	lb ai/a	PRE	46.7	104.98
	s-metolachlor	7.62	EC	0.067	lb ai/a	PRE		
	fomesafen	2	SL	0.25	lb ai/a	PRE		
14	clomazone	3	ME	0.25	lb ai/a	PRE	37.0	92.33
	s-metolachlor	7.62	EC	0.67	lb ai/a	PRE		
	fomesafen	2	SL	0.25	lb ai/a	PRE		
	halosulfuron	75	WG	0.023	lb ai/a	PRE		
15	Untreated Cultivated						38.0	75.36
LSD (P=.05)							12.87	40.689
Standard Deviation							7.70	24.333
CV							19.77	28.2

Weed Control in Seeded Summer Squash – HTRC 2011

Project Code: 108-11-03 **Location: East Lansing, MI**

Personnel: Bernard H. Zandstra, Rodney Tocco
Crop: Summer squash **Variety: Black beauty zucchini**
Planting Method: Seeded **Planting Date: 6/3/2011**
Spacing: 12 inch **Row Spacing: 8 ft**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 5.5 ft wide x 30 ft long

Soil Type: Colwood-Brookston Loam **OM: 2.5%** **pH: 6.6**
Sand: 52% **Silt: 25%** **Clay: 23%** **CEC: 7.2**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	6/7/11	9:20 am	86/73	F	Dry	3 SW	61	13% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
6/7	SQUASH		Seeded 6/6	
	BYGR = barnyardgrass			
	COLQ = common lambsquarters			
	RRPW = redroot pigweed			

Notes and Comments
1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.

Weed Control in Seeded Summer Squash – HTRC 2011

Weed Control in Seeded Summer Squash - HTRC 2011

Trial ID: 108-11-03 Protocol ID: 108-11-03
Location: East Lansing, MI Study Director: Rodney Tocco
Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage								
Pest Code								COLQ	RRPW				BYGR	COLQ	RRPW
Crop Code							SQUASH			SQUASH	SQUASH				
Rating Date							22/Jun/11	22/Jun/11	28/Jun/11		6/Jul/11	6/Jul/11	6/Jul/11	6/Jul/11
Rating Type							RATING	RATING	RATING	RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10	1-10	1-10	1-10
1	Untreated						1.3	3.3	3.3	1.3	2.3	8.0	2.7	3.0
2	fomesafen	2	SL	0.125	lb ai/a	PRE	1.3	1.7	10.0	2.0	1.7	8.7	4.3	10.0
3	fomesafen	2	SL	0.187	lb ai/a	PRE	1.7	5.0	10.0	2.0	1.7	10.0	6.0	10.0
4	fomesafen	2	SL	0.25	lb ai/a	PRE	2.3	5.3	10.0	2.3	2.3	7.0	6.7	10.0
5	fomesafen	2	SL	0.25	lb ai/a	PRE	2.3	9.3	10.0	1.7	2.0	10.0	9.0	10.0
	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE								
6	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	1.7	5.3	10.0	1.3	1.7	10.0	4.7	10.0
7	halosulfuron	75	WG	0.035	lb ai/a	PRE	2.3	9.3	10.0	3.0	3.3	8.7	7.3	10.0
8	flumioxazin	51	WDG	0.047	lb ai/a	PRE	5.0	10.0	10.0	4.0	3.0	9.7	8.0	9.7
9	fomesafen	2	SL	0.25	lb ai/a	PRE	1.0	9.0	10.0	1.0	1.0	10.0	8.0	10.0
	ethalfluralin	3	EC	1.13	lb ai/a	PRE								
10	fomesafen	2	SL	0.25	lb ai/a	PRE	1.7	10.0	10.0	1.7	1.7	10.0	9.7	10.0
	clomazone	3	ME	0.25	lb ai/a	PRE								
11	ethalfluralin	3	EC	1.13	lb ai/a	PRE	1.0	10.0	10.0	1.0	1.0	10.0	8.0	9.0
	clomazone	3	ME	0.25	lb ai/a	PRE								
12	ethalfluralin	3	EC	1.13	lb ai/a	PRE	2.3	10.0	10.0	1.7	2.0	10.0	9.3	9.7
	clomazone	3	ME	0.25	lb ai/a	PRE								
	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE								
LSD (P=.05)							1.80	3.89	1.98	2.25	2.05	3.00	2.60	1.49
Standard Deviation							1.06	2.30	1.17	1.33	1.21	1.77	1.54	0.88
CV							53.12	31.19	12.35	69.32	61.42	18.95	22.04	9.46

Weed Control in Seeded Summer Squash – HTRC 2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage							
Pest Code													
Crop Code							SQUASH	SQUASH	SQUASH	SQUASH	SQUASH	SQUASH	SQUASH
Rating Date							18/Jul/11	18/Jul/11	21/Jul/11	21/Jul/11	25/Jul/11	25/Jul/11	29/Jul/11
Rating Type							Harvest	Harvest	Harvest	Harvest	Harvest	Harvest	Harvest
Rating Unit								#KG/PLOT		#KG/PLOT		#KG/PLOT	#
1	Untreated						7.0	1.452	15.7	3.917	12.0	2.704	22.0
2	fomesafen	2	SL	0.125	lb ai/a	PRE	15.0	3.221	17.3	4.670	15.0	2.636	25.3
3	fomesafen	2	SL	0.187	lb ai/a	PRE	18.0	3.364	11.7	2.277	20.3	4.074	23.3
4	fomesafen	2	SL	0.25	lb ai/a	PRE	21.0	3.797	16.7	4.127	14.3	2.791	25.3
5	fomesafen	2	SL	0.25	lb ai/a	PRE	11.0	2.038	16.3	3.778	17.3	3.552	29.7
	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE							
6	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	16.7	2.497	19.0	3.725	20.3	4.073	21.7
7	halosulfuron	75	WG	0.035	lb ai/a	PRE	17.3	3.423	14.0	2.983	18.0	3.157	22.7
8	flumioxazin	51	WDG	0.047	lb ai/a	PRE	16.3	3.222	15.0	3.678	26.0	4.861	25.7
9	fomesafen	2	SL	0.25	lb ai/a	PRE	26.7	5.334	22.7	5.883	15.3	3.153	35.0
	ethalfluralin	3	EC	1.13	lb ai/a	PRE							
10	fomesafen	2	SL	0.25	lb ai/a	PRE	22.0	3.965	19.0	4.115	19.0	3.143	30.7
	clomazone	3	ME	0.25	lb ai/a	PRE							
11	ethalfluralin	3	EC	1.13	lb ai/a	PRE	22.3	3.626	19.3	4.480	22.3	3.768	35.7
	clomazone	3	ME	0.25	lb ai/a	PRE							
12	ethalfluralin	3	EC	1.13	lb ai/a	PRE	21.0	3.931	18.7	4.935	19.3	3.525	26.3
	clomazone	3	ME	0.25	lb ai/a	PRE							
	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE							
LSD (P=.05)							19.26	3.5009	15.14	4.3631	14.54	2.6389	16.53
Standard Deviation							11.37	2.0673	8.94	2.5765	8.59	1.5584	9.76
CV							63.68	62.22	52.26	63.66	46.97	45.13	36.23

Weed Control in Seeded Summer Squash – HTRC 2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	SQUASH 29/Jul/11 Harvest KG/PLOT	SQUASH 1/Aug/11 Harvest #KG/PLOT	SQUASH 1/Aug/11 Harvest #KG/PLOT	SQUASH 3/Aug/11 Harvest #KG/PLOT	SQUASH 3/Aug/11 Harvest #KG/PLOT	SQUASH 5/Aug/11 Harvest #KG/PLOT	SQUASH 5/Aug/11 Harvest #KG/PLOT
1	Untreated						4.263	11.7	2.174	14.3	2.910	6.0	1.020
2	fomesafen	2	SL	0.125	lb ai/a	PRE	5.020	21.7	4.915	18.0	4.017	5.7	1.265
3	fomesafen	2	SL	0.187	lb ai/a	PRE	5.217	19.7	4.053	11.3	1.983	5.3	1.185
4	fomesafen	2	SL	0.25	lb ai/a	PRE	5.927	24.3	4.823	9.3	2.070	6.3	1.865
5	fomesafen	2	SL	0.25	lb ai/a	PRE	6.368	21.7	5.182	11.0	2.243	8.0	1.393
	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE							
6	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	5.163	21.3	5.018	16.3	3.657	6.3	1.278
7	halosulfuron	75	WG	0.035	lb ai/a	PRE	4.978	15.0	3.850	9.0	2.013	5.0	0.943
8	flumioxazin	51	WDG	0.047	lb ai/a	PRE	5.722	19.3	4.548	19.7	3.660	10.3	2.555
9	fomesafen	2	SL	0.25	lb ai/a	PRE	7.742	22.0	5.470	11.3	2.897	4.7	1.142
	ethalfluralin	3	EC	1.13	lb ai/a	PRE							
10	fomesafen	2	SL	0.25	lb ai/a	PRE	7.262	28.3	5.614	11.3	2.530	6.7	1.492
	clomazone	3	ME	0.25	lb ai/a	PRE							
11	ethalfluralin	3	EC	1.13	lb ai/a	PRE	7.180	24.0	6.477	11.0	2.610	9.0	2.033
	clomazone	3	ME	0.25	lb ai/a	PRE							
12	ethalfluralin	3	EC	1.13	lb ai/a	PRE	5.588	22.3	4.727	15.7	2.467	7.0	1.377
	clomazone	3	ME	0.25	lb ai/a	PRE							
	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE							
LSD (P=.05)							3.7789	10.01	2.4828	8.63	2.2598	6.59	1.7220
Standard Deviation							2.2315	5.91	1.4662	5.10	1.3345	3.89	1.0169
CV							38.02	28.22	30.95	38.64	48.44	58.14	69.54

Weed Control in Seeded Summer Squash – HTRC 2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	SQUASH 8/Aug/11 Harvest #	SQUASH 8/Aug/11 Harvest KG/PLOT	SQUASH 10/Aug/11 Harvest #	SQUASH 10/Aug/11 Harvest KG/PLOT	SQUASH 12/Aug/11 Harvest #	SQUASH 12/Aug/11 Harvest KG/PLOT	SQUASH 15/Aug/11 Harvest #
	Pest Code												
	Crop Code												
	Rating Date						8/Aug/11	8/Aug/11	10/Aug/11	10/Aug/11	12/Aug/11	12/Aug/11	15/Aug/11
	Rating Type						Harvest	Harvest	Harvest	Harvest	Harvest	Harvest	Harvest
	Rating Unit						#	KG/PLOT	#	KG/PLOT	#	KG/PLOT	#
1	Untreated						12.7	3.767	8.3	1.982	8.7	1.750	16.0
2	fomesafen	2	SL	0.125	lb ai/a	PRE	12.7	3.000	16.7	4.137	13.3	3.108	11.0
3	fomesafen	2	SL	0.187	lb ai/a	PRE	21.0	4.650	16.3	3.870	10.0	2.415	18.3
4	fomesafen	2	SL	0.25	lb ai/a	PRE	21.0	4.530	16.0	3.080	7.0	1.445	10.0
5	fomesafen	2	SL	0.25	lb ai/a	PRE	20.7	4.927	9.7	2.063	12.0	2.548	18.7
	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE							
6	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	16.7	3.507	9.3	2.097	10.7	2.217	17.3
7	halosulfuron	75	WG	0.035	lb ai/a	PRE	16.7	4.890	17.3	4.827	12.3	2.855	12.7
8	flumioxazin	51	WDG	0.047	lb ai/a	PRE	23.0	5.267	15.0	1.865	5.3	1.302	14.0
9	fomesafen	2	SL	0.25	lb ai/a	PRE	20.3	4.727	13.3	3.113	17.0	3.792	19.3
	ethalfluralin	3	EC	1.13	lb ai/a	PRE							
10	fomesafen	2	SL	0.25	lb ai/a	PRE	14.3	3.517	13.7	2.943	10.3	2.518	18.3
	clomazone	3	ME	0.25	lb ai/a	PRE							
11	ethalfluralin	3	EC	1.13	lb ai/a	PRE	21.7	4.880	14.3	3.420	8.3	2.167	10.7
	clomazone	3	ME	0.25	lb ai/a	PRE							
12	ethalfluralin	3	EC	1.13	lb ai/a	PRE	16.7	3.877	15.7	3.410	9.0	2.068	12.7
	clomazone	3	ME	0.25	lb ai/a	PRE							
	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE							
LSD (P=.05)							11.56	2.8041	9.97	2.5522	8.06	2.4102	12.17
Standard Deviation							6.82	1.6559	5.89	1.5071	4.76	1.4233	7.19
CV							37.68	38.56	42.66	49.14	46.07	60.6	48.18

Weed Control in Seeded Summer Squash – HTRC 2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	SQUASH 15/Aug/11 Harvest KG/PLOT	SQUASH 17/Aug/11 Harvest #	SQUASH 17/Aug/11 Harvest KG/PLOT	SQUASH 19/Aug/11 Harvest #	SQUASH 19/Aug/11 Harvest KG/PLOT	SQUASH Total #	SQUASH Total KG/PLOT
1	Untreated						3.460	6.0	1.140	11.3	1.927	151.7	32.466
2	fomesafen	2	SL	0.125	lb ai/a	PRE	2.287	14.7	2.993	10.0	1.773	196.3	43.041
3	fomesafen	2	SL	0.187	lb ai/a	PRE	4.753	12.7	2.513	14.0	2.607	202.0	42.961
4	fomesafen	2	SL	0.25	lb ai/a	PRE	2.187	17.0	3.787	6.0	1.220	194.3	41.647
5	fomesafen	2	SL	0.25	lb ai/a	PRE	3.500	10.0	1.907	12.7	2.800	198.7	42.300
	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE							
6	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE	3.467	11.3	1.987	11.0	1.773	198.0	40.459
7	halosulfuron	75	WG	0.035	lb ai/a	PRE	1.947	13.3	2.187	9.3	2.033	182.7	40.087
8	flumioxazin	51	WDG	0.047	lb ai/a	PRE	3.060	18.0	3.320	13.7	3.340	221.3	46.399
9	fomesafen	2	SL	0.25	lb ai/a	PRE	4.227	8.0	2.367	12.3	2.533	228.0	52.379
	ethalfluralin	3	EC	1.13	lb ai/a	PRE							
10	fomesafen	2	SL	0.25	lb ai/a	PRE	3.940	9.0	2.287	11.0	2.407	213.7	45.732
	clomazone	3	ME	0.25	lb ai/a	PRE							
11	ethalfluralin	3	EC	1.13	lb ai/a	PRE	2.707	17.0	3.220	14.0	2.707	229.7	49.275
	clomazone	3	ME	0.25	lb ai/a	PRE							
12	ethalfluralin	3	EC	1.13	lb ai/a	PRE	2.493	16.3	3.393	12.0	2.200	212.7	43.992
	clomazone	3	ME	0.25	lb ai/a	PRE							
	s-metolachlor	7.62	EC	0.95	lb ai/a	PRE							
LSD (P=.05)							2.8082	10.58	2.8314	9.57	2.0681	89.81	21.2233
Standard Deviation							1.6583	6.25	1.6720	5.65	1.2213	53.03	12.5328
CV							52.33	48.89	64.52	49.36	53.64	26.2	28.88

Fall and Spring Weed Control in Rhubarb – HTRC 2010-2011

Project Code: 102-11-01 **Location: East Lansing, MI**

Personnel: Bernard H. Zandstra, Rodney Tocco
Crop: Rhubarb **Variety: German Wine**
Planting Method: Root divisions **Planting Date: 5/21/2007**
Spacing: 4 ft **Row Spacing: 6 ft**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 5.5 ft wide x 30 ft long

Soil Type: Marlette Fine Sandy Loam **OM: 2.6%** **pH: 5.6**
Sand: 74% **Silt: 21%** **Clay: 6%** **CEC: 8.4**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
FALL10	11/1/10	3:00 pm	53/48	F	Dry	3 NW	25	0% Cloudy	N
SPRING11	4/12/11	2:00 pm	53/56	F	Good	5-8 NE	20	0% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
11/1	RHUBARB		Dormant	
11/1	QUGR = quackgrass	4-5″		Moderate
11/1	DAND = dandelion	2-3″		Many
11/1	RECL = red clover	3-6″, 6-10″		Moderate
11/1	WHCA = white campion	2-3″, 6-10″		Moderate
4/12	RHUBARB		Just greening	
4/12	CAGE = Carolina geranium	2-4″		Moderate
4/12	WHCL = white clover	1-2″		Moderate
4/12	GRFT = green foxtail			
4/12	COLQ = common lambsquarters			

Notes and Comments
1. The entire experiment declined after greenup. No explanation.
2. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
3. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.

Fall and Spring Weed Control in Rhubarb – HTRC 2010-2011

Fall and Spring Weed Control in Rhubarb - HTRC 2010-2011

Trial ID: 102-11-01 Protocol ID: 102-11-01
Location: East Lansing, MI Study Director: Rodney Tocco
Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	RHUB	GRFT	QUGR	CAGE	COLQ	DAND
Pest Code												
Crop Code							RHUB					
Rating Date							1/Jun/11	1/Jun/11	1/Jun/11	1/Jun/11	1/Jun/11	1/Jun/11
Rating Type							RATING	RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10	1-10
1	pronamide	50	WP	2	lb ai/a	FALL10	2.7	3.0	6.7	4.0	5.3	8.3
2	mesotrione	4	SC	0.188	lb ai/a	FALL10	1.3	2.0	1.0	4.3	10.0	9.7
3	halosulfuron	75	WG	0.047	lb ai/a	FALL10	2.3	3.7	4.7	5.7	9.7	9.7
4	indaziflam	1.67	SC	0.065	lb ai/a	FALL10	2.7	10.0	9.7	7.0	10.0	10.0
5	pronamide	50	WP	2	lb ai/a	SPRING11	2.0	1.7	8.7	5.0	10.0	10.0
6	mesotrione	4	SC	0.188	lb ai/a	SPRING11	1.3	6.3	7.0	6.3	10.0	10.0
	s-metolachlor	7.62	EC	1.26	lb ai/a	SPRING11						
7	halosulfuron	75	WG	0.047	lb ai/a	SPRING11	1.7	5.7	6.3	6.3	9.7	9.7
8	indaziflam	1.67	SC	0.065	lb ai/a	SPRING11	2.0	9.0	7.3	9.0	8.7	10.0
9	isoxaben	75	DF	1.3	lb ai/a	SPRING11	3.0	9.7	6.0	5.3	10.0	10.0
10	Untreated						2.3	3.0	8.7	2.3	4.3	8.3
	glyphosate	5.5	L	1.375	lb ai/a	SPRING11						
LSD (P=.05)							1.87	4.49	5.69	5.01	3.05	1.23
Standard Deviation							1.09	2.62	3.32	2.92	1.78	0.72
CV							51.11	48.51	50.26	52.78	20.31	7.5

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	RHUB	GRFT	QUGR	CAGE	COLQ	RHUB
Pest Code												
Crop Code							RHUB					RHUB
Rating Date							9/Jun/11	9/Jun/11	9/Jun/11	9/Jun/11	9/Jun/11	27/Jun/11
Rating Type							RATING	RATING	RATING	RATING	RATING	Harvest
Rating Unit							1-10	1-10	1-10	1-10	1-10	KG/PLOT
1	pronamide	50	WP	2	lb ai/a	FALL10	2.0	3.3	2.3	1.0	6.3	2.94
2	mesotrione	4	SC	0.188	lb ai/a	FALL10	1.7	3.0	1.3	5.3	7.7	5.65
3	halosulfuron	75	WG	0.047	lb ai/a	FALL10	2.7	1.7	2.7	4.3	9.0	4.29
4	indaziflam	1.67	SC	0.065	lb ai/a	FALL10	2.7	10.0	7.3	1.0	10.0	4.26
5	pronamide	50	WP	2	lb ai/a	SPRING11	2.3	1.0	1.7	2.3	10.0	3.83
6	mesotrione	4	SC	0.188	lb ai/a	SPRING11	2.0	2.0	3.0	5.3	9.3	5.47
	s-metolachlor	7.62	EC	1.26	lb ai/a	SPRING11						
7	halosulfuron	75	WG	0.047	lb ai/a	SPRING11	2.0	3.7	2.3	4.0	10.0	4.13
8	indaziflam	1.67	SC	0.065	lb ai/a	SPRING11	2.7	9.3	6.3	6.7	7.3	3.87
9	isoxaben	75	DF	1.3	lb ai/a	SPRING11	4.3	9.3	5.7	3.0	10.0	1.80
10	Untreated						2.0	2.0	2.7	5.0	3.0	3.74
	glyphosate	5.5	L	1.375	lb ai/a	SPRING11						
LSD (P=.05)							1.94	3.96	3.87	6.58	4.50	2.780
Standard Deviation							1.13	2.31	2.26	3.83	2.62	1.620
CV							46.59	50.96	63.89	100.88	31.7	40.52

Fall Weed Control in Apple – CRC 2010-2011

Project Code: 128-11-01 **Location: Clarksville, MI**

Personnel: Bernard H. Zandstra, Rodney Tocco
Crop: Apple **Variety: See notes.**
Planting Method: Transplant **Planting Date: 2006**
Spacing: 12 ft **Row Spacing: 18 ft**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 11 ft wide x 48 ft long

Soil Type: Lapeer Sandy Loam **OM: 2.8%** **pH: 6.5**
Sand: 39% **Silt: 48%** **Clay: 13%** **CEC: 6.5**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
FALL10	10/22/10	9:30 am	40/43	F	Damp	2 SW	74	0% Cloudy	Y

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
10/22	APPLE	8-10 ft	Dormant	
10/22	ANBG = annual bluegrass			
10/22	BYGR = barnyardgrass			
10/22	FAPA = fall panicum			
10/22	LACG = large crabgrass			
10/22	PERG = perennial ryegrass	2-3″		Many
10/22	COGR = common groundsel			
10/22	COLQ = common lambsquarters			
10/22	COMA = common mallow			
10/22	DAND = dandelion	2-3″		Many
10/22	HOWE = horseweed			
10/22	ROFB = rough fleabane			
10/22	SHPU = sheperdspurse			
10/22	WHCA = white campion			
10/22	WHCL = white clover			

Notes and Comments
1. Varieties: Red Delicious, Ruby Jonathon, Fuji, Dandy Red, Honey Crisp.
2. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
3. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.

Fall Weed Control in Apple – CRC 2010-2011

Fall Weed Control in Apple - CHES 2010-2011

Trial ID: 128-11-01 Protocol ID: 128-11-01
Location: Clarksville, MI Study Director: Rodney Tocco
Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage								
Pest Code								ANBG	PERG	COGR	COLQ	COMA	DAND	SHPU
Crop Code							APPLE							
Rating Date							2/Jun/11	2/Jun/11	2/Jun/11	2/Jun/11	2/Jun/11	2/Jun/11	2/Jun/11	2/Jun/11
Rating Type							RATING	RATING	RATING	RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10	1-10	1-10	1-10
1	glyphosate	5.5	L	0.56	lb ai/a	FALL10	1.0	5.7	7.3	2.3	5.3	7.0	5.0	5.7
2	glyphosate	5.5	L	1.12	lb ai/a	FALL10	1.0	6.7	8.3	1.0	4.7	9.3	6.0	5.3
3	flumioxazin	51	WDG	0.383	lb ai/a	FALL10	1.0	9.7	6.7	10.0	10.0	10.0	3.7	10.0
	glyphosate	5.5	L	0.56	lb ai/a	FALL10								
4	saflufenacil	70	WG	0.045	lb ai/a	FALL10	1.0	10.0	4.7	3.0	5.0	10.0	3.7	4.0
	glyphosate	5.5	L	0.56	lb ai/a	FALL10								
5	saflufenacil	70	WG	0.045	lb ai/a	FALL10	1.0	6.3	5.7	7.0	10.0	10.0	5.0	7.0
	pendimethalin	3.8	CS	3.8	lb ai/a	FALL10								
	glyphosate	5.5	L	0.56	lb ai/a	FALL10								
6	terbacil	80	WDG	2.4	lb ai/a	FALL10	1.0	9.0	7.3	3.7	7.0	9.0	5.3	10.0
	glyphosate	5.5	L	0.56	lb ai/a	FALL10								
7	indaziflam	1.67	SC	0.065	lb ai/a	FALL10	1.0	10.0	7.7	10.0	10.0	7.0	6.7	10.0
	glufosinate	2.34	L	1.02	lb ai/a	FALL10								
8	indaziflam	1.67	SC	0.065	lb ai/a	FALL10	1.0	10.0	9.0	10.0	10.0	7.0	5.0	10.0
	glyphosate	5.5	L	0.56	lb ai/a	FALL10								
9	rimsulfuron (M)	25	DF	0.063	lb ai/a	FALL10	1.0	9.0	7.7	9.0	7.7	10.0	8.0	10.0
	glyphosate	5.5	L	0.56	lb ai/a	FALL10								
10	mesotrione	4	SC	0.188	lb ai/a	FALL10	1.7	10.0	7.7	7.3	6.3	10.0	8.0	10.0
	simazine	90	WDG	4	lb ai/a	FALL10								
	glyphosate	5.5	L	0.56	lb ai/a	FALL10								
11	diuron	80	DF	3	lb ai/a	FALL10	1.0	10.0	10.0	5.3	10.0	7.0	5.0	10.0
	pronamide	50	WP	4	lb ai/a	FALL10								
	glyphosate	5.5	L	0.56	lb ai/a	FALL10								
12	Untreated						1.0	1.0	4.0	7.0	7.7	10.0	6.7	5.0
LSD (P=.05)							0.56	3.86	2.96	4.63	5.82	4.83	3.45	3.97
Standard Deviation							0.33	2.28	1.75	2.74	3.44	2.85	2.04	2.35
CV							31.58	28.1	24.41	43.38	44.07	32.22	35.92	29.03

Fall Weed Control in Apple – CRC 2010-2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	WHCL	APPLE	BYGR	COGR	DAND	HOWE	ROFB
Pest Code													
Crop Code								APPLE					
Rating Date							2/Jun/11	12/Jul/11	12/Jul/11	12/Jul/11	12/Jul/11	12/Jul/11	12/Jul/11
Rating Type							RATING	RATING	RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10	1-10	1-10
1	glyphosate	5.5	L	0.56	lb ai/a	FALL10	3.3	1.0	10.0	1.7	4.0	4.7	7.0
2	glyphosate	5.5	L	1.12	lb ai/a	FALL10	3.3	1.0	6.3	1.7	5.7	4.7	7.0
3	flumioxazin	51	WDG	0.383	lb ai/a	FALL10	5.3	1.0	4.0		1.3	9.3	10.0
	glyphosate	5.5	L	0.56	lb ai/a	FALL10							
4	saflufenacil	70	WG	0.045	lb ai/a	FALL10	1.3	1.0	9.0	6.7	2.7	8.3	10.0
	glyphosate	5.5	L	0.56	lb ai/a	FALL10							
5	saflufenacil	70	WG	0.045	lb ai/a	FALL10	2.3	1.0	10.0	1.8	3.7	9.0	7.7
	pendimethalin	3.8	CS	3.8	lb ai/a	FALL10							
	glyphosate	5.5	L	0.56	lb ai/a	FALL10							
6	terbacil	80	WDG	2.4	lb ai/a	FALL10	4.3	1.0	7.0	1.3	5.7	10.0	9.0
	glyphosate	5.5	L	0.56	lb ai/a	FALL10							
7	indaziflam	1.67	SC	0.065	lb ai/a	FALL10	6.3	1.0	10.0		4.7	10.0	7.3
	glufosinate	2.34	L	1.02	lb ai/a	FALL10							
8	indaziflam	1.67	SC	0.065	lb ai/a	FALL10	2.7	1.0	10.0	8.8	2.3	9.0	7.0
	glyphosate	5.5	L	0.56	lb ai/a	FALL10							
9	rimsulfuron (M)	25	DF	0.063	lb ai/a	FALL10	2.7	1.0	7.0	4.0	4.7	10.0	9.0
	glyphosate	5.5	L	0.56	lb ai/a	FALL10							
10	mesotrione	4	SC	0.188	lb ai/a	FALL10	8.3	1.7	6.7	6.6	5.0	10.0	10.0
	simazine	90	WDG	4	lb ai/a	FALL10							
	glyphosate	5.5	L	0.56	lb ai/a	FALL10							
11	diuron	80	DF	3	lb ai/a	FALL10	4.3	1.0	4.3	2.0	4.0	7.7	7.7
	pronamide	50	WP	4	lb ai/a	FALL10							
	glyphosate	5.5	L	0.56	lb ai/a	FALL10							
12	Untreated						1.0	1.0	9.7	10.7	4.7	3.3	10.0
LSD (P=.05)							4.32	0.56	4.70	3.23	4.24	4.86	5.33
Standard Deviation							2.55	0.33	2.78	1.54	2.50	2.87	3.15
CV							67.51	31.58	35.43	33.83	62.09	35.84	37.14

Fall Weed Control in Apple – CRC 2010-2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	WHCL		BYGR	LACG	COMA	DAND	WHCA
Crop Code								APPLE					
Rating Date							12/Jul/11	12/Aug/11	12/Aug/11	12/Aug/11	12/Aug/11	12/Aug/11	12/Aug/11
Rating Type							RATING	RATING	RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10	1-10	1-10
1	glyphosate	5.5	L	0.56	lb ai/a	FALL10	1.7	1.0	8.3	8.7	10.0	4.3	1.3
2	glyphosate	5.5	L	1.12	lb ai/a	FALL10	3.0	1.0	6.7	7.7	10.0	4.7	2.3
3	flumioxazin	51	WDG	0.383	lb ai/a	FALL10	3.3	1.0	4.0	7.3	10.0	2.3	6.3
	glyphosate	5.5	L	0.56	lb ai/a	FALL10							
4	saflufenacil	70	WG	0.045	lb ai/a	FALL10	1.7	1.0	9.0	7.3	10.0	3.3	3.3
	glyphosate	5.5	L	0.56	lb ai/a	FALL10							
5	saflufenacil	70	WG	0.045	lb ai/a	FALL10	2.7	1.0	10.0	10.0	10.0	3.3	1.7
	pendimethalin	3.8	CS	3.8	lb ai/a	FALL10							
	glyphosate	5.5	L	0.56	lb ai/a	FALL10							
6	terbacil	80	WDG	2.4	lb ai/a	FALL10	3.7	1.0	3.3	4.3	10.0	5.0	5.0
	glyphosate	5.5	L	0.56	lb ai/a	FALL10							
7	indaziflam	1.67	SC	0.065	lb ai/a	FALL10	4.0	1.0	9.7	9.7	7.0	5.3	4.0
	glufosinate	2.34	L	1.02	lb ai/a	FALL10							
8	indaziflam	1.67	SC	0.065	lb ai/a	FALL10	1.0	1.0	9.0	10.0	7.0	3.3	1.7
	glyphosate	5.5	L	0.56	lb ai/a	FALL10							
9	rimsulfuron (M)	25	DF	0.063	lb ai/a	FALL10	1.3	1.0	3.3	3.3	10.0	4.3	2.7
	glyphosate	5.5	L	0.56	lb ai/a	FALL10							
10	mesotrione	4	SC	0.188	lb ai/a	FALL10	4.3	1.0	3.0	1.0	10.0	7.0	6.7
	simazine	90	WDG	4	lb ai/a	FALL10							
	glyphosate	5.5	L	0.56	lb ai/a	FALL10							
11	diuron	80	DF	3	lb ai/a	FALL10	3.3	1.0	2.7	5.0	7.0	3.3	1.7
	pronamide	50	WP	4	lb ai/a	FALL10							
	glyphosate	5.5	L	0.56	lb ai/a	FALL10							
12	Untreated						1.0	1.0	8.0	9.7	10.0	6.3	1.3
LSD (P=.05)							4.36	0.00	4.81	4.70	4.40	3.51	4.18
Standard Deviation							2.57	0.00	2.84	2.77	2.60	2.07	2.47
CV							99.66	0.0	44.31	39.61	28.09	47.21	77.98

Fall Weed Control in Apple – CRC 2010-2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage					
Pest Code								BYGR	FAPA	DAND	HOWE
Crop Code							APPLE				
Rating Date							21/Sep/11	21/Sep/11	21/Sep/11	21/Sep/11	21/Sep/11
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	glyphosate	5.5	L	0.56	lb ai/a	FALL10	1.0	7.3	7.0	4.3	8.3
2	glyphosate	5.5	L	1.12	lb ai/a	FALL10	1.0	9.3	4.3	4.0	9.7
3	flumioxazin	51	WDG	0.383	lb ai/a	FALL10	1.0	4.3	6.7	2.7	9.3
	glyphosate	5.5	L	0.56	lb ai/a	FALL10					
4	saflufenacil	70	WG	0.045	lb ai/a	FALL10	1.0	8.7	8.3	3.3	9.0
	glyphosate	5.5	L	0.56	lb ai/a	FALL10					
5	saflufenacil	70	WG	0.045	lb ai/a	FALL10	1.0	9.3	10.0	1.3	7.7
	pendimethalin	3.8	CS	3.8	lb ai/a	FALL10					
	glyphosate	5.5	L	0.56	lb ai/a	FALL10					
6	terbacil	80	WDG	2.4	lb ai/a	FALL10	1.0	7.3	3.3	4.0	8.7
	glyphosate	5.5	L	0.56	lb ai/a	FALL10					
7	indaziflam	1.67	SC	0.065	lb ai/a	FALL10	1.0	10.0	5.7	4.7	8.0
	glufosinate	2.34	L	1.02	lb ai/a	FALL10					
8	indaziflam	1.67	SC	0.065	lb ai/a	FALL10	1.0	6.7	8.7	2.3	9.3
	glyphosate	5.5	L	0.56	lb ai/a	FALL10					
9	rimsulfuron (M)	25	DF	0.063	lb ai/a	FALL10	1.0	6.3	1.0	4.7	9.3
	glyphosate	5.5	L	0.56	lb ai/a	FALL10					
10	mesotrione	4	SC	0.188	lb ai/a	FALL10	1.0	6.7	1.0	6.0	10.0
	simazine	90	WDG	4	lb ai/a	FALL10					
	glyphosate	5.5	L	0.56	lb ai/a	FALL10					
11	diuron	80	DF	3	lb ai/a	FALL10	1.0	4.3	5.0	5.0	8.7
	pronamide	50	WP	4	lb ai/a	FALL10					
	glyphosate	5.5	L	0.56	lb ai/a	FALL10					
12	Untreated						1.0	8.3	3.7	5.3	6.3
LSD (P=.05)							0.00	4.91	5.45	2.96	3.14
Standard Deviation							0.00	2.90	3.22	1.75	1.86
CV							0.0	39.26	59.69	43.97	21.35

Spring Weed Control in Apple – CRC 2011

Project Code: 128-11-02 **Location: Clarksville, MI**

Personnel: Bernard H. Zandstra, Rodney Tocco
Crop: Apple **Variety: See notes**
Planting Method: Transplant **Planting Date: 2006**
Spacing: 12 ft **Row Spacing: 18 ft**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 11 ft wide x 48 ft long

Soil Type: Lapeer Sandy Loam **OM: 2.8%** **pH: 6.5**
Sand: 39% **Silt: 48%** **Clay: 13%** **CEC: 6.5**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH		Sky	Dew
LPRE	5/9/11	1:00 pm	71/68	F	Dry	5-8 E	24	10%	Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
5/9	APPLE	3-5 LS	Post bud break	
5/9	ANBG = annual bluegrass	1″, 3-6″		Moderate
5/9	BYGR = barnyardgrass			
5/9	FAPA = fall panicum			
5/9	LACG = large crabgrass	3-6″		Few
5/9	PERG = perennial ryegrass	4-6″, 3-5″		Few
5/9	COGR = common groundsel			
5/9	DAND = dandelion	4-6″, 1-2″		Many
5/9	DOBG = downy brome	6-10″, 3-5″		Moderate
5/9	HOWE = horseweed	2-3″, 2-3″		Many
5/9	PUDN = purple deadnettle	4-6″, 4-6″		Many
5/9	ROCI = rough cinquefoil			
5/9	ROFB = rough fleabane			
5/9	SHPU = sheperdspurse	6-10″, 6-12″		Moderate
5/9	VIPW = Virginia pepperweed			
5/9	WHCL = white clover	2″, 8-12″		Many
5/9	WICA = wild carrot	3-4″, 10-12″		Few

Notes and Comments
1. Varieties: Red Delicious, Ruby Jonathon, Fuji, Dandy Red, Honey Crisp.
2. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
3. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.

Spring Weed Control in Apple – CRC 2011

Spring Weed Control in Apple - CHES 2011

Trial ID: 128-11-2 Protocol ID: 128-11-2
Location: Clarksville, MI Study Director: Rodney Tocco
Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	APPLE	ANBG	PERG	COGR	DAND	HOWE	WHCL
	Pest Code							ANBG	PERG	COGR	DAND	HOWE	WHCL
	Crop Code						APPLE						
	Rating Date						2/Jun/11	2/Jun/11	2/Jun/11	2/Jun/11	2/Jun/11	2/Jun/11	2/Jun/11
	Rating Type						RATING	RATING	RATING	RATING	RATING	RATING	RATING
	Rating Unit						1-10	1-10	1-10	1-10	1-10	1-10	1-10
1	Untreated						1.0	5.3	1.7	10.0	3.0	1.7	1.0
2	indaziflam	1.67	SC	0.065	lb ai/a	LPRE	1.0	9.3	7.0	10.0	9.0	9.0	3.7
	glyphosate	5.5	L	1.3	lb ai/a	LPRE							
	ammonium sulfate	100	SG	3.4	lb ai/a	LPRE							
3	indaziflam	1.67	SC	0.065	lb ai/a	LPRE	1.0	9.7	6.3	10.0	8.7	7.3	6.3
	glufosinate	2.34	L	1.2	lb ai/a	LPRE							
	glyphosate	5.5	L	1.3	lb ai/a	LPRE							
	ammonium sulfate	100	SG	3.4	lb ai/a	LPRE							
4	terbacil	80	WDG	2.4	lb ai/a	LPRE	1.0	9.3	9.0	7.0	6.0	10.0	8.3
5	glyphosate	5.5	L	1.3	lb ai/a	LPRE	1.0	8.7	6.0	10.0	9.0	10.0	2.0
	ammonium sulfate	100	SG	3.4	lb ai/a	LPRE							
6	flumioxazin	51	WDG	0.191	lb ai/a	LPRE	1.0	6.0	2.3	10.0	6.0	1.7	1.7
7	carfentrazone	0.35	SE	0.027	lb ai/a	LPRE	1.0	6.3	3.0	10.0	5.3	1.0	2.0
	sulfentrazone	3.15	SE	0.243	lb ai/a	LPRE							
	oryzalin	4	L	2	lb ai/a	LPRE							
8	carfentrazone	0.35	SE	0.027	lb ai/a	LPRE	1.0	5.3	5.7	10.0	5.7	1.3	2.3
	sulfentrazone	3.15	SE	0.243	lb ai/a	LPRE							
	norflurazon	80	DF	2	lb ai/a	LPRE							
9	rimsulfuron (M)	25	DF	0.063	lb ai/a	LPRE	1.0	5.0	8.0	10.0	7.3	9.0	4.0
	halosulfuron	75	WG	0.047	lb ai/a	LPRE							
10	indaziflam	1.67	SC	0.065	lb ai/a	LPRE	1.0	6.0	4.7	10.0	6.3	6.0	1.3
	saflufenacil	70	WG	0.045	lb ai/a	LPRE							
11	pendimethalin	3.8	CS	3	lb ai/a	LPRE	1.0	4.0	1.0	10.0	5.7	9.0	1.0
	saflufenacil	70	WG	0.065	lb ai/a	LPRE							
12	diuron	80	DF	3	lb ai/a	LPRE	1.0	9.0	8.3	10.0	6.7	9.0	10.0
	mesotrione	4	SC	0.188	lb ai/a	LPRE							
LSD (P=.05)							0.00	5.64	2.80	1.76	3.91	3.10	2.51
Standard Deviation							0.00	3.33	1.65	1.04	2.31	1.83	1.48
CV							0.0	47.58	31.46	10.68	35.22	29.25	40.71

Spring Weed Control in Apple – CRC 2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage							
Pest Code								COGR	PERG	DAND	HOWE	ROCI	ROFB
Crop Code							APPLE						
Rating Date							12/Jul/11	12/Jul/11	12/Jul/11	12/Jul/11	12/Jul/11	12/Jul/11	12/Jul/11
Rating Type							RATING	RATING	RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10	1-10	1-10
1	Untreated						1.3	10.0	3.3	2.3	3.0	10.0	8.0
2	indaziflam	1.67	SC	0.065	lb ai/a	LPRE	1.0	10.0	3.7	3.3	9.0	10.0	10.0
	glyphosate	5.5	L	1.3	lb ai/a	LPRE							
	ammonium sulfate	100	SG	3.4	lb ai/a	LPRE							
3	indaziflam	1.67	SC	0.065	lb ai/a	LPRE	1.0	10.0	4.3	2.7	6.3	7.7	9.0
	glufosinate	2.34	L	1.2	lb ai/a	LPRE							
	glyphosate	5.5	L	1.3	lb ai/a	LPRE							
	ammonium sulfate	100	SG	3.4	lb ai/a	LPRE							
4	terbacil	80	WDG	2.4	lb ai/a	LPRE	1.0	1.0	9.3	7.0	8.0	10.0	10.0
5	glyphosate	5.5	L	1.3	lb ai/a	LPRE	1.0	10.0	4.3	5.3	9.3	5.7	6.3
	ammonium sulfate	100	SG	3.4	lb ai/a	LPRE							
6	flumioxazin	51	WDG	0.191	lb ai/a	LPRE	1.0	10.0	3.7	3.3	2.7	10.0	10.0
7	carfentrazone	0.35	SE	0.027	lb ai/a	LPRE	1.3	10.0	4.3	3.3	1.3	7.3	4.3
	sulfentrazone	3.15	SE	0.243	lb ai/a	LPRE							
	oryzalin	4	L	2	lb ai/a	LPRE							
8	carfentrazone	0.35	SE	0.027	lb ai/a	LPRE	1.0	10.0	5.7	3.7	1.7	10.0	7.7
	sulfentrazone	3.15	SE	0.243	lb ai/a	LPRE							
	norflurazon	80	DF	2	lb ai/a	LPRE							
9	rimsulfuron (M)	25	DF	0.063	lb ai/a	LPRE	1.0	10.0	7.0	4.3	6.3	7.0	8.3
	halosulfuron	75	WG	0.047	lb ai/a	LPRE							
10	indaziflam	1.67	SC	0.065	lb ai/a	LPRE	1.0	10.0	4.3	3.3	6.3	10.0	4.7
	saflufenacil	70	WG	0.045	lb ai/a	LPRE							
11	pendimethalin	3.8	CS	3	lb ai/a	LPRE	1.0	10.0	3.7	6.3	9.0	10.0	10.0
	saflufenacil	70	WG	0.065	lb ai/a	LPRE							
12	diuron	80	DF	3	lb ai/a	LPRE	1.0	10.0	9.0	1.7	7.0	7.3	10.0
	mesotrione	4	SC	0.188	lb ai/a	LPRE							
LSD (P=.05)							0.42	0.00	4.06	4.25	4.12	5.26	4.71
Standard Deviation							0.25	0.00	2.40	2.51	2.43	3.10	2.78
CV							23.38	0.0	45.91	64.47	41.67	35.48	33.95

Spring Weed Control in Apple – CRC 2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	VIPW	WHCL	APPLE	BYGR	LACG	DAND
Pest Code							VIPW	WHCL		BYGR	LACG	DAND
Crop Code									APPLE			
Rating Date							12/Jul/11	12/Jul/11	12/Aug/11	12/Aug/11	12/Aug/11	12/Aug/11
Rating Type							RATING	RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10	1-10
1	Untreated						7.7	1.0	1.0	10.0	10.0	2.3
2	indaziflam	1.67	SC	0.065	lb ai/a	LPRE	9.0	1.3	1.0	10.0	10.0	3.7
	glyphosate	5.5	L	1.3	lb ai/a	LPRE						
	ammonium sulfate	100	SG	3.4	lb ai/a	LPRE						
3	indaziflam	1.67	SC	0.065	lb ai/a	LPRE	10.0	2.7	1.0	7.7	7.7	3.3
	glufosinate	2.34	L	1.2	lb ai/a	LPRE						
	glyphosate	5.5	L	1.3	lb ai/a	LPRE						
	ammonium sulfate	100	SG	3.4	lb ai/a	LPRE						
4	terbacil	80	WDG	2.4	lb ai/a	LPRE	10.0	7.3	1.0	9.0	9.3	7.0
5	glyphosate	5.5	L	1.3	lb ai/a	LPRE	10.0	1.0	1.0	6.0	8.3	5.3
	ammonium sulfate	100	SG	3.4	lb ai/a	LPRE						
6	flumioxazin	51	WDG	0.191	lb ai/a	LPRE	10.0	3.7	1.0	9.0	10.0	4.7
7	carfentrazone	0.35	SE	0.027	lb ai/a	LPRE	10.0	1.0	1.0	10.0	10.0	3.3
	sulfentrazone	3.15	SE	0.243	lb ai/a	LPRE						
	oryzalin	4	L	2	lb ai/a	LPRE						
8	carfentrazone	0.35	SE	0.027	lb ai/a	LPRE	9.0	2.7	1.0	10.0	10.0	3.3
	sulfentrazone	3.15	SE	0.243	lb ai/a	LPRE						
	norflurazon	80	DF	2	lb ai/a	LPRE						
9	rimsulfuron (M)	25	DF	0.063	lb ai/a	LPRE	7.0	1.7	1.0	10.0	8.0	4.3
	halosulfuron	75	WG	0.047	lb ai/a	LPRE						
10	indaziflam	1.67	SC	0.065	lb ai/a	LPRE	10.0	1.0	1.0	10.0	9.7	4.0
	saflufenacil	70	WG	0.045	lb ai/a	LPRE						
11	pendimethalin	3.8	CS	3	lb ai/a	LPRE	10.0	3.3	1.0	10.0	10.0	4.7
	saflufenacil	70	WG	0.065	lb ai/a	LPRE						
12	diuron	80	DF	3	lb ai/a	LPRE	10.0	10.0	1.0	8.7	7.0	4.3
	mesotrione	4	SC	0.188	lb ai/a	LPRE						
LSD (P=.05)							3.52	3.10	0.00	2.81	3.48	4.16
Standard Deviation							2.08	1.83	0.00	1.66	2.06	2.46
CV							22.17	60.0	0.0	18.05	22.45	58.61

Spring Weed Control in Apple – CRC 2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	HOWE	WHCL	APPLE	BYGR	FAPA	LACG
Pest Code												
Crop Code									APPLE			
Rating Date							12/Aug/11	12/Aug/11	21/Sep/11	21/Sep/11	21/Sep/11	21/Sep/11
Rating Type							RATING	RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10	1-10
1	Untreated						5.0	1.3	1.0	10.0	10.0	10.0
2	indaziflam	1.67	SC	0.065	lb ai/a	LPRE	8.7	2.7	1.0	9.7	10.0	7.0
	glyphosate	5.5	L	1.3	lb ai/a	LPRE						
	ammonium sulfate	100	SG	3.4	lb ai/a	LPRE						
3	indaziflam	1.67	SC	0.065	lb ai/a	LPRE	4.7	3.3	1.0	8.3	8.7	10.0
	glufosinate	2.34	L	1.2	lb ai/a	LPRE						
	glyphosate	5.5	L	1.3	lb ai/a	LPRE						
	ammonium sulfate	100	SG	3.4	lb ai/a	LPRE						
4	terbacil	80	WDG	2.4	lb ai/a	LPRE	9.0	8.0	1.0	6.0	9.3	7.0
5	glyphosate	5.5	L	1.3	lb ai/a	LPRE	10.0	2.3	1.0	5.0	4.0	6.3
	ammonium sulfate	100	SG	3.4	lb ai/a	LPRE						
6	flumioxazin	51	WDG	0.191	lb ai/a	LPRE	4.0	4.0	1.0	8.0	10.0	10.0
7	carfentrazone	0.35	SE	0.027	lb ai/a	LPRE	3.7	2.3	1.0	10.0	10.0	10.0
	sulfentrazone	3.15	SE	0.243	lb ai/a	LPRE						
	oryzalin	4	L	2	lb ai/a	LPRE						
8	carfentrazone	0.35	SE	0.027	lb ai/a	LPRE	5.3	2.7	1.0	10.0	10.0	10.0
	sulfentrazone	3.15	SE	0.243	lb ai/a	LPRE						
	norflurazon	80	DF	2	lb ai/a	LPRE						
9	rimsulfuron (M)	25	DF	0.063	lb ai/a	LPRE	7.0	3.0	1.0	10.0	6.3	2.0
	halosulfuron	75	WG	0.047	lb ai/a	LPRE						
10	indaziflam	1.67	SC	0.065	lb ai/a	LPRE	7.7	3.7	1.0	10.0	10.0	9.3
	saflufenacil	70	WG	0.045	lb ai/a	LPRE						
11	pendimethalin	3.8	CS	3	lb ai/a	LPRE	10.0	2.0	1.0	10.0	10.0	10.0
	saflufenacil	70	WG	0.065	lb ai/a	LPRE						
12	diuron	80	DF	3	lb ai/a	LPRE	7.3	9.0	1.0	6.0	2.0	2.3
	mesotrione	4	SC	0.188	lb ai/a	LPRE						
LSD (P=.05)							3.40	2.36	0.00	4.25	3.84	3.70
Standard Deviation							2.01	1.39	0.00	2.51	2.27	2.18
CV							29.31	37.67	0.0	29.25	27.1	27.87

Spring Weed Control in Apple – CRC 2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	DAND	HOWE
Pest Code							DAND	HOWE
Crop Code								
Rating Date							21/Sep/11	21/Sep/11
Rating Type							RATING	RATING
Rating Unit							1-10	1-10
1	Untreated						3.3	5.0
2	indaziflam	1.67	SC	0.065	lb ai/a	LPRE	3.0	9.0
	glyphosate	5.5	L	1.3	lb ai/a	LPRE		
	ammonium sulfate	100	SG	3.4	lb ai/a	LPRE		
3	indaziflam	1.67	SC	0.065	lb ai/a	LPRE	2.7	6.3
	glufosinate	2.34	L	1.2	lb ai/a	LPRE		
	glyphosate	5.5	L	1.3	lb ai/a	LPRE		
	ammonium sulfate	100	SG	3.4	lb ai/a	LPRE		
4	terbacil	80	WDG	2.4	lb ai/a	LPRE	4.7	9.3
5	glyphosate	5.5	L	1.3	lb ai/a	LPRE	5.3	10.0
	ammonium sulfate	100	SG	3.4	lb ai/a	LPRE		
6	flumioxazin	51	WDG	0.191	lb ai/a	LPRE	4.0	3.7
7	carfentrazone	0.35	SE	0.027	lb ai/a	LPRE	1.7	2.7
	sulfentrazone	3.15	SE	0.243	lb ai/a	LPRE		
	oryzalin	4	L	2	lb ai/a	LPRE		
8	carfentrazone	0.35	SE	0.027	lb ai/a	LPRE	2.7	4.0
	sulfentrazone	3.15	SE	0.243	lb ai/a	LPRE		
	norflurazon	80	DF	2	lb ai/a	LPRE		
9	rimsulfuron (M)	25	DF	0.063	lb ai/a	LPRE	3.7	10.0
	halosulfuron	75	WG	0.047	lb ai/a	LPRE		
10	indaziflam	1.67	SC	0.065	lb ai/a	LPRE	3.3	5.7
	saflufenacil	70	WG	0.045	lb ai/a	LPRE		
11	pendimethalin	3.8	CS	3	lb ai/a	LPRE	5.3	10.0
	saflufenacil	70	WG	0.065	lb ai/a	LPRE		
12	diuron	80	DF	3	lb ai/a	LPRE	4.7	7.3
	mesotrione	4	SC	0.188	lb ai/a	LPRE		
LSD (P=.05)							4.65	4.99
Standard Deviation							2.75	2.95
CV							74.34	42.58

Postemergence Weed Control in Apple – HTRC 2011

Project Code: 128-11-03 **Location: East Lansing, MI**

Personnel: Bernard H. Zandstra, Rodney Tocco
Crop: Apple **Variety: See notes**
Planting Method: Transplant **Planting Date: 4/19/06**
Spacing: 12 ft **Row Spacing: 18 ft**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 11 ft wide x 48 ft long

Soil Type: Marlette Fine Sandy Loam **OM: 2.1%** **pH: 6.8**
Sand: 55% **Silt: 35%** **Clay: 10%** **CEC: 6.3**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
EPRE	4/14/11	11:00 am	53/50	F	Good	3-5 N	60	99% Cloudy	N
LPRE	5/11/11	3:30 pm	83/70	F	Dry	1-3 SE	44	100%Cloudy	N
EPOS	6/2/11	12:00 pm	76/75	F	Good	1-2 NW	39	25% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
4/14	APPLE		Dormant	
4/14	HAFE = hard fescue	2-3″		
4/14	DAND = dandelion			
4/14	WHCA = white clover	3-4″		
4/14	WICA = wild carrot	4-6″		
5/11	APPLE	3-6 LS	Post bud break	
5/11	ANBG = annual bluegrass	2-4″		Moderate
5/11	GRFT = green foxtail	4-6″		Moderate
5/11	QUGR = quackgrass	4-6″, 4-6″		Moderate
5/11	ALFA = alfalfa	6-12″		Few
5/11	DAND = dandelion	6-10″, 4-8″		Many
5/11	WHCA = white campion	2-4″, 3-5″		Moderate
6/2	APPLE		Buds present	
6/2	ANBG = annual bluegrass	6-10″		Few
6/2	LACG = large crabgrass	4-8″		Few
6/2	QUGR = quackgrass			Moderate
6/2	ALFA = alfalfa	12-24″		Few
6/2	BFTF = birdsfoot trefoil	6-12″		Many
6/2	BHPL = buckhorn plantain	6-10″		Moderate
6/2	DAND = dandelion	6-8″		
6/2	FAPA = fall panicum			
6/2	RESO = red sorrel	4-6″	4-6 LS	
6/2	WHCL = white clover	12-16″		Moderate
6/2	WICA = wild carrot	6-12″		Many
6/2	YEFT = yellow foxtail			
6/2	YERO = yellow rocket	12-16″	8-10 LS	Moderate

Notes and Comments
1. Varieties: Luckyjon, Spartan, Gala, Honeycrisp, Fuji.
2. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
3. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.

Postemergence Weed Control in Apple – HTRC 2011

Postemergence Weed Control in Apple - HTRC 2011

Trial ID: 128-11-3 Protocol ID: 128-11-3
Location: East Lansing, MI Study Director: Rodney Tocco
Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	HAFE	QUGR	ALFA	BFTF	BHPL	DAND
Pest Code												
Crop Code							APPLE					
Rating Date							1/Jun/11	1/Jun/11	1/Jun/11	1/Jun/11	1/Jun/11	1/Jun/11	1/Jun/11
Rating Type							RATING	RATING	RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10	1-10	1-10
1	simazine	90	WDG	2	lb ai/a	EPRE	1.0	8.3	10.0	2.3	1.0	7.3	1.3
	pelargonic_acid	4.2	EC	5	% v/v	EPOS							
2	simazine	90	WDG	2	lb ai/a	EPRE	1.0	8.7	10.0	1.0	1.0	9.0	3.7
	pelargonic_acid	4.2	EC	7	% v/v	EPOS							
3	simazine	90	WDG	2	% v/v	EPRE	1.0	9.7	9.7	1.0	1.0	9.3	1.0
	pelargonic_acid	4.2	EC	10	% v/v	EPOS							
4	simazine	90	WDG	2	lb ai/a	EPRE	1.0	9.0	10.0	4.0	1.7	10.0	1.0
	pelargonic_acid	4.2	EC	5	% v/v	EPOS							
	halosulfuron	75	WG	0.035	lb ai/a	EPOS							
5	simazine	90	WDG	2	lb ai/a	EPRE	1.0	9.3	10.0	1.3	1.0	10.0	1.7
	pelargonic_acid	4.2	EC	5	% v/v	EPOS							
	glyphosate	5.5	L	1	lb ai/a	EPOS							
6	glyphosate	5.5	L	1	lb ai/a	EPRE	1.0	9.7	10.0	6.0	3.7	10.0	7.0
7	carfentrazone	2	EC	0.016	lb ai/a	LPRE	1.0	9.3	9.7	9.3	8.7	10.0	8.0
	paraquat	2	L	0.375	lb ai/a	LPRE							
	pendimethalin	3.3	EC	0.82	lb ai/a	LPRE							
	COC	100	SL	1	% v/v	LPRE							
8	carfentrazone	2	EC	0.016	lb ai/a	LPRE	1.0	9.0	10.0	7.0	7.7	10.0	7.0
	paraquat	2	L	0.375	lb ai/a	LPRE							
	oryzalin	4	L	2	lb ai/a	LPRE							
	COC	100	SL	1	% v/v	LPRE							
9	carfentrazone	2	EC	0.016	lb ai/a	LPRE	1.0	9.7	10.0	8.0	8.7	10.0	8.0
	paraquat	2	L	0.375	lb ai/a	LPRE							
	indaziflam	1.67	SC	0.065	lb ai/a	LPRE							
	COC	100	SL	1	% v/v	LPRE							
10	pyraflufen	0.177	SC	0.00553	lb ai/a	EPOS	1.0	5.3	7.7	1.3	1.0	10.0	1.0
11	pyraflufen	0.177	SC	0.00553	lb ai/a	EPOS	1.0	9.0	7.0	2.7	1.0	10.0	1.0
	glyphosate	5.5	L	0.95	lb ai/a	EPOS							
	COC	100	SL	1	% v/v	EPOS							
12	Untreated						1.0	5.0	7.7	2.0	1.0	10.0	1.0
LSD (P=.05)							0.00	2.41	3.78	3.01	2.64	2.34	1.83
Standard Deviation							0.00	1.42	2.23	1.78	1.56	1.38	1.08
CV							0.0	16.76	24.01	46.31	50.02	14.33	31.07

Postemergence Weed Control in Apple – HTRC 2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	WICA	APPLE	HAFE	ALFA	BFTF	DAND	WHCA
Pest Code							WICA		HAFE	ALFA	BFTF	DAND	WHCA
Crop Code								APPLE					
Rating Date							1/Jun/11	16/Jun/11	16/Jun/11	16/Jun/11	16/Jun/11	16/Jun/11	16/Jun/11
Rating Type							RATING	RATING	RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10	1-10	1-10
1	simazine	90	WDG	2	lb ai/a	EPRE	6.0	1.0	9.3	5.7	2.0	2.0	1.3
	pelargonic_acid	4.2	EC	5	% v/v	EPOS							
2	simazine	90	WDG	2	lb ai/a	EPRE	4.7	1.0	5.7	1.7	2.7	2.3	9.0
	pelargonic_acid	4.2	EC	7	% v/v	EPOS							
3	simazine	90	WDG	2	% v/v	EPRE	4.7	1.0	9.0	2.3	6.7	2.3	9.3
	pelargonic_acid	4.2	EC	10	% v/v	EPOS							
4	simazine	90	WDG	2	lb ai/a	EPRE	4.0	1.0	8.0	10.0	3.0	5.3	10.0
	pelargonic_acid	4.2	EC	5	% v/v	EPOS							
	halosulfuron	75	WG	0.035	lb ai/a	EPOS							
5	simazine	90	WDG	2	lb ai/a	EPRE	1.3	1.0	9.7	9.0	5.3	6.0	10.0
	pelargonic_acid	4.2	EC	5	% v/v	EPOS							
	glyphosate	5.5	L	1	lb ai/a	EPOS							
6	glyphosate	5.5	L	1	lb ai/a	EPRE	5.7	1.0	8.7	6.7	3.3	1.7	7.0
7	carfentrazone	2	EC	0.016	lb ai/a	LPRE	7.7	1.0	7.7	9.0	4.3	1.3	9.3
	paraquat	2	L	0.375	lb ai/a	LPRE							
	pendimethalin	3.3	EC	0.82	lb ai/a	LPRE							
	COC	100	SL	1	% v/v	LPRE							
8	carfentrazone	2	EC	0.016	lb ai/a	LPRE	5.7	1.0	8.7	2.7	2.0	1.3	7.0
	paraquat	2	L	0.375	lb ai/a	LPRE							
	oryzalin	4	L	2	lb ai/a	LPRE							
	COC	100	SL	1	% v/v	LPRE							
9	carfentrazone	2	EC	0.016	lb ai/a	LPRE	8.7	1.0	9.7	5.3	4.7	4.3	7.0
	paraquat	2	L	0.375	lb ai/a	LPRE							
	indaziflam	1.67	SC	0.065	lb ai/a	LPRE							
	COC	100	SL	1	% v/v	LPRE							
10	pyraflufen	0.177	SC	0.00553	lb ai/a	EPOS	3.3	1.0	3.0	4.7	5.0	5.0	7.0
11	pyraflufen	0.177	SC	0.00553	lb ai/a	EPOS	1.7	1.0	9.0	8.3	8.3	8.0	8.0
	glyphosate	5.5	L	0.95	lb ai/a	EPOS							
	COC	100	SL	1	% v/v	EPOS							
12	Untreated						1.7	1.0	1.0	1.0	1.0	1.0	1.0
LSD (P=.05)							4.90	0.00	2.22	4.55	3.77	2.02	5.12
Standard Deviation							2.90	0.00	1.31	2.69	2.23	1.19	3.03
CV							63.18	0.0	17.64	48.63	55.25	35.18	42.21

Postemergence Weed Control in Apple – HTRC 2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	WICA	APPLE	GRFT	HAFE	ALFA	BFTF	BHPL
Pest Code							WICA		GRFT	HAFE	ALFA	BFTF	BHPL
Crop Code								APPLE					
Rating Date							16/Jun/11	13/Jul/11	13/Jul/11	13/Jul/11	13/Jul/11	13/Jul/11	13/Jul/11
Rating Type							RATING	RATING	RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10	1-10	1-10
1	simazine	90	WDG	2	lb ai/a	EPRE	3.3	1.0	5.7	5.0	4.0	1.0	7.0
	pelargonic_acid	4.2	EC	5	% v/v	EPOS							
2	simazine	90	WDG	2	lb ai/a	EPRE	5.0	1.0	7.7	4.7	2.3	4.3	7.0
	pelargonic_acid	4.2	EC	7	% v/v	EPOS							
3	simazine	90	WDG	2	% v/v	EPRE	4.7	1.0	1.7	7.7	1.0	1.7	9.3
	pelargonic_acid	4.2	EC	10	% v/v	EPOS							
4	simazine	90	WDG	2	lb ai/a	EPRE	9.0	1.0	2.7	7.0	9.3	1.3	9.3
	pelargonic_acid	4.2	EC	5	% v/v	EPOS							
	halosulfuron	75	WG	0.035	lb ai/a	EPOS							
5	simazine	90	WDG	2	lb ai/a	EPRE	8.0	1.0	2.7	9.0	7.7	2.0	10.0
	pelargonic_acid	4.2	EC	5	% v/v	EPOS							
	glyphosate	5.5	L	1	lb ai/a	EPOS							
6	glyphosate	5.5	L	1	lb ai/a	EPRE	1.0	1.0	4.0	9.0	4.0	2.3	10.0
7	carfentrazone	2	EC	0.016	lb ai/a	LPRE	8.7	1.0	6.7	6.0	7.7	4.7	10.0
	paraquat	2	L	0.375	lb ai/a	LPRE							
	pendimethalin	3.3	EC	0.82	lb ai/a	LPRE							
	COC	100	SL	1	% v/v	LPRE							
8	carfentrazone	2	EC	0.016	lb ai/a	LPRE	7.0	1.0	7.3	6.7	4.7	1.3	7.3
	paraquat	2	L	0.375	lb ai/a	LPRE							
	oryzalin	4	L	2	lb ai/a	LPRE							
	COC	100	SL	1	% v/v	LPRE							
9	carfentrazone	2	EC	0.016	lb ai/a	LPRE	5.3	1.0	9.0	9.3	7.0	1.7	10.0
	paraquat	2	L	0.375	lb ai/a	LPRE							
	indaziflam	1.67	SC	0.065	lb ai/a	LPRE							
	COC	100	SL	1	% v/v	LPRE							
10	pyraflufen	0.177	SC	0.00553	lb ai/a	EPOS	3.7	1.0	8.0	4.7	6.0	1.7	10.0
11	pyraflufen	0.177	SC	0.00553	lb ai/a	EPOS	6.7	1.0	1.0	8.3	4.7	2.3	10.0
	glyphosate	5.5	L	0.95	lb ai/a	EPOS							
	COC	100	SL	1	% v/v	EPOS							
12	Untreated						1.0	1.0	9.3	2.0	7.0	1.7	10.0
LSD (P=.05)							4.79	0.00	5.07	2.76	5.53	3.13	3.85
Standard Deviation							2.83	0.00	2.99	1.63	3.27	1.85	2.28
CV							53.63	0.0	54.68	24.62	60.02	85.31	24.83

Postemergence Weed Control in Apple – HTRC 2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	DAND	WICA	APPLE	HAFE	YEFT	ALFA	BFTF
Pest Code							DAND	WICA		HAFE	YEFT	ALFA	BFTF
Crop Code									APPLE				
Rating Date							13/Jul/11	13/Jul/11	10/Aug/11	10/Aug/11	10/Aug/11	10/Aug/11	10/Aug/11
Rating Type							RATING	RATING	RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10	1-10	1-10
1	simazine	90	WDG	2	lb ai/a	EPRE	1.3	4.0	1.0	5.7	2.7	6.0	1.0
	pelargonic_acid	4.2	EC	5	% v/v	EPOS							
2	simazine	90	WDG	2	lb ai/a	EPRE	3.7	5.7	1.0	5.0	7.0	1.0	4.0
	pelargonic_acid	4.2	EC	7	% v/v	EPOS							
3	simazine	90	WDG	2	% v/v	EPRE	1.0	2.3	1.0	8.0	3.0	1.3	2.3
	pelargonic_acid	4.2	EC	10	% v/v	EPOS							
4	simazine	90	WDG	2	lb ai/a	EPRE	3.3	8.7	1.0	9.3	2.3	8.0	2.0
	pelargonic_acid	4.2	EC	5	% v/v	EPOS							
	halosulfuron	75	WG	0.035	lb ai/a	EPOS							
5	simazine	90	WDG	2	lb ai/a	EPRE	7.0	7.7	1.0	10.0	1.0	8.7	2.7
	pelargonic_acid	4.2	EC	5	% v/v	EPOS							
	glyphosate	5.5	L	1	lb ai/a	EPOS							
6	glyphosate	5.5	L	1	lb ai/a	EPRE	2.0	1.7	1.0	10.0	4.7	4.0	3.7
7	carfentrazone	2	EC	0.016	lb ai/a	LPRE	2.0	7.3	1.0	5.7	8.3	9.3	4.0
	paraquat	2	L	0.375	lb ai/a	LPRE							
	pendimethalin	3.3	EC	0.82	lb ai/a	LPRE							
	COC	100	SL	1	% v/v	LPRE							
8	carfentrazone	2	EC	0.016	lb ai/a	LPRE	1.7	5.3	1.0	8.3	8.3	6.0	2.7
	paraquat	2	L	0.375	lb ai/a	LPRE							
	oryzalin	4	L	2	lb ai/a	LPRE							
	COC	100	SL	1	% v/v	LPRE							
9	carfentrazone	2	EC	0.016	lb ai/a	LPRE	3.0	4.0	1.0	10.0	4.7	6.7	3.7
	paraquat	2	L	0.375	lb ai/a	LPRE							
	indaziflam	1.67	SC	0.065	lb ai/a	LPRE							
	COC	100	SL	1	% v/v	LPRE							
10	pyraflufen	0.177	SC	0.00553	lb ai/a	EPOS	1.3	2.3	1.0	3.7	6.7	1.7	1.7
11	pyraflufen	0.177	SC	0.00553	lb ai/a	EPOS	7.3	5.3	1.0	9.3	1.0	7.7	3.3
	glyphosate	5.5	L	0.95	lb ai/a	EPOS							
	COC	100	SL	1	% v/v	EPOS							
12	Untreated						1.3	1.7	1.0	1.3	9.0	4.3	1.3
LSD (P=.05)							2.15	3.81	0.00	3.15	3.92	5.06	3.21
Standard Deviation							1.27	2.25	0.00	1.86	2.32	2.99	1.89
CV							43.55	48.17	0.0	25.82	47.36	55.47	70.3

Postemergence Weed Control in Apple – HTRC 2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	WICA	APPLE	FAPA	YEFT	CORW	WICA
Pest Code							WICA		FAPA	YEFT	CORW	WICA
Crop Code								APPLE				
Rating Date							10/Aug/11	15/Sep/11	15/Sep/11	15/Sep/11	15/Sep/11	15/Sep/11
Rating Type							RATING	RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10	1-10
1	simazine	90	WDG	2	lb ai/a	EPRE	3.3	1.0	6.0	5.0	8.3	4.7
	pelargonic_acid	4.2	EC	5	% v/v	EPOS						
2	simazine	90	WDG	2	lb ai/a	EPRE	5.7	1.0	6.3	6.0	9.0	7.0
	pelargonic_acid	4.2	EC	7	% v/v	EPOS						
3	simazine	90	WDG	2	% v/v	EPRE	4.7	1.0	8.7	3.3	9.0	6.0
	pelargonic_acid	4.2	EC	10	% v/v	EPOS						
4	simazine	90	WDG	2	lb ai/a	EPRE	8.3	1.0	7.0	4.7	9.0	7.0
	pelargonic_acid	4.2	EC	5	% v/v	EPOS						
	halosulfuron	75	WG	0.035	lb ai/a	EPOS						
5	simazine	90	WDG	2	lb ai/a	EPRE	6.0	1.0	1.3	2.0	8.3	7.7
	pelargonic_acid	4.2	EC	5	% v/v	EPOS						
	glyphosate	5.5	L	1	lb ai/a	EPOS						
6	glyphosate	5.5	L	1	lb ai/a	EPRE	2.7	1.0	8.3	5.0	4.0	2.3
7	carfentrazone	2	EC	0.016	lb ai/a	LPRE	6.0	1.0	8.7	8.0	2.0	7.3
	paraquat	2	L	0.375	lb ai/a	LPRE						
	pendimethalin	3.3	EC	0.82	lb ai/a	LPRE						
	COC	100	SL	1	% v/v	LPRE						
8	carfentrazone	2	EC	0.016	lb ai/a	LPRE	5.3	1.0	9.0	7.7	5.7	4.7
	paraquat	2	L	0.375	lb ai/a	LPRE						
	oryzalin	4	L	2	lb ai/a	LPRE						
	COC	100	SL	1	% v/v	LPRE						
9	carfentrazone	2	EC	0.016	lb ai/a	LPRE	3.3	1.0	7.3	6.0	8.7	4.3
	paraquat	2	L	0.375	lb ai/a	LPRE						
	indaziflam	1.67	SC	0.065	lb ai/a	LPRE						
	COC	100	SL	1	% v/v	LPRE						
10	pyraflufen	0.177	SC	0.00553	lb ai/a	EPOS	4.0	1.0	8.0	7.0	6.0	4.0
11	pyraflufen	0.177	SC	0.00553	lb ai/a	EPOS	3.0	1.0	5.0	1.0	7.7	5.3
	glyphosate	5.5	L	0.95	lb ai/a	EPOS						
	COC	100	SL	1	% v/v	EPOS						
12	Untreated						5.7	1.0	10.0	7.3	10.0	6.0
LSD (P=.05)							4.63	0.00	5.36	4.58	4.75	3.84
Standard Deviation							2.73	0.00	3.17	2.71	2.80	2.27
CV							56.52	0.0	44.36	51.55	38.38	41.05

Postemergent Broadleaf and Yellow Nutsedge Control in Apple – HTRC 2011

Project Code: 128-11-04 **Location: East Lansing, MI**

Personnel: Bernard H. Zandstra, Rodney Tocco
Crop: Apple **Variety: See notes**
Planting Method: Transplant **Planting Date: 4/19/06**
Spacing: 12 ft **Row Spacing: 18 ft**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 11 ft wide x 48 ft long

Soil Type: Marlette Fine Sandy Loam **OM: 2.1%** **pH: 6.8**
Sand: 60% **Silt: 25%** **Clay: 15%** **CEC: 6.3**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
EPRE	4/14/11	12:00 pm	53/50	F	Good	3-5 N	60	99% Cloudy	N
LPRE	6/2/11	1:20 pm	70/72	F	Good	3 NW	40	0% Cloudy	N
EPOS	6/28/11	3:00 pm	-/75	F	Good	3 W	45	90% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
4/14	APPLE		Dormant, 100%	
4/14	BYGR = barnyardgrass	6-12″		Few
4/14	LACG = large crabgrass	2-3″		Moderate
4/14	PERG = perennial ryegrass	2-4″		Few
4/14	YENS = yellow nutsedge	1-3″		Moderate
4/14	DAND = dandelion	3-6″		Many
4/14	WHCA = white campion	1-2″, 1-2″		Moderate
4/14	WHCL = white clover	3-6″		Moderate
4/14	WICA = wild carrot	2-6″		Many
6/2	APPLE		Pre Bud Break	Full Foilage
6/2	HAFE = hard fescue	12-18″		Many
6/2	PERG = perennial ryegrass	10-12″		Moderate
6/2	QUGR = quackgrass	2-3′	4-6 LS	Moderate
6/2	ALFA = alfalfa	6-10″		Many
6/2	BFTF = birdsfoot trefoil	4-8″		Many
6/2	CATH = Canada thistle	12-24″		Many
6/2	CUDO = curly dock	12-24″		Moderate
6/2	DAND = dandelion	6-8″		Moderate
6/2	RESO = red sorrel	4-6″, 4-6″		Many
6/2	WHCL = white clover	12″, 6-10″		Many
6/2	WICA = wild carrot	8-10″, 6-10″		Many
6/2	YERO = yellow rocket	12-16″		Few
6/28	APPLE	1-2″	Green apples	
6/28	BYGR = barnyardgrass	2-3′		Many
6/28	HAFE = hard fescue	12-16″		Many
6/28	LACG = large crabgrass	6-10″		Many
6/28	QUGR = quackgrass	12-18″		Many
6/28	YEFT = yellow foxtail			
6/28	YENS = yellow nutsedge	6-10″		Many
6/28	BFTF = birdsfoot trefoil	10-15″		Many
6/28	CORW = common ragweed			
6/28	FAPA = fall panicum			
6/28	RESO = red sorrel	6-8″		Many
6/28	WICA = wild carrot	1-3′		Many
6/28	YERO = yellow rocket	10-16″		Moderate

Postemergent Broadleaf and Yellow Nutsedge Control in Apple – HTRC 2011

Notes and Comments
1. Varieties: Luckyjon, Spartan, Gala, Honeycrisp, Fuji.
2. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
3. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.

Postemergent Broadleaf and Yellow Nutsedge Control in Apple – HTRC 2011

Postemergent Broadleaf and Yellow Nutsedge Control in Apple - HTRC 2011

Trial ID: 128-11-04 Protocol ID: 128-11-04
Location: East Lansing, MI Study Director: Rodney Tocco
Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage						
Pest Code								HAFE	YENS	ALFA	BFTF	DAND	WHCA
Crop Code							APPLE						
Rating Date							16/Jun/11	16/Jun/11	16/Jun/11	16/Jun/11	16/Jun/11	16/Jun/11	16/Jun/11
Rating Type							RATING	RATING	RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10	1-10	1-10
1	simazine	90	WDG	2	lb ai/a	EPRE	1.0	4.3	3.3	0.7	1.0	1.0	7.0
	Untreated					LPOS							
2	simazine	90	WDG	2	lb ai/a	EPRE	1.0	7.3	2.3	0.3	1.7	1.3	1.0
	halosulfuron	75	WG	0.047	lb ai/a	LPOS							
	NIS	100	SL	0.25	% v/v	LPOS							
3	simazine	90	WDG	2	lb ai/a	EPRE	1.0	5.3	1.0	0.3	1.7	1.3	4.3
	bentazon	4	L	2	lb ai/a	LPOS							
	COC	100	SL	1	% v/v	LPOS							
4	simazine	90	WDG	2	lb ai/a	EPRE	1.0	7.0	0.3	1.7	1.0	1.0	4.0
	carfentrazone	0.35	SE	0.027	lb ai/a	LPOS							
	sulfentrazone	3.15	SE	0.243	lb ai/a	LPOS							
5	simazine	90	WDG	2	lb/a	EPRE	1.0	8.7	0.3	3.7	3.3	3.3	7.0
	linuron	50	DF	2	lb ai/a	LPOS							
	COC	100	SL	1	% v/v	LPOS							
6	simazine	90	WDG	2	lb ai/a	EPRE	1.0	9.7	2.7	7.3	9.0	4.0	4.7
	pyraflufen	0.177	SC	0.00553	lb ai/a	EPOS							
	COC	100	SL	1	% v/v	EPOS							
7	simazine	90	WDG	2	lb ai/a	EPRE	1.0	9.7	3.3	5.3	7.7	7.3	4.5
	pyraflufen	0.177	SC	0.0053	lb ai/a	EPOS							
	glyphosate	5.5	L	0.95	lb ai/a	EPOS							
	COC	100	SL	1	% v/v	EPOS							
8	simazine	90	WDG	2	lb ai/a	EPRE	1.0	9.3	1.0	5.0	7.3	7.7	9.0
	glyphosate	5.5	L	0.95	lb ai/a	EPOS							
9	simazine	90	WDG	2	lb ai/a	EPRE	1.0	9.7	2.7	4.7	8.0	8.0	5.0
	pyraflufen	0.177	SC	0.0053	lb ai/a	EPOS							
	glufosinate	2.34	L	0.4	lb ai/a	EPOS							
	NIS	100	SL	0.25	% v/v	EPOS							
10	simazine	90	WDG	2	lb ai/a	EPRE	1.0	10.0	2.7	10.0	8.3	9.0	9.0
	pyraflufen	0.177	SC	0.00553	lb ai/a	EPOS							
	saflufenacil	70	WG	0.045	lb ai/a	EPOS							
	glyphosate	5.5	L	0.95	lb ai/a	EPOS							
	MSO	100	SL	1	% v/v	EPOS							
11	indaziflam	1.67	SC	0.065	lb ai/a	EPRE	1.0	6.3	0.7	3.7	5.3	3.0	7.0
	pyraflufen	0.177	SC	0.00553	lb ai/a	EPRE							
	COC	100	SL	1	% v/v	EPRE							
12	Untreated						1.0	4.7	3.3	1.3	1.7	2.0	4.5
LSD (P=.05)							0.00	4.61	3.69	5.36	2.20	1.95	7.45
Standard Deviation							0.00	2.72	2.18	3.17	1.30	1.15	4.30
CV							0.0	35.52	110.39	86.34	27.85	28.2	77.08

Postemergent Broadleaf and Yellow Nutsedge Control in Apple – HTRC 2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	WICA	APPLE	HAFE	YEFT	YENS	ALFA	BFTF
Pest Code							WICA		HAFE	YEFT	YENS	ALFA	BFTF
Crop Code								APPLE					
Rating Date							16/Jun/11	13/Jul/11	13/Jul/11	13/Jul/11	13/Jul/11	13/Jul/11	13/Jul/11
Rating Type							RATING	RATING	RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10	1-10	1-10
1	simazine	90	WDG	2	lb ai/a	EPRE	1.7	1.0	5.0	10.0	7.0	4.0	2.0
	Untreated					LPOS							
2	simazine	90	WDG	2	lb ai/a	EPRE	1.0	1.0	9.3	10.0	10.0	7.7	2.0
	halosulfuron	75	WG	0.047	lb ai/a	LPOS							
	NIS	100	SL	0.25	% v/v	LPOS							
3	simazine	90	WDG	2	lb ai/a	EPRE	1.0	1.0	6.3	7.7	10.0	7.0	5.3
	bentazon	4	L	2	lb ai/a	LPOS							
	COC	100	SL	1	% v/v	LPOS							
4	simazine	90	WDG	2	lb ai/a	EPRE	1.7	1.0	7.0	9.3	9.7	7.7	6.3
	carfentrazone	0.35	SE	0.027	lb ai/a	LPOS							
	sulfentrazone	3.15	SE	0.243	lb ai/a	LPOS							
5	simazine	90	WDG	2	lb/a	EPRE	2.3	1.0	8.7	9.7	9.3	9.3	9.0
	linuron	50	DF	2	lb ai/a	LPOS							
	COC	100	SL	1	% v/v	LPOS							
6	simazine	90	WDG	2	lb ai/a	EPRE	5.7	1.0	9.7	8.3	10.0	7.0	1.7
	pyraflufen	0.177	SC	0.00553	lb ai/a	EPOS							
	COC	100	SL	1	% v/v	EPOS							
7	simazine	90	WDG	2	lb ai/a	EPRE	4.0	1.0	9.7	7.0	10.0	2.7	3.3
	pyraflufen	0.177	SC	0.0053	lb ai/a	EPOS							
	glyphosate	5.5	L	0.95	lb ai/a	EPOS							
	COC	100	SL	1	% v/v	EPOS							
8	simazine	90	WDG	2	lb ai/a	EPRE	6.7	1.0	9.3	6.3	10.0	7.7	3.3
	glyphosate	5.5	L	0.95	lb ai/a	EPOS							
9	simazine	90	WDG	2	lb ai/a	EPRE	8.0	1.0	8.7	2.7	7.0	9.3	1.0
	pyraflufen	0.177	SC	0.0053	lb ai/a	EPOS							
	glufosinate	2.34	L	0.4	lb ai/a	EPOS							
	NIS	100	SL	0.25	% v/v	EPOS							
10	simazine	90	WDG	2	lb ai/a	EPRE	7.3	1.0	9.0	4.0	4.3	9.0	2.7
	pyraflufen	0.177	SC	0.00553	lb ai/a	EPOS							
	saflufenacil	70	WG	0.045	lb ai/a	EPOS							
	glyphosate	5.5	L	0.95	lb ai/a	EPOS							
	MSO	100	SL	1	% v/v	EPOS							
11	indaziflam	1.67	SC	0.065	lb ai/a	EPRE	4.0	1.0	8.3	6.0	4.0	7.0	2.3
	pyraflufen	0.177	SC	0.00553	lb ai/a	EPRE							
	COC	100	SL	1	% v/v	EPRE							
12	Untreated						1.3	1.0	8.7	9.3	10.0	2.3	2.3
LSD (P=.05)							3.21	0.00	3.98	4.38	5.11	5.36	3.32
Standard Deviation							1.90	0.00	2.35	2.58	3.02	3.16	1.96
CV							51.0	0.0	28.33	34.33	35.73	47.07	56.88

Postemergent Broadleaf and Yellow Nutsedge Control in Apple – HTRC 2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	DAND	WICA	APPLE	HAFE	YEFT	YENS	ALFA
Pest Code													
Crop Code									APPLE				
Rating Date							13/Jul/11	13/Jul/11	10/Aug/11	10/Aug/11	10/Aug/11	10/Aug/11	10/Aug/11
Rating Type							RATING	RATING	RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10	1-10	1-10
1	simazine	90	WDG	2	lb ai/a	EPRE	1.7	3.7	1.0	7.0	6.0	1.0	7.0
	Untreated					LPOS							
2	simazine	90	WDG	2	lb ai/a	EPRE	1.0	5.3	1.0	5.7	6.7	10.0	9.0
	halosulfuron	75	WG	0.047	lb ai/a	LPOS							
	NIS	100	SL	0.25	% v/v	LPOS							
3	simazine	90	WDG	2	lb ai/a	EPRE	5.0	5.3	1.0	7.0	5.7	1.0	7.0
	bentazon	4	L	2	lb ai/a	LPOS							
	COC	100	SL	1	% v/v	LPOS							
4	simazine	90	WDG	2	lb ai/a	EPRE	4.3	3.3	1.0	9.3	7.3	1.0	6.7
	carfentrazone	0.35	SE	0.027	lb ai/a	LPOS							
	sulfentrazone	3.15	SE	0.243	lb ai/a	LPOS							
5	simazine	90	WDG	2	lb/a	EPRE	7.7	4.0	1.0	7.7	6.7	2.0	9.3
	linuron	50	DF	2	lb ai/a	LPOS							
	COC	100	SL	1	% v/v	LPOS							
6	simazine	90	WDG	2	lb ai/a	EPRE	1.3	3.7	1.0	10.0	5.0	1.0	7.3
	pyraflufen	0.177	SC	0.00553	lb ai/a	EPOS							
	COC	100	SL	1	% v/v	EPOS							
7	simazine	90	WDG	2	lb ai/a	EPRE	7.0	5.7	1.0	8.3	5.0	10.0	2.3
	pyraflufen	0.177	SC	0.0053	lb ai/a	EPOS							
	glyphosate	5.5	L	0.95	lb ai/a	EPOS							
	COC	100	SL	1	% v/v	EPOS							
8	simazine	90	WDG	2	lb ai/a	EPRE	6.7	7.0	1.0	9.0	3.7	3.0	6.7
	glyphosate	5.5	L	0.95	lb ai/a	EPOS							
9	simazine	90	WDG	2	lb ai/a	EPRE	5.0	5.0	1.0	9.0	2.3	.	9.3
	pyraflufen	0.177	SC	0.0053	lb ai/a	EPOS							
	glufosinate	2.34	L	0.4	lb ai/a	EPOS							
	NIS	100	SL	0.25	% v/v	EPOS							
10	simazine	90	WDG	2	lb ai/a	EPRE	8.3	5.3	1.0	9.7	1.7	8.0	10.0
	pyraflufen	0.177	SC	0.00553	lb ai/a	EPOS							
	saflufenacil	70	WG	0.045	lb ai/a	EPOS							
	glyphosate	5.5	L	0.95	lb ai/a	EPOS							
	MSO	100	SL	1	% v/v	EPOS							
11	indaziflam	1.67	SC	0.065	lb ai/a	EPRE	2.3	2.7	1.0	6.7	5.7	.	7.3
	pyraflufen	0.177	SC	0.00553	lb ai/a	EPRE							
	COC	100	SL	1	% v/v	EPRE							
12	Untreated						3.7	4.0	1.0	10.0	7.3	10.0	2.0
LSD (P=.05)							2.92	6.04	0.00	3.72	5.49	.	5.52
Standard Deviation							1.72	3.57	0.00	2.19	3.24	.	3.26
CV							38.3	77.86	0.0	26.51	61.7	.	46.59

Postemergent Broadleaf and Yellow Nutsedge Control in Apple – HTRC 2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	BFTF WICA 10/Aug/11 RATING 1-10	WICA 10/Aug/11 RATING 1-10	APPLE 15/Sep/11 RATING 1-10	YEFT 15/Sep/11 RATING 1-10	CORW 15/Sep/11 RATING 1-10	FAPA 15/Sep/11 RATING 1-10	WICA 15/Sep/11 RATING 1-10
1	simazine	90	WDG	2	lb ai/a	EPRE	3.0	3.7	1.0	7.7	7.7	10.0	3.3
	Untreated					LPOS							
2	simazine	90	WDG	2	lb ai/a	EPRE	2.0	8.3	1.0	6.0	10.0	7.7	7.0
	halosulfuron	75	WG	0.047	lb ai/a	LPOS							
	NIS	100	SL	0.25	% v/v	LPOS							
3	simazine	90	WDG	2	lb ai/a	EPRE	3.7	4.7	1.0	3.7	10.0	6.3	5.3
	bentazon	4	L	2	lb ai/a	LPOS							
	COC	100	SL	1	% v/v	LPOS							
4	simazine	90	WDG	2	lb ai/a	EPRE	2.7	1.7	1.0	7.0	7.3	7.7	2.3
	carfentrazone	0.35	SE	0.027	lb ai/a	LPOS							
	sulfentrazone	3.15	SE	0.243	lb ai/a	LPOS							
5	simazine	90	WDG	2	lb/a	EPRE	7.7	3.3	1.0	9.0	9.7	7.3	4.0
	linuron	50	DF	2	lb ai/a	LPOS							
	COC	100	SL	1	% v/v	LPOS							
6	simazine	90	WDG	2	lb ai/a	EPRE	3.3	2.3	1.0	6.3	10.0	9.0	4.7
	pyraflufen	0.177	SC	0.00553	lb ai/a	EPOS							
	COC	100	SL	1	% v/v	EPOS							
7	simazine	90	WDG	2	lb ai/a	EPRE	4.0	5.0	1.0	4.0	4.7	3.7	5.3
	pyraflufen	0.177	SC	0.0053	lb ai/a	EPOS							
	glyphosate	5.5	L	0.95	lb ai/a	EPOS							
	COC	100	SL	1	% v/v	EPOS							
8	simazine	90	WDG	2	lb ai/a	EPRE	3.3	3.7	1.0	3.7	10.0	2.3	7.0
	glyphosate	5.5	L	0.95	lb ai/a	EPOS							
9	simazine	90	WDG	2	lb ai/a	EPRE	4.0	4.3	1.0	2.7	7.7	1.0	5.7
	pyraflufen	0.177	SC	0.0053	lb ai/a	EPOS							
	glufosinate	2.34	L	0.4	lb ai/a	EPOS							
	NIS	100	SL	0.25	% v/v	EPOS							
10	simazine	90	WDG	2	lb ai/a	EPRE	4.0	5.3	1.0	4.0	10.0	1.0	5.3
	pyraflufen	0.177	SC	0.00553	lb ai/a	EPOS							
	saflufenacil	70	WG	0.045	lb ai/a	EPOS							
	glyphosate	5.5	L	0.95	lb ai/a	EPOS							
	MSO	100	SL	1	% v/v	EPOS							
11	indaziflam	1.67	SC	0.065	lb ai/a	EPRE	2.7	4.3	1.0	5.7	8.0	8.3	4.0
	pyraflufen	0.177	SC	0.00553	lb ai/a	EPRE							
	COC	100	SL	1	% v/v	EPRE							
12	Untreated						2.3	3.7	1.0	9.3	6.0	7.7	5.3
LSD (P=.05)							3.55	4.60	0.00	5.11	4.91	4.46	4.55
Standard Deviation							2.09	2.72	0.00	3.02	2.90	2.63	2.69
CV							58.89	64.78	0.0	52.5	34.47	43.9	54.3

Postemergence Weed Control in Apple with Rely 280 – HTRC 2011

Project Code: 128-11-07 **Location: East Lansing, MI**

Personnel: Bernard H. Zandstra, Rodney Tocco
Crop: Apple **Variety: See notes**
Planting Method: Transplant **Planting Date: 4/19/06**
Spacing: 12 ft **Row Spacing: 18 ft**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 11 ft wide x 50 ft long

Soil Type: Marlette Fine Sandy Loam **OM: 2.1%** **pH: 6.8**
Sand: 60% **Silt: 25%** **Clay: 15%** **CEC: 6.3**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
EPOS	6/2/11	11:00 am	76/75	F	Good	1-2 NW	39	25% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
6/2	APPLE			
6/2	HAFE = hard fescue	8-10″	3-4 LS	Many
6/2	LACG = large crabgrass	3-6″		Few
6/2	ALFA = alfalfa	8-10″		
6/2	BFTF = birdsfoot trefoil	6-8″		
6/2	BHPL = buckhorn plantain	4-6″		
6/2	DAND = dandelion	8-10″, 10-12″		Many
6/2	RECL = red clover	6-12″		
6/2	RESO = red sorrel			
6/2	WHCL = white clover	12-14″, 14-16″		Few
6/2	WICA = wild carrot	6-8″, 6-8″		Many
6/2	YEFT = yellow foxtail			
	FAPA = fall panicum			

Notes and Comments
1. Varieties: Luckyjon, Spartan, Gala, Honeycrisp, Fuji.
2. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
3. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.

Postemergence Weed Control in Apple with Rely 280 – HTRC 2011

Postemergence Weed Control in Apple with Rely 280 - HTRC 2011

Trial ID: 128-11-07 Protocol ID: 128-11-07
Location: East Lansing, MI Study Director: Rodney Tocco
Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage						
Pest Code								HAFE	ALFA	BFTF	DAND	RECL
Crop Code							APPLE					
Rating Date							15/Jun/11	15/Jun/11	15/Jun/11	15/Jun/11	15/Jun/11	15/Jun/11
Rating Type							RATING	RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10	1-10
1	Untreated						1.0	0.7	0.7	0.7	0.7	0.7
2	glufosinate	2.34	L	1.46	lb ai/a	EPOS	1.0	9.7	9.0	9.3	9.7	9.3
3	glufosinate	2.34	L	1.46	lb ai/a	EPOS	1.0	10.0	8.7	9.7	9.3	10.0
	ammonium sulfate	100	SG	3.0	lb ai/a	EPOS						
4	glyphosate	5.5	L	1.5	lb ai/a	EPOS	1.0	8.3	9.0	9.3	6.3	9.3
	ammonium sulfate	100	SG	3.0	lb ai/a	EPOS						
5	saflufenacil	70	WG	0.045	lb ai/a	EPOS	1.0	5.3	4.7	8.3	6.7	8.0
	pyraflufen	0.177	SC	0.0053	lb ai/a	EPOS						
	diquat	2	L	0.5	lb ai/a	EPOS						
	NIS	100	SL	0.25	% v/v	EPOS						
LSD (P=.05)							0.00	2.55	2.27	2.23	1.19	3.49
Standard Deviation							0.00	1.35	1.20	1.18	0.63	1.85
CV							0.0	19.91	18.81	15.85	9.68	24.82

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage							
Pest Code							WICA		YEFT	ALFA	BFTF	BHPL	DAND
Crop Code								APPLE					
Rating Date							15/Jun/11	13/Jul/11	13/Jul/11	13/Jul/11	13/Jul/11	13/Jul/11	13/Jul/11
Rating Type							RATING	RATING	RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10	1-10	1-10
1	Untreated						0.7	1.0	7.7	1.7	1.7	1.3	1.7
2	glufosinate	2.34	L	1.46	lb ai/a	EPOS	7.3	1.0	4.3	3.7	6.0	7.7	8.0
3	glufosinate	2.34	L	1.46	lb ai/a	EPOS	7.3	1.0	6.0	6.0	5.0	7.7	7.3
	ammonium sulfate	100	SG	3.0	lb ai/a	EPOS							
4	glyphosate	5.5	L	1.5	lb ai/a	EPOS	3.7	1.0	6.0	8.3	8.0	10.0	8.3
	ammonium sulfate	100	SG	3.0	lb ai/a	EPOS							
5	saflufenacil	70	WG	0.045	lb ai/a	EPOS	6.7	1.0	9.3	1.3	6.7	7.7	2.7
	pyraflufen	0.177	SC	0.0053	lb ai/a	EPOS							
	diquat	2	L	0.5	lb ai/a	EPOS							
	NIS	100	SL	0.25	% v/v	EPOS							
LSD (P=.05)							2.79	0.00	3.87	3.54	6.37	6.02	2.91
Standard Deviation							1.48	0.00	2.06	1.88	3.38	3.20	1.54
CV							28.89	0.0	30.86	44.76	61.9	46.55	27.57

Postemergence Weed Control in Apple with Rely 280 – HTRC 2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	WICA	HAFE	YEFT	ALFA	BFTF
Pest Code											
Crop Code							APPLE				
Rating Date							13/Jul/11	10/Aug/11	10/Aug/11	10/Aug/11	10/Aug/11
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	Untreated						2.0	1.0	2.3	8.3	1.7
2	glufosinate	2.34	L	1.46	lb ai/a	EPOS	3.0	1.0	5.7	4.3	3.3
3	glufosinate	2.34	L	1.46	lb ai/a	EPOS	3.3	1.0	9.0	2.3	6.7
	ammonium sulfate	100	SG	3.0	lb ai/a	EPOS					
4	glyphosate	5.5	L	1.5	lb ai/a	EPOS	8.7	1.0	9.7	4.7	9.3
	ammonium sulfate	100	SG	3.0	lb ai/a	EPOS					
5	saflufenacil	70	WG	0.045	lb ai/a	EPOS	6.7	1.0	1.0	9.3	4.0
	pyraflufen	0.177	SC	0.0053	lb ai/a	EPOS					
	diquat	2	L	0.5	lb ai/a	EPOS					
	NIS	100	SL	0.25	% v/v	EPOS					
LSD (P=.05)							2.25	0.00	4.41	5.94	4.68	7.05
Standard Deviation							1.20	0.00	2.34	3.16	2.49	3.74
CV							25.29	0.0	42.32	54.43	49.73	69.33

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	WICA	FAPA	YEFT	WICA
Pest Code										
Crop Code							APPLE			
Rating Date							10/Aug/11	15/Sep/11	15/Sep/11	15/Sep/11	15/Sep/11
Rating Type							RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10
1	Untreated						1.7	1.0	10.0	10.0	2.3
2	glufosinate	2.34	L	1.46	lb ai/a	EPOS	1.3	1.0	7.0	4.0	4.0
3	glufosinate	2.34	L	1.46	lb ai/a	EPOS	1.3	1.0	7.7	2.0	5.3
	ammonium sulfate	100	SG	3.0	lb ai/a	EPOS					
4	glyphosate	5.5	L	1.5	lb ai/a	EPOS	7.0	1.0	10.0	4.0	7.7
	ammonium sulfate	100	SG	3.0	lb ai/a	EPOS					
5	saflufenacil	70	WG	0.045	lb ai/a	EPOS	5.7	1.0	10.0	7.7	7.7
	pyraflufen	0.177	SC	0.0053	lb ai/a	EPOS					
	diquat	2	L	0.5	lb ai/a	EPOS					
	NIS	100	SL	0.25	% v/v	EPOS					
LSD (P=.05)							3.06	0.00	5.87	5.30	3.94
Standard Deviation							1.62	0.00	3.12	2.81	2.09
CV							47.73	0.0	34.89	50.85	38.77

Fall and Spring Weed Control Blueberry – Nye Farms 2010-2011

Project Code: 127-11-01 **Location: Fennville, MI**

Personnel: Bernard H. Zandstra, Rodney Tocco
Crop: Blueberry **Variety: Jersey**
Planting Method: Transplant **Planting Date: Unknown**
Spacing: 6 ft **Row Spacing: 12 ft**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 6 ft wide x 40 ft long

Soil Type: Pipestone Sand **OM: 5.0%** **pH: 5.2**
Sand: 85% **Silt: 7%** **Clay: 8%** **CEC: 8.9**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
FALL	11/8/11	2:45 pm	69/48	F		0	45	0% Cloudy	N
SPRING	4/5/11	1:20 pm	47/47	F	Good	2-4 SW	43	5% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
11/8	BLBE = blueberry	4-6″, 5-7′	Dormant 100%	
11/8	LACG = large crabgrass	4-8″		Many
11/8	COBD = common burdock		2-4 LS	Moderate
11/8	EBNS = eastern black nightshade	1-2′, 12-15″		Moderate
11/8	HEBI = henbit	12-16″, 1″		Many
11/8	ROFB = rough fleabane	2-4″, 12-18″		Many
4/5	BLBE = blueberry		Dormant, Buds	
4/5	ANBG = annual bluegrass	1-3″		Many
4/5	PERG = perennial ryegrass	1-3″		Moderate
4/5	QUGR = quackgrass			
4/5	CUDO = curly dock			
4/5	DAND = dandelion			Mod-Many
4/5	FIVI = field violet			
4/5	GORO = goldenrod			
4/5	HEBI = henbit	0.5-1″, 1-2″		
4/5	POIV = poison ivy			
4/5	WHCL = white clover			
4/5	YEWS = yellow woodsorrel			

Notes and Comments
1. Spray applied with 2 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.

Fall and Spring Weed Control Blueberry – Nye Farms 2010-2011

Fall and Spring Weed Control in Blueberry - Nye Farms 2010-2011

Trial ID: 127-11-01 Protocol ID: 127-11-01
Location: Fennville, MI Study Director: Rodney Tocco
Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage						
Pest Code								QUGR	CUDO	DAND	FIVI	GORO
Crop Code							BLBE					
Rating Date							6/Jun/11	6/Jun/11	6/Jun/11	6/Jun/11	6/Jun/11	6/Jun/11
Rating Type							RATING	RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10	1-10
1	diuron	80	DF	1.6	lb ai/a	FALL	1.0	3.0	1.0	6.0	3.3	5.0
	terbacil	80	WDG	1.6	lb ai/a	FALL						
	glyphosate	5.5	L	1	lb ai/a	FALL						
2	diuron	80	DF	1.6	lb ai/a	SPRING	1.0	4.3	4.3	6.3	6.0	6.0
	terbacil	80	WDG	1.6	lb ai/a	SPRING						
	glyphosate	5.5	L	1	lb ai/a	SPRING						
3	indaziflam	1.67	SC	0.065	lb ai/a	FALL	1.0	6.7	3.3	8.0	8.0	6.3
	glyphosate	5.5	L	1	lb ai/a	FALL						
4	indaziflam	1.67	SC	0.065	lb ai/a	SPRING	1.0	3.7	4.7	6.3	4.3	5.3
	glyphosate	5.5	L	1	lb ai/a	SPRING						
5	flumioxazin	51	WDG	0.383	lb ai/a	FALL	1.0	7.7	5.7	7.3	7.3	7.7
	glyphosate	5.5	L	1	lb ai/a	FALL						
6	flumioxazin	51	WDG	0.383	lb ai/a	SPRING	1.3	3.7	4.7	7.0	6.3	7.0
	glyphosate	5.5	L	1	lb ai/a	SPRING						
7	mesotrione	4	SC	0.188	lb ai/a	FALL	1.0	8.7	2.7	8.7	6.3	5.0
	simazine	90	WDG	4	lb ai/a	FALL						
	glyphosate	5.5	L	1	lb ai/a	FALL						
8	mesotrione	4	SC	0.188	lb ai/a	SPRING	1.0	4.7	1.7	8.3	9.0	2.7
	simazine	90	WDG	4	lb ai/a	SPRING						
	glyphosate	5.5	L	1	lb ai/a	SPRING						
9	rimsulfuron (M)	25	DF	0.063	lb ai/a	FALL	1.0	8.0	7.3	9.0	7.7	8.0
	glyphosate	5.5	L	1	lb ai/a	FALL						
10	rimsulfuron (M)	25	DF	0.063	lb ai/a	SPRING	1.0	4.0	2.0	5.3	5.7	5.7
	glyphosate	5.5	L	1	lb ai/a	SPRING						
11	hexazinone	2	L	1	lb ai/a	SPRING	1.0	5.7	7.3	5.7	4.3	2.0
	glyphosate	5.5	L	1	lb ai/a	SPRING						
12	Untreated						1.7	4.7	4.0	4.7	3.0	2.3
LSD (P=.05)							0.61	3.09	5.38	3.95	4.51	3.71
Standard Deviation							0.36	1.83	3.18	2.33	2.67	2.19
CV							33.13	33.87	78.29	33.89	44.84	41.68

Fall and Spring Weed Control Blueberry – Nye Farms 2010-2011

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	POIV	WHCL	YEWS	BLBE	FIVI	YEWS
Pest Code							POIV	WHCL	YEWS		FIVI	YEWS
Crop Code										BLBE		
Rating Date							6/Jun/11	6/Jun/11	6/Jun/11	14/Jul/11	14/Jul/11	14/Jul/11
Rating Type							RATING	RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10	1-10
1	diuron	80	DF	1.6	lb ai/a	FALL	7.0	8.7	2.3	1.0	2.3	1.3
	terbacil	80	WDG	1.6	lb ai/a	FALL						
	glyphosate	5.5	L	1	lb ai/a	FALL						
2	diuron	80	DF	1.6	lb ai/a	SPRING	7.0	10.0	4.3	1.0	4.3	4.0
	terbacil	80	WDG	1.6	lb ai/a	SPRING						
	glyphosate	5.5	L	1	lb ai/a	SPRING						
3	indaziflam	1.67	SC	0.065	lb ai/a	FALL	10.0	6.7	1.3	1.0	5.0	5.3
	glyphosate	5.5	L	1	lb ai/a	FALL						
4	indaziflam	1.67	SC	0.065	lb ai/a	SPRING	10.0	4.7	3.3	1.0	3.0	3.7
	glyphosate	5.5	L	1	lb ai/a	SPRING						
5	flumioxazin	51	WDG	0.383	lb ai/a	FALL	10.0	9.0	4.0	1.0	7.7	3.3
	glyphosate	5.5	L	1	lb ai/a	FALL						
6	flumioxazin	51	WDG	0.383	lb ai/a	SPRING	10.0	3.3	5.0	1.0	7.0	3.0
	glyphosate	5.5	L	1	lb ai/a	SPRING						
7	mesotrione	4	SC	0.188	lb ai/a	FALL	10.0	8.3	1.7	1.0	6.7	4.0
	simazine	90	WDG	4	lb ai/a	FALL						
	glyphosate	5.5	L	1	lb ai/a	FALL						
8	mesotrione	4	SC	0.188	lb ai/a	SPRING	10.0	9.7	3.0	1.0	6.0	5.7
	simazine	90	WDG	4	lb ai/a	SPRING						
	glyphosate	5.5	L	1	lb ai/a	SPRING						
9	rimsulfuron (M)	25	DF	0.063	lb ai/a	FALL	7.0	7.3	3.3	1.0	5.3	1.7
	glyphosate	5.5	L	1	lb ai/a	FALL						
10	rimsulfuron (M)	25	DF	0.063	lb ai/a	SPRING	10.0	4.0	3.7	1.0	4.7	2.7
	glyphosate	5.5	L	1	lb ai/a	SPRING						
11	hexazinone	2	L	1	lb ai/a	SPRING	7.0	8.0	3.7	1.0	3.3	2.7
	glyphosate	5.5	L	1	lb ai/a	SPRING						
12	Untreated						10.0	1.3	2.7	1.0	3.7	2.7
LSD (P=.05)							5.08	3.38	3.79	0.00	3.55	4.19
Standard Deviation							3.00	2.00	2.24	0.00	2.10	2.48
CV							33.33	29.6	70.09	0.0	42.67	74.27

Spring Weed Control in Blueberry – Getzoff Farms 2011

Project Code: 127-11-02 **Location: Glenn, MI**

Personnel: Bernard H. Zandstra, Rodney Tocco
Crop: Blueberry **Variety: Rubel**
Planting Method: Transplant **Planting Date: Unknown**
Spacing: 5 ft **Row Spacing: 10 ft**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 6 ft wide x 50 ft long

Soil Type: Oakville Fine Sand **OM: 5.8%** **pH: 4.6**
Sand: 78% **Silt: 7%** **Clay: 15%** **CEC: 13.4**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
EPRE	5/2/11	1:00 pm	50/52	F	Moist	1-3 NW	43	5% Cloudy	N
LPRE	5/10/11	10:30 am	67/55	F	Damp	2-3 SE	48	100%Cloudy	N
EPOS	6/6/11	2:00 pm	78/71	F	Damp	0-1 SW	55	100%Cloudy	N
LPOS	6/27/11	11:30 am	67/69	F	Damp	2 SE	82	100%Cloudy	Y

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
5/2	BLBE = blueberry		Pre bud break	100%
5/2	RSBG = roughstalk bluegrass	3-5″		Many
5/2	BHPL = buckhorn plantain	3-5″		Moderate
5/2	BRPL = broadleaf plantain	2-5″, 2-4″		Moderate
5/2	GORO = goldenrod	3-6″		Moderate
5/2	HOWE = horseweed	1-3″, 1″		Moderate
5/2	PUDN = purple deadnettle	3-4″		Many
5/2	RESO = red sorrel	1-3″		Moderate
5/2	WHCA = white campion	3-5″		Moderate
5/10	BLBE = blueberry		Small leaves	100%
5/10	QUGR = quackgrass	4-6″		Few
5/10	RSBG = roughstalk bluegrass	3-5″		Many
5/10	GORO = goldenrod	3-4″		Few
5/10	MECR = mouseear cress	3-6″, 3-6″		Moderate
5/10	PUDN = purple deadnettle	3-5″		Moderate
6/6	BLBE = blueberry		Late bloom	
6/6	HAFE = hard fescue	6-12″		Few
6/6	LACG = large crabgrass			
6/6	COPU = common purslane	12-15″		Few
6/6	COPW = common pokeweed			
6/6	GORO = goldenrod	6-12″		Moderate
6/6	POIV = poison ivy	6-12″		Few
6/6	RESO = red sorrel	3-6″		Many
6/6	TRCV = trailing crownvetch	12-24″, 1-2″		Moderate
6/27	BLBE = blueberry		Green fruit	
6/27	CWBS = catchweed bedstraw	15-24″		Few
6/27	HAFE = hard fescue	6-12″		Few
6/27	COPW = common pokeweed	15-20″		Few
6/27	GORO = goldenrod	12-18″		Moderate
6/27	RESO = red sorrel	5-10″		Many

Notes and Comments
1. Spray applied with 2 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2

Spring Weed Control in Blueberry – Getzoff Farms 2011

backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.

Spring Weed Control in Blueberry – Getzoff Farms 2011

Spring Weed Control in Blueberry - Getzoff 2011

Trial ID: 127-11-02 Protocol ID: 127-11-02
Location: Glenn, MI Study Director: Rodney Tocco
Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	BLBE	HAFE	QUGR	COPW	GORO	POIV	RESO	TRCV
Pest Code														
Crop Code							BLBE							
Rating Date							6/Jun/11	6/Jun/11	6/Jun/11	6/Jun/11	6/Jun/11	6/Jun/11	6/Jun/11	6/Jun/11
Rating Type							RATING	RATING	RATING	RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10	1-10	1-10	1-10
1	hexazinone	2	L	1	lb ai/a	EPRE	1.3	8.7	8.7	10.0	5.7	10.0	10.0	8.3
2	hexazinone	2	L	1	lb ai/a	EPRE	1.0	9.0	9.3	7.3	5.0	10.0	5.0	10.0
	rimsulfuron (M)	25	DF	0.063	lb ai/a	EPOS								
	NIS	100	SL	0.25	% v/v	EPOS								
3	diuron	80	DF	1.6	lb ai/a	EPRE	1.0	7.7	8.7	7.3	7.0	10.0	5.7	10.0
	terbacil	80	WDG	1.6	lb ai/a	EPRE								
	rimsulfuron (M)	25	DF	0.063	lb ai/a	EPOS								
	NIS	100	SL	0.25	% v/v	EPOS								
4	mesotrione	4	SC	0.188	lb ai/a	LPRE	1.0	9.3	9.0	10.0	9.0	7.0	3.3	10.0
	rimsulfuron (M)	25	DF	0.063	lb ai/a	LPRE								
	COC	100	SL	1.0	% v/v	LPRE								
5	simazine	90	WDG	2	lb ai/a	EPRE	1.3	7.3	8.3	10.0	6.3	10.0	2.7	10.0
	halosulfuron	75	WG	0.023	lb ai/a	LPOS								
	clethodim	0.97	EC	0.09	lb ai/a	LPOS								
	NIS	100	SL	0.25	% v/v	LPOS								
6	simazine	90	WDG	2	lb ai/a	EPRE	1.0	7.0	8.7	7.7	6.3	7.0	6.7	7.7
	halosulfuron	75	WG	0.047	lb ai/a	LPOS								
	clethodim	0.97	EC	0.09	lb ai/a	LPOS								
	NIS	100	SL	0.25	% v/v	LPOS								
7	simazine	90	WDG	2	lb ai/a	EPRE	1.0	7.7	8.0	9.0	4.3	10.0	4.3	4.3
	clopyralid	3	L	0.12	lb ai/a	EPOS								
	sethoxydim	1.53	EC	0.19	lb ai/a	EPOS								
8	carfentrazone	0.35	SE	0.027	lb ai/a	EPOS	1.3	6.0	9.0	10.0	4.7	10.0	4.0	10.0
	sulfentrazone	3.15	SE	0.243	lb ai/a	EPOS								
9	carfentrazone	0.35	SE	0.027	lb ai/a	EPOS	1.7	4.3	8.3	10.0	4.3	10.0	1.7	10.0
	sulfentrazone	3.15	SE	0.243	lb ai/a	EPOS								
	oryzalin	4	L	4.0	lb ai/a	EPOS								
10	terbacil	80	WDG	1.6	lb ai/a	EPRE	1.0	8.7	9.3	7.7	6.3	8.3	9.0	10.0
	diuron	80	DF	1.6	lb ai/a	EPRE								
11	terbacil	80	WDG	1.6	lb ai/a	EPRE	1.3	8.7	9.7	8.3	4.7	10.0	5.0	8.3
	mesotrione	4	SC	0.188	lb ai/a	EPRE								
12	Untreated						1.0	4.3	7.0	9.3	7.7	7.0	7.0	7.0
LSD (P=.05)							0.74	2.59	2.44	4.28	6.21	4.34	6.05	4.32
Standard Deviation							0.44	1.53	1.44	2.53	3.67	2.56	3.57	2.55
CV							37.3	20.73	16.65	28.44	61.66	28.11	66.66	28.95

Spring Weed Control in Blueberry – Getzoff Farms 2011

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	BLBE	HAFE	COPW	GORO	RESO	TRCV	BLBE
Pest Code													
Crop Code							BLBE						BLBE
Rating Date							27/Jun/11	27/Jun/11	27/Jun/11	27/Jun/11	27/Jun/11	27/Jun/11	14/Jul/11
Rating Type							RATING	RATING	RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10	1-10	1-10
1	hexazinone	2	L	1	lb ai/a	EPRE	1.3	10.0	10.0	9.3	10.0	7.3	1.0
2	hexazinone	2	L	1	lb ai/a	EPRE	1.0	10.0	9.0	9.3	9.3	10.0	2.0
	rimsulfuron (M)	25	DF	0.063	lb ai/a	EPOS							
	NIS	100	SL	0.25	% v/v	EPOS							
3	diuron	80	DF	1.6	lb ai/a	EPRE	1.0	10.0	9.0	9.3	8.7	10.0	1.0
	terbacil	80	WDG	1.6	lb ai/a	EPRE							
	rimsulfuron (M)	25	DF	0.063	lb ai/a	EPOS							
	NIS	100	SL	0.25	% v/v	EPOS							
4	mesotrione	4	SC	0.188	lb ai/a	LPRE	2.0	8.3	9.7	7.7	5.7	8.3	2.0
	rimsulfuron (M)	25	DF	0.063	lb ai/a	LPRE							
	COC	100	SL	1.0	% v/v	LPRE							
5	simazine	90	WDG	2	lb ai/a	EPRE	1.7	7.7	7.0	6.7	2.7	6.7	1.3
	halosulfuron	75	WG	0.023	lb ai/a	LPOS							
	clethodim	0.97	EC	0.09	lb ai/a	LPOS							
	NIS	100	SL	0.25	% v/v	LPOS							
6	simazine	90	WDG	2	lb ai/a	EPRE	1.0	7.7	7.0	7.7	5.7	7.0	1.3
	halosulfuron	75	WG	0.047	lb ai/a	LPOS							
	clethodim	0.97	EC	0.09	lb ai/a	LPOS							
	NIS	100	SL	0.25	% v/v	LPOS							
7	simazine	90	WDG	2	lb ai/a	EPRE	1.0	7.7	7.7	7.3	7.0	9.0	1.0
	clopyralid	3	L	0.12	lb ai/a	EPOS							
	sethoxydim	1.53	EC	0.19	lb ai/a	EPOS							
8	carfentrazone	0.35	SE	0.027	lb ai/a	EPOS	1.0	7.0	10.0	5.7	5.7	10.0	1.0
	sulfentrazone	3.15	SE	0.243	lb ai/a	EPOS							
9	carfentrazone	0.35	SE	0.027	lb ai/a	EPOS	1.7	2.7	10.0	5.3	9.3	9.7	1.0
	sulfentrazone	3.15	SE	0.243	lb ai/a	EPOS							
	oryzalin	4	L	4.0	lb ai/a	EPOS							
10	terbacil	80	WDG	1.6	lb ai/a	EPRE	1.0	9.7	6.7	10.0	9.0	10.0	1.0
	diuron	80	DF	1.6	lb ai/a	EPRE							
11	terbacil	80	WDG	1.6	lb ai/a	EPRE	1.0	10.0	7.0	6.7	8.0	9.3	1.3
	mesotrione	4	SC	0.188	lb ai/a	EPRE							
12	Untreated						1.0	4.7	7.0	4.7	1.0	7.0	1.3
LSD (P=.05)							0.86	1.95	5.68	4.88	3.85	5.50	0.90
Standard Deviation							0.51	1.15	3.36	2.88	2.27	3.25	0.53
CV							41.32	14.52	40.28	38.56	33.24	37.37	41.81

Spring Weed Control in Blueberry – Getzoff Farms 2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	HAFE	LACG	GORO	RESO	BLBE	LACG
Pest Code												
Crop Code												
Rating Date							14/Jul/11	14/Jul/11	14/Jul/11	14/Jul/11	12/Aug/11	12/Aug/11
Rating Type							RATING	RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10	1-10
1	hexazinone	2	L	1	lb ai/a	EPRE	10.0	8.7	9.0	10.0	1.0	6.7
2	hexazinone	2	L	1	lb ai/a	EPRE	10.0	9.3	10.0	9.3	1.3	8.0
	rimsulfuron (M)	25	DF	0.063	lb ai/a	EPOS						
	NIS	100	SL	0.25	% v/v	EPOS						
3	diuron	80	DF	1.6	lb ai/a	EPRE	10.0	10.0	9.0	8.0	1.7	9.3
	terbacil	80	WDG	1.6	lb ai/a	EPRE						
	rimsulfuron (M)	25	DF	0.063	lb ai/a	EPOS						
	NIS	100	SL	0.25	% v/v	EPOS						
4	mesotrione	4	SC	0.188	lb ai/a	LPRE	9.3	1.3	9.0	4.3	2.0	1.0
	rimsulfuron (M)	25	DF	0.063	lb ai/a	LPRE						
	COC	100	SL	1.0	% v/v	LPRE						
5	simazine	90	WDG	2	lb ai/a	EPRE	10.0	8.3	7.7	5.0	1.0	4.3
	halosulfuron	75	WG	0.023	lb ai/a	LPOS						
	clethodim	0.97	EC	0.09	lb ai/a	LPOS						
	NIS	100	SL	0.25	% v/v	LPOS						
6	simazine	90	WDG	2	lb ai/a	EPRE	8.7	10.0	9.3	6.7	1.0	5.3
	halosulfuron	75	WG	0.047	lb ai/a	LPOS						
	clethodim	0.97	EC	0.09	lb ai/a	LPOS						
	NIS	100	SL	0.25	% v/v	LPOS						
7	simazine	90	WDG	2	lb ai/a	EPRE	8.0	4.3	8.3	8.7	1.3	3.7
	clopyralid	3	L	0.12	lb ai/a	EPOS						
	sethoxydim	1.53	EC	0.19	lb ai/a	EPOS						
8	carfentrazone	0.35	SE	0.027	lb ai/a	EPOS	9.0	1.7	7.3	10.0	1.0	1.3
	sulfentrazone	3.15	SE	0.243	lb ai/a	EPOS						
9	carfentrazone	0.35	SE	0.027	lb ai/a	EPOS	8.3	3.3	8.0	9.3	1.0	2.3
	sulfentrazone	3.15	SE	0.243	lb ai/a	EPOS						
	oryzalin	4	L	4.0	lb ai/a	EPOS						
10	terbacil	80	WDG	1.6	lb ai/a	EPRE	10.0	10.0	6.3	9.0	1.0	8.3
	diuron	80	DF	1.6	lb ai/a	EPRE						
11	terbacil	80	WDG	1.6	lb ai/a	EPRE	10.0	8.3	6.3	6.7	2.7	7.3
	mesotrione	4	SC	0.188	lb ai/a	EPRE						
12	Untreated						8.0	1.3	7.0	3.7	1.0	2.3
LSD (P=.05)							1.32	2.94	5.35	3.83	1.36	3.89
Standard Deviation							0.78	1.74	3.16	2.26	0.80	2.30
CV							8.37	27.2	38.98	29.94	60.18	45.96

Postemergence Weed Control in Cherry & Plum – HTRC 2011

Project Code: 128-11-05 **Location: East Lansing, MI**

Personnel: Bernard H. Zandstra, Rodney Tocco
Crop: Cherry, Plum **Variety: Montmorency, Stanley**
Planting Method: Transplant **Planting Date: 2007**
Spacing: 16 ft **Row Spacing: 20 ft**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 11 ft wide x 30 ft long

Soil Type: Marlette Fine Sandy Loam **OM: 3.1%** **pH: 7.5**
Sand: 58% **Silt: 36%** **Clay: 6.0%** **CEC: 7.1**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
EPOS	6/2/11	2:30 pm	74/73	F	Good	1 W	43	0% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
6/2	CHERRY, PLUM			
6/2	BYGR = barnyardgrass	12-18″	4-6 LS	Many
6/2	LACG = large crabgrass	3-5″		Few
6/2	QUGR = quackgrass	12-16″		Moderate
6/2	ALFA = alfalfa	12-18″		Many
6/2	BHPL = buckhorn plantain	6-10″		Moderate
6/2	CATH = Canada thistle	10-24″		Many
6/2	COMW = common milkweed	6-10″		Many
6/2	DAND = dandelion	6-10″		Moderate
6/2	FAPA = fall panicum	2-6″		Moderate
6/2	VIPW = Virginia pepperweed	10-12″		Moderate
6/2	WICA = wild carrot	3-6″		Many
6/2	WIGR = wild grape	2-3′, 4-6″		Moderate
6/2	YENS = yellow nutsedge	4-6″		Few

Notes and Comments
1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO_2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.

Postemergence Weed Control in Cherry & Plum – HTRC 2011

Postemergence Weed Control in Cherry & Plum - HTRC 2011

Trial ID: 128-11-05 Protocol ID: 128-11-05
Location: East Lansing, MI Study Director: Rodney Tocco
Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	CHERRY	PLUM	ORGR	QUGR	ALFA	BHPL
Pest Code									ORGR	QUGR	ALFA	BHPL
Crop Code							CHERRY	PLUM				
Rating Date							15/Jun/11	15/Jun/11	15/Jun/11	15/Jun/11	15/Jun/11	15/Jun/11
Rating Type							RATING	RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10	1-10
1	glyphosate	5.5	L	0.95	lb ai/a	EPOS	0.0	1.0	9.3	10.0	8.7	5.3
	ammonium sulfate	100	SG	3.4	lb ai/a	EPOS						
2	experimental	0.417	EC	0.125	lb ai/a	EPOS	1.0	0.0	9.0	9.0	6.0	8.7
	NIS	100	SL	0.25	% v/v	EPOS						
3	halosulfuron	75	WG	0.047	lb ai/a	EPOS	0.0	1.0	5.0	3.7	4.3	1.7
	fluazifop-p-butyl	2	EC	0.25	lb ai/a	EPOS						
	NIS	100	SL	0.25	% v/v	EPOS						
4	experimental	0.417	EC	0.188	lb ai/a	EPOS	1.0	0.0	9.7	9.7	9.7	9.3
	NIS	100	SL	0.25	% v/v	EPOS						
5	saflufenacil	70	WG	0.044	lb ai/a	EPOS	0.0	1.0	4.7	5.3	8.0	7.7
	clethodim	0.97	EC	0.12	lb ai/a	EPOS						
	MSO	100	SL	1	% v/v	EPOS						
	ammonium sulfate	100	SG	3.5	lb ai/a	EPOS						
6	experimental	0.417	EC	0.25	lb ai/a	EPOS	1.0	0.0	10.0	10.0	10.0	8.7
	NIS	100	SL	0.25	% v/v	EPOS						
7	paraquat	2	L	1	lb ai/a	EPOS	0.0	1.0	10.0	10.0	8.7	7.0
	NIS	100	SL	0.25	% v/v	EPOS						
8	experimental	0.417	EC	.375	lb ai/a	EPOS	1.0	0.0	10.0	10.0	9.0	8.3
	NIS	100	SL	0.25	% v/v	EPOS						
9	paraquat	2	L	1	lb ai/a	EPOS	0.0	1.0	10.0	10.0	9.3	5.3
	pyraflufen	0.177	SC	0.00553	lb ai/a	EPOS						
	NIS	100	SL	0.25	% v/v	EPOS						
10	rimsulfuron (M)	25	DF	0.063	lb ai/a	EPOS	1.0	0.0	7.7	7.0	5.7	7.0
	pendimethalin	3.8	CS	2.85	lb ai/a	EPOS						
	glyphosate	5.5	L	0.95	lb ai/a	EPOS						
	NIS	100	SL	0.25	% v/v	EPOS						
11	glufosinate	2.34	L	1.17	lb ai/a	EPOS	0.0	1.0	10.0	9.7	7.0	9.3
	NIS	100	SL	0.25	% v/v	EPOS						
12	Untreated						1.0	0.0	1.0	1.0	1.0	0.7
13	glufosinate	2.34	L	1.17	lb ai/a	EPOS	0.0	1.0	10.0	10.0	10.0	9.3
	pyraflufen	0.177	SC	0.00553	lb ai/a	EPOS						
	NIS	100	SL	0.25	% v/v	EPOS						
14	pyraflufen	0.177	SC	0.00553	lb ai/a	EPOS	1.0	0.0	1.7	1.0	4.7	3.7
	NIS	100	SL	0.25	% v/v	EPOS						
15	pyraflufen	0.177	SC	0.0553	lb ai/a	EPOS	0.0	1.0	1.0	1.0	3.0	1.0
	NIS	100	SL	0.25	% v/v	EPOS						
16	carfentrazone	0.35	SE	0.027	lb ai/a	EPOS	1.0	0.0	3.7	5.3	6.7	8.0
	sulfentrazone	3.15	SE	0.243	lb ai/a	EPOS						
	fluazifop-p-butyl	2	EC	0.25	lb ai/a	EPOS						
	COC	100	SL	1	% v/v	EPOS						
LSD (P=.05)							0.00	0.00	2.34	2.26	4.09	3.22
Standard Deviation							0.00	0.00	1.40	1.35	2.45	1.93
CV							0.0	0.0	19.91	19.24	35.17	30.59

Postemergence Weed Control in Cherry & Plum – HTRC 2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	CATH	COMW	DAND	VIPW	WICA	
Pest Code												
Crop Code												CHERRY
Rating Date							15/Jun/11	15/Jun/11	15/Jun/11	15/Jun/11	15/Jun/11	30/Jun/11
Rating Type							RATING	RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10	1-10
1	glyphosate	5.5	L	0.95	lb ai/a	EPOS	9.3	3.3	9.7	8.3	9.0	0.0
	ammonium sulfate	100	SG	3.4	lb ai/a	EPOS						
2	experimental	0.417	EC	0.125	lb ai/a	EPOS	0.0	3.0	9.0	9.7	8.7	1.0
	NIS	100	SL	0.25	% v/v	EPOS						
3	halosulfuron	75	WG	0.047	lb ai/a	EPOS	1.0	0.0	7.0	6.3	5.3	0.0
	fluazifop-p-butyl	2	EC	0.25	lb ai/a	EPOS						
	NIS	100	SL	0.25	% v/v	EPOS						
4	experimental	0.417	EC	0.188	lb ai/a	EPOS	0.0	5.3	10.0	10.0	7.7	1.0
	NIS	100	SL	0.25	% v/v	EPOS						
5	saflufenacil	70	WG	0.044	lb ai/a	EPOS	0.0	2.0	7.7	6.7	2.7	0.0
	clethodim	0.97	EC	0.12	lb ai/a	EPOS						
	MSO	100	SL	1	% v/v	EPOS						
	ammonium sulfate	100	SG	3.5	lb ai/a	EPOS						
6	experimental	0.417	EC	0.25	lb ai/a	EPOS	5.3	3.3	10.0	3.3	9.0	1.0
	NIS	100	SL	0.25	% v/v	EPOS						
7	paraquat	2	L	1	lb ai/a	EPOS	5.7	5.7	8.7	3.3	9.0	0.0
	NIS	100	SL	0.25	% v/v	EPOS						
8	experimental	0.417	EC	.375	lb ai/a	EPOS	2.0	0.0	10.0	6.7	9.7	1.0
	NIS	100	SL	0.25	% v/v	EPOS						
9	paraquat	2	L	1	lb ai/a	EPOS	0.0	0.0	10.0	6.7	10.0	0.0
	pyraflufen	0.177	SC	0.00553	lb ai/a	EPOS						
	NIS	100	SL	0.25	% v/v	EPOS						
10	rimsulfuron (M)	25	DF	0.063	lb ai/a	EPOS	0.0	1.0	7.7	4.7	5.0	1.0
	pendimethalin	3.8	CS	2.85	lb ai/a	EPOS						
	glyphosate	5.5	L	0.95	lb ai/a	EPOS						
	NIS	100	SL	0.25	% v/v	EPOS						
11	glufosinate	2.34	L	1.17	lb ai/a	EPOS	3.3	3.3	10.0	10.0	8.0	0.0
	NIS	100	SL	0.25	% v/v	EPOS						
12	Untreated						0.3	0.0	1.0	1.0	1.0	1.0
13	glufosinate	2.34	L	1.17	lb ai/a	EPOS	3.3	3.3	10.0	6.3	8.3	0.0
	pyraflufen	0.177	SC	0.00553	lb ai/a	EPOS						
	NIS	100	SL	0.25	% v/v	EPOS						
14	pyraflufen	0.177	SC	0.00553	lb ai/a	EPOS	2.0	0.0	4.3	7.0	3.3	1.0
	NIS	100	SL	0.25	% v/v	EPOS						
15	pyraflufen	0.177	SC	0.0553	lb ai/a	EPOS	0.3	1.0	6.7	10.0	3.7	0.0
	NIS	100	SL	0.25	% v/v	EPOS						
16	carfentrazone	0.35	SE	0.027	lb ai/a	EPOS	0.0	2.3	8.0	5.3	5.3	1.0
	sulfentrazone	3.15	SE	0.243	lb ai/a	EPOS						
	fluazifop-p-butyl	2	EC	0.25	lb ai/a	EPOS						
	COC	100	SL	1	% v/v	EPOS						
LSD (P=.05)							4.65	5.71	2.80	5.91	3.84	0.00
Standard Deviation							2.79	3.42	1.68	3.55	2.30	0.00
CV							136.54	162.68	20.7	53.89	34.85	0.0

Postemergence Weed Control in Cherry & Plum – HTRC 2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	PLUM	QUGR	ALFA	BHPL	CATH	COMW
Pest Code								QUGR	ALFA	BHPL	CATH	COMW
Crop Code							PLUM					
Rating Date							30/Jun/11	30/Jun/11	30/Jun/11	30/Jun/11	30/Jun/11	30/Jun/11
Rating Type							RATING	RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10	1-10
1	glyphosate	5.5	L	0.95	lb ai/a	EPOS	1.0	10.0	8.7	10.0	6.0	3.3
	ammonium sulfate	100	SG	3.4	lb ai/a	EPOS						
2	experimental	0.417	EC	0.125	lb ai/a	EPOS	0.0	8.0	4.7	7.3	3.3	1.7
	NIS	100	SL	0.25	% v/v	EPOS						
3	halosulfuron	75	WG	0.047	lb ai/a	EPOS	1.0	4.7	3.7	2.0	4.0	3.3
	fluazifop-p-butyl	2	EC	0.25	lb ai/a	EPOS						
	NIS	100	SL	0.25	% v/v	EPOS						
4	experimental	0.417	EC	0.188	lb ai/a	EPOS	0.0	9.0	3.3	7.0	2.7	1.0
	NIS	100	SL	0.25	% v/v	EPOS						
5	saflufenacil	70	WG	0.044	lb ai/a	EPOS	1.0	7.3	1.7	3.3	0.0	1.3
	clethodim	0.97	EC	0.12	lb ai/a	EPOS						
	MSO	100	SL	1	% v/v	EPOS						
	ammonium sulfate	100	SG	3.5	lb ai/a	EPOS						
6	experimental	0.417	EC	0.25	lb ai/a	EPOS	0.0	9.0	3.3	7.7	2.7	0.0
	NIS	100	SL	0.25	% v/v	EPOS						
7	paraquat	2	L	1	lb ai/a	EPOS	1.0	9.0	2.0	2.7	5.0	1.7
	NIS	100	SL	0.25	% v/v	EPOS						
8	experimental	0.417	EC	.375	lb ai/a	EPOS	0.0	10.0	4.3	7.3	2.7	0.0
	NIS	100	SL	0.25	% v/v	EPOS						
9	paraquat	2	L	1	lb ai/a	EPOS	1.0	9.3	2.7	2.7	0.0	0.0
	pyraflufen	0.177	SC	0.00553	lb ai/a	EPOS						
	NIS	100	SL	0.25	% v/v	EPOS						
10	rimsulfuron (M)	25	DF	0.063	lb ai/a	EPOS	0.0	9.0	4.0	8.0	3.3	1.7
	pendimethalin	3.8	CS	2.85	lb ai/a	EPOS						
	glyphosate	5.5	L	0.95	lb ai/a	EPOS						
	NIS	100	SL	0.25	% v/v	EPOS						
11	glufosinate	2.34	L	1.17	lb ai/a	EPOS	1.0	10.0	5.3	5.3	2.7	0.0
	NIS	100	SL	0.25	% v/v	EPOS						
12	Untreated						0.0	1.0	1.0	1.0	1.0	1.0
13	glufosinate	2.34	L	1.17	lb ai/a	EPOS	1.0	10.0	3.3	7.0	0.0	0.0
	pyraflufen	0.177	SC	0.00553	lb ai/a	EPOS						
	NIS	100	SL	0.25	% v/v	EPOS						
14	pyraflufen	0.177	SC	0.00553	lb ai/a	EPOS	0.0	5.0	1.0	2.7	1.3	0.0
	NIS	100	SL	0.25	% v/v	EPOS						
15	pyraflufen	0.177	SC	0.0553	lb ai/a	EPOS	1.0	4.0	0.7	1.0	0.3	0.3
	NIS	100	SL	0.25	% v/v	EPOS						
16	carfentrazone	0.35	SE	0.027	lb ai/a	EPOS	0.0	6.7	1.7	5.7	2.3	0.7
	sulfentrazone	3.15	SE	0.243	lb ai/a	EPOS						
	fluazifop-p-butyl	2	EC	0.25	lb ai/a	EPOS						
	COC	100	SL	1	% v/v	EPOS						
LSD (P=.05)							0.00	2.43	3.52	2.83	6.18	3.88
Standard Deviation							0.00	1.46	2.11	1.70	3.71	2.33
CV							0.0	19.12	65.86	33.72	158.79	232.89

Postemergence Weed Control in Cherry & Plum – HTRC 2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	DAND	WICA	CHERRY	PLUM	LACG	QUGR	ALFA
Pest Code							DAND	WICA			LACG	QUGR	ALFA
Crop Code									CHERRY	PLUM			
Rating Date							30/Jun/11	30/Jun/11	8/Aug/11	8/Aug/11	8/Aug/11	8/Aug/11	8/Aug/11
Rating Type							RATING	RATING	RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10	1-10	1-10
1	glyphosate	5.5	L	0.95	lb ai/a	EPOS	9.7	9.7		1.3	1.0	7.7	8.7
	ammonium sulfate	100	SG	3.4	lb ai/a	EPOS							
2	experimental	0.417	EC	0.125	lb ai/a	EPOS	6.7	6.7	1.0		10.0	5.3	7.0
	NIS	100	SL	0.25	% v/v	EPOS							
3	halosulfuron	75	WG	0.047	lb ai/a	EPOS	5.7	7.7		1.0	10.0	8.0	4.0
	fluazifop-p-butyl	2	EC	0.25	lb ai/a	EPOS							
	NIS	100	SL	0.25	% v/v	EPOS							
4	experimental	0.417	EC	0.188	lb ai/a	EPOS	7.0	6.0	1.0		10.0	8.0	4.0
	NIS	100	SL	0.25	% v/v	EPOS							
5	saflufenacil	70	WG	0.044	lb ai/a	EPOS	4.0	1.0		1.3	8.3	6.7	1.7
	clethodim	0.97	EC	0.12	lb ai/a	EPOS							
	MSO	100	SL	1	% v/v	EPOS							
	ammonium sulfate	100	SG	3.5	lb ai/a	EPOS							
6	experimental	0.417	EC	0.25	lb ai/a	EPOS	8.0	5.7	1.0		9.3	7.0	6.0
	NIS	100	SL	0.25	% v/v	EPOS							
7	paraquat	2	L	1	lb ai/a	EPOS	6.0	7.7		1.7	2.7	6.3	5.0
	NIS	100	SL	0.25	% v/v	EPOS							
8	experimental	0.417	EC	.375	lb ai/a	EPOS	9.0	7.3	1.0		10.0	8.0	2.0
	NIS	100	SL	0.25	% v/v	EPOS							
9	paraquat	2	L	1	lb ai/a	EPOS	6.3	9.7		1.3	4.0	6.3	1.0
	pyraflufen	0.177	SC	0.00553	lb ai/a	EPOS							
	NIS	100	SL	0.25	% v/v	EPOS							
10	rimsulfuron (M)	25	DF	0.063	lb ai/a	EPOS	9.0	5.7	1.0		10.0	9.7	5.0
	pendimethalin	3.8	CS	2.85	lb ai/a	EPOS							
	glyphosate	5.5	L	0.95	lb ai/a	EPOS							
	NIS	100	SL	0.25	% v/v	EPOS							
11	glufosinate	2.34	L	1.17	lb ai/a	EPOS	10.0	7.3		1.0	3.0	7.7	4.3
	NIS	100	SL	0.25	% v/v	EPOS							
12	Untreated						1.0	1.0	1.0		10.0	6.3	5.3
13	glufosinate	2.34	L	1.17	lb ai/a	EPOS	8.3	8.0		1.0	1.7	7.3	5.0
	pyraflufen	0.177	SC	0.00553	lb ai/a	EPOS							
	NIS	100	SL	0.25	% v/v	EPOS							
14	pyraflufen	0.177	SC	0.00553	lb ai/a	EPOS	5.3	1.7	1.3		10.0	7.0	2.3
	NIS	100	SL	0.25	% v/v	EPOS							
15	pyraflufen	0.177	SC	0.0553	lb ai/a	EPOS	7.3	1.0		1.7	6.7	2.7	7.7
	NIS	100	SL	0.25	% v/v	EPOS							
16	carfentrazone	0.35	SE	0.027	lb ai/a	EPOS	5.0	2.3	1.0		8.7	7.7	4.7
	sulfentrazone	3.15	SE	0.243	lb ai/a	EPOS							
	fluazifop-p-butyl	2	EC	0.25	lb ai/a	EPOS							
	COC	100	SL	1	% v/v	EPOS							
LSD (P=.05)							2.50	3.67	0.36	1.05	3.03	2.98	6.38
Standard Deviation							1.50	2.20	0.20	0.60	1.82	1.78	3.83
CV							22.17	39.84	19.6	46.27	25.18	25.57	83.13

Postemergence Weed Control in Cherry & Plum – HTRC 2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	BHPL WICA 8/Aug/11 8/Aug/11 RATING 1-10	WICA 15/Sep/11 RATING 1-10	CHERRY 15/Sep/11 RATING 1-10	PLUM 15/Sep/11 RATING 1-10	FAPA 15/Sep/11 RATING 1-10
1	glyphosate	5.5	L	0.95	lb ai/a	EPOS	9.7	9.0		1.7	1.0
	ammonium sulfate	100	SG	3.4	lb ai/a	EPOS					
2	experimental	0.417	EC	0.125	lb ai/a	EPOS	2.3	2.7	1.0		10.0
	NIS	100	SL	0.25	% v/v	EPOS					
3	halosulfuron	75	WG	0.047	lb ai/a	EPOS	4.3	8.7		1.0	10.0
	fluazifop-p-butyl	2	EC	0.25	lb ai/a	EPOS					
	NIS	100	SL	0.25	% v/v	EPOS					
4	experimental	0.417	EC	0.188	lb ai/a	EPOS	5.7	2.0	1.0	1.3	10.0
	NIS	100	SL	0.25	% v/v	EPOS					
5	saflufenacil	70	WG	0.044	lb ai/a	EPOS	6.0	1.0		1.0	10.0
	clethodim	0.97	EC	0.12	lb ai/a	EPOS					
	MSO	100	SL	1	% v/v	EPOS					
	ammonium sulfate	100	SG	3.5	lb ai/a	EPOS					
6	experimental	0.417	EC	0.25	lb ai/a	EPOS	5.3	3.7	1.0		10.0
	NIS	100	SL	0.25	% v/v	EPOS					
7	paraquat	2	L	1	lb ai/a	EPOS	4.7	9.0		2.3	1.7
	NIS	100	SL	0.25	% v/v	EPOS					
8	experimental	0.417	EC	.375	lb ai/a	EPOS	7.7	7.0	1.0		10.0
	NIS	100	SL	0.25	% v/v	EPOS					
9	paraquat	2	L	1	lb ai/a	EPOS	1.0	9.7		1.0	2.0
	pyraflufen	0.177	SC	0.00553	lb ai/a	EPOS					
	NIS	100	SL	0.25	% v/v	EPOS					
10	rimsulfuron (M)	25	DF	0.063	lb ai/a	EPOS	10.0	7.3	1.0		10.0
	pendimethalin	3.8	CS	2.85	lb ai/a	EPOS					
	glyphosate	5.5	L	0.95	lb ai/a	EPOS					
	NIS	100	SL	0.25	% v/v	EPOS					
11	glufosinate	2.34	L	1.17	lb ai/a	EPOS	4.7	3.7		1.0	4.7
	NIS	100	SL	0.25	% v/v	EPOS					
12	Untreated						7.7	5.0	1.0		10.0
13	glufosinate	2.34	L	1.17	lb ai/a	EPOS	2.7	5.7		1.0	1.7
	pyraflufen	0.177	SC	0.00553	lb ai/a	EPOS					
	NIS	100	SL	0.25	% v/v	EPOS					
14	pyraflufen	0.177	SC	0.00553	lb ai/a	EPOS	7.3	1.7	1.0		9.3
	NIS	100	SL	0.25	% v/v	EPOS					
15	pyraflufen	0.177	SC	0.0553	lb ai/a	EPOS	4.3	1.0		5.7	7.7
	NIS	100	SL	0.25	% v/v	EPOS					
16	carfentrazone	0.35	SE	0.027	lb ai/a	EPOS	4.3	3.3	1.0		10.0
	sulfentrazone	3.15	SE	0.243	lb ai/a	EPOS					
	fluazifop-p-butyl	2	EC	0.25	lb ai/a	EPOS					
	COC	100	SL	1	% v/v	EPOS					
LSD (P=.05)							3.22	4.13	0.00	2.82	2.75
Standard Deviation							1.93	2.48	0.00	1.61	1.65
CV							35.28	49.35	0.0	90.72	22.39

Weed Control in Cherry with Alion – HTRC 2011

Project Code: 128-11-06 **Location: East Lansing, MI**

Personnel: Bernard H. Zandstra, Rodney Tocco
Crop: Cherry **Variety: Montmorency**
Planting Method: Transplant **Planting Date: 5/5/1999**
Spacing: 15 ft **Row Spacing: 20 ft**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 11 ft wide x 50 ft long

Soil Type: Marlette Fine Sandy Loam **OM: 3.3%** **pH: 5.5**
Sand: 52% **Silt: 27%** **Clay: 21%** **CEC: 9.1**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
LPRE	5/11/11	4:00 pm	80/70	F	Dry	1-3 S	47	100%Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
5/11	CHERRY		3-5 LS, Flowering	
5/11	HAFE = hard fescue			
5/11	LACG = large crabgrass	3-6″		Many
5/11	YEFT = yellow foxtail			
5/11	ALFA = alfalfa	3-8″, 4-10″		Moderate
5/11	CABR = California brome	4-6″		Moderate
5/11	DAND = dandelion	4-7″		Moderate
5/11	HOWE = horseweed	1-3″		Few
5/11	GORO = goldenrod	1-3″, 2-3″		Few
5/11	MECR = mouseear cress	2-4″		Many
5/11	RECL = red clover			
5/11	WHCL = white clover	4-12″		Many
5/11	WICA = wild carrot	2-3″, 1-3″		Few

Notes and Comments
1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.

Weed Control in Cherry with Alion – HTRC 2011

Weed Control in Cherry with Alion - HTRC 2011

Trial ID: 128-11-06 Protocol ID: 128-11-06
Location: East Lansing, MI Study Director: Rodney Tocco
Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	CHERRY	HAFE	DAND	RECL	WICA	CHERRY
Pest Code								HAFE	DAND	RECL	WICA	
Crop Code							CHERRY					CHERRY
Rating Date							23/May/11	23/May/11	23/May/11	23/May/11	23/May/11	16/Jun/11
Rating Type							RATING	RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10	1-10
1	glyphosate	5.5	L	1.3	lb ai/a	LPRE	1.0	8.3	5.3	6.7	3.7	1.0
	ammonium sulfate	100	SG	3.4	lb ai/a	LPRE						
2	indaziflam	1.67	SC	0.065	lb ai/a	LPRE	1.0	6.0	5.7	4.0	1.7	1.0
	glyphosate	5.5	L	1.3	lb ai/a	LPRE						
	ammonium sulfate	100	SG	3.4	lb ai/a	LPRE						
3	indaziflam	1.67	SC	0.065	lb ai/a	LPRE	1.0	8.3	8.7	9.0	8.0	1.0
	glufosinate	2.34	L	1.2	lb ai/a	LPRE						
	glyphosate	5.5	L	1.3	lb ai/a	LPRE						
	ammonium sulfate	100	SG	3.4	lb ai/a	LPRE						
4	simazine	90	WDG	3	lb ai/a	LPRE	1.0	6.0	5.3	4.7	2.0	1.0
	pendimethalin	3.8	CS	3.8	lb ai/a	LPRE						
	glyphosate	5.5	L	1.3	lb ai/a	LPRE						
5	rimsulfuron (M)	25	DF	0.063	lb ai/a	LPRE	1.0	6.3	4.3	3.0	4.3	1.0
	pendimethalin	3.8	CS	3.8	lb ai/a	LPRE						
	glyphosate	5.5	L	1.3	lb ai/a	LPRE						
6	Untreated						1.0	3.7	2.3	1.7	1.0	1.0
LSD (P=.05)							0.00	3.23	5.63	4.85	2.09	0.00
Standard Deviation							0.00	1.78	3.10	2.66	1.15	0.00
CV							0.0	27.56	58.67	55.13	33.38	0.0

Weed Control in Cherry with Alion – HTRC 2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	HAFE	ALFA	CABR	DAND	RECL	WICA	CHERRY
Pest Code													
Crop Code													
Rating Date							16/Jun/11	16/Jun/11	16/Jun/11	16/Jun/11	16/Jun/11	16/Jun/11	13/Jul/11
Rating Type							RATING	RATING	RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10	1-10	1-10
1	glyphosate	5.5	L	1.3	lb ai/a	LPRE	7.3	6.3	6.3	8.7	8.3	4.3	1.0
	ammonium sulfate	100	SG	3.4	lb ai/a	LPRE							
2	indaziflam	1.67	SC	0.065	lb ai/a	LPRE	7.7	7.0	8.3	6.7	4.0	1.7	1.0
	glyphosate	5.5	L	1.3	lb ai/a	LPRE							
	ammonium sulfate	100	SG	3.4	lb ai/a	LPRE							
3	indaziflam	1.67	SC	0.065	lb ai/a	LPRE	8.3	8.0	8.7	9.3	9.3	6.3	1.0
	glufosinate	2.34	L	1.2	lb ai/a	LPRE							
	glyphosate	5.5	L	1.3	lb ai/a	LPRE							
	ammonium sulfate	100	SG	3.4	lb ai/a	LPRE							
4	simazine	90	WDG	3	lb ai/a	LPRE	6.3	9.7	7.7	7.0	7.0	2.3	1.0
	pendimethalin	3.8	CS	3.8	lb ai/a	LPRE							
	glyphosate	5.5	L	1.3	lb ai/a	LPRE							
5	rimsulfuron (M)	25	DF	0.063	lb ai/a	LPRE	8.3	9.7	9.7	7.7	7.0	4.7	1.0
	pendimethalin	3.8	CS	3.8	lb ai/a	LPRE							
	glyphosate	5.5	L	1.3	lb ai/a	LPRE							
6	Untreated						1.0	1.0	1.0	3.0	1.0	1.0	1.0
LSD (P=.05)							3.32	4.73	4.16	4.22	3.45	3.41	0.00
Standard Deviation							1.83	2.60	2.29	2.32	1.89	1.88	0.00
CV							28.09	37.43	32.91	32.9	31.0	55.38	0.0

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	HAFE	ALFA	RECL	WICA	CHERRY	ALFA	RECL
Pest Code													
Crop Code													
Rating Date							13/Jul/11	13/Jul/11	13/Jul/11	13/Jul/11	8/Aug/11	8/Aug/11	8/Aug/11
Rating Type							RATING	RATING	RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10	1-10	1-10
1	glyphosate	5.5	L	1.3	lb ai/a	LPRE	7.3	3.7	8.3	5.7	1.0	1.7	2.0
	ammonium sulfate	100	SG	3.4	lb ai/a	LPRE							
2	indaziflam	1.67	SC	0.065	lb ai/a	LPRE	6.7	4.0	5.7	1.0	1.0	4.7	5.0
	glyphosate	5.5	L	1.3	lb ai/a	LPRE							
	ammonium sulfate	100	SG	3.4	lb ai/a	LPRE							
3	indaziflam	1.67	SC	0.065	lb ai/a	LPRE	9.0	7.7	10.0	7.0	1.0	5.0	9.3
	glufosinate	2.34	L	1.2	lb ai/a	LPRE							
	glyphosate	5.5	L	1.3	lb ai/a	LPRE							
	ammonium sulfate	100	SG	3.4	lb ai/a	LPRE							
4	simazine	90	WDG	3	lb ai/a	LPRE	5.3	6.7	6.7	2.3	1.0	6.7	6.3
	pendimethalin	3.8	CS	3.8	lb ai/a	LPRE							
	glyphosate	5.5	L	1.3	lb ai/a	LPRE							
5	rimsulfuron (M)	25	DF	0.063	lb ai/a	LPRE	7.7	8.0	8.7	4.0	1.0	5.0	6.0
	pendimethalin	3.8	CS	3.8	lb ai/a	LPRE							
	glyphosate	5.5	L	1.3	lb ai/a	LPRE							
6	Untreated						3.3	3.0	1.3	1.7	1.0	4.0	3.7
LSD (P=.05)							4.33	6.01	4.14	3.60	0.00	6.94	5.51
Standard Deviation							2.38	3.30	2.28	1.98	0.00	3.82	3.03
CV							36.28	60.03	33.61	54.84	0.0	84.81	56.25

Weed Control in Cherry with Alion – HTRC 2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	WICA 8/Aug/11 RATING 1-10	CHERRY 15/Sep/11 RATING 1-10	YEFT 15/Sep/11 RATING 1-10	WICA 15/Sep/11 RATING 1-10
1	glyphosate	5.5	L	1.3	lb ai/a	LPRE	1.7	1.0	3.7	3.7
	ammonium sulfate	100	SG	3.4	lb ai/a	LPRE				
2	indaziflam	1.67	SC	0.065	lb ai/a	LPRE	1.7	1.0	10.0	2.0
	glyphosate	5.5	L	1.3	lb ai/a	LPRE				
	ammonium sulfate	100	SG	3.4	lb ai/a	LPRE				
3	indaziflam	1.67	SC	0.065	lb ai/a	LPRE	5.0	1.0	10.0	7.7
	glufosinate	2.34	L	1.2	lb ai/a	LPRE				
	glyphosate	5.5	L	1.3	lb ai/a	LPRE				
	ammonium sulfate	100	SG	3.4	lb ai/a	LPRE				
4	simazine	90	WDG	3	lb ai/a	LPRE	1.7	1.0	10.0	3.0
	pendimethalin	3.8	CS	3.8	lb ai/a	LPRE				
	glyphosate	5.5	L	1.3	lb ai/a	LPRE				
5	rimsulfuron (M)	25	DF	0.063	lb ai/a	LPRE	2.0	1.0	9.3	4.7
	pendimethalin	3.8	CS	3.8	lb ai/a	LPRE				
	glyphosate	5.5	L	1.3	lb ai/a	LPRE				
6	Untreated						1.3	1.0	10.0	1.7
LSD (P=.05)							2.63	0.00	2.57	4.04
Standard Deviation							1.45	0.00	1.41	2.22
CV							65.04	0.0	16.01	58.73

Weed Control in Grape – HTRC 2011

Project Code: 132-11-01 **Location: East Lansing, MI**

Personnel: Bernard H. Zandstra, Rodney Tocco
Crop: Grape **Variety: Concord**
Planting Method: Transplant **Planting Date: 1967**
Spacing: 7 ft **Row Spacing: 10 ft**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 6 ft wide x 30 ft long (4 plants)

Soil Type: Capac Loam **OM: 2.2%** **pH: 6.7**
Sand: 53% **Silt: 31%** **Clay: 15%** **CEC: 6.6**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
LPRE	5/6/2011	1:30 pm	62/61	F	Moist	8-12 NW	43	90% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
5/6	GRAPE		Dormant	
5/6	ANBG = annual bluegrass	3-4″		Moderate
5/6	QUGR = quackgrass	6-10″		Many
5/6	COCW = common chickweed	3-5″		Moderate
5/6	CABR = California brome	2-3″		
5/6	COMA = common mallow	4-6″		Moderate
5/6	DAND = dandelion	3-6″		Moderate
5/6	FIBW = field bindweed	2-3″		
5/6	HOWE = horseweed	3-4″		
5/6	MECR = mouseear cress	6-10″		
5/6	PRKW = prostrate knotweed	2-4″		
5/6	RECL = red clover	4-6″		
5/6	SHPU = sheperdspurse	5-10″		Few
5/6	VIPW = Virginia pepperweed	3-4″		Moderate
5/6	WHCL = white clover	4-6″		
5/6	WICA = wild carrot	3-5″		

Notes and Comments

1. Spray applied with 2 nozzle boom (32″) on each side of row. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.

Weed Control in Grape – HTRC 2011

Weed Control in Grape - HTRC 2011

Trial ID: 132-11-01 Protocol ID: 132-11-01
Location: East Lansing, MI Study Director: Rodney Tocco
Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage		ANBG	COMA	DAND	FIBW	MECR
	Pest Code											
	Crop Code						GRAPE					
	Rating Date						23/May/11	23/May/11	23/May/11	23/May/11	23/May/11	23/May/11
	Rating Type						RATING	RATING	RATING	RATING	RATING	RATING
	Rating Unit						1-10	1-10	1-10	1-10	1-10	1-10
1	Untreated						1.0	1.0	1.0	4.7	3.3	4.0
2	flumioxazin	51	WDG	0.191	lb ai/a	LPRE	1.0	6.7	5.3	8.0	6.7	9.0
3	carfentrazone	0.35	SE	0.027	lb ai/a	LPRE	1.0	3.3	7.7	6.0	6.7	6.3
	sulfentrazone	3.15	SE	0.243	lb ai/a	LPRE						
4	carfentrazone	0.35	SE	0.027	lb ai/a	LPRE	1.0	2.7	5.3	6.0	5.7	8.0
	sulfentrazone	3.15	SE	0.243	lb ai/a	LPRE						
	oryzalin	4	L	2	lb ai/a	LPRE						
5	carfentrazone	0.35	SE	0.027	lb ai/a	LPRE	1.0	4.0	6.0	8.0	8.3	7.0
	sulfentrazone	3.15	SE	0.243	lb ai/a	LPRE						
	norflurazon	80	DF	2.5	lb ai/a	LPRE						
6	oxyfluorfen	4	SC	1.25	lb ai/a	LPRE	1.0	8.7	10.0	9.0	8.0	9.0
	diuron	80	DF	1.6	lb ai/a	LPRE						
7	flazasulfuron	25	WG	0.033	lb ai/a	LPRE	1.0	10.0	6.0	7.7	4.3	9.0
	glyphosate	5.5	L	0.95	lb ai/a	LPRE						
8	flazasulfuron	25	WG	0.045	lb ai/a	LPRE	1.0	8.3	6.7	8.3	3.0	8.0
	glyphosate	5.5	L	0.95	lb ai/a	LPRE						
9	indaziflam	1.67	SC	0.065	lb ai/a	LPRE	1.0	9.7	7.3	7.7	3.7	10.0
	glufosinate	2.34	L	0.88	lb ai/a	LPRE						
10	mesotrione	4	SC	0.188	lb ai/a	LPRE	1.0	9.0	8.0	6.7	3.7	9.7
	glyphosate	5.5	L	0.95	lb ai/a	LPRE						
11	rimsulfuron (M)	25	DF	0.031	lb ai/a	LPRE	1.0	8.3	5.0	6.7	3.3	7.7
	glyphosate	5.5	L	0.95	lb ai/a	LPRE						
12	diuron	80	DF	3	lb ai/a	LPRE	1.0	9.7	5.7	8.7	6.0	9.3
	glyphosate	5.5	L	0.95	lb ai/a	LPRE						
	pyraflufen	0.177	SC	0.00553	lb ai/a	LPRE						
	NIS	100	SL	0.25	% v/v	LPRE						
LSD (P=.05)							0.00	2.51	4.62	3.89	4.18	3.35
Standard Deviation							0.00	1.48	2.73	2.30	2.47	1.98
CV							0.0	21.86	44.21	31.59	47.25	24.48

Weed Control in Grape – HTRC 2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	RECL		CABR	COMA	DAND	FIBW
Pest Code												
Crop Code								GRAPE				
Rating Date							23/May/11	15/Jun/11	15/Jun/11	15/Jun/11	15/Jun/11	15/Jun/11
Rating Type							RATING	RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10	1-10
1	Untreated						1.0	1.0	1.0	1.7	4.3	2.3
2	flumioxazin	51	WDG	0.191	lb ai/a	LPRE	8.3	1.0	1.0	4.3	7.7	1.7
3	carfentrazone	0.35	SE	0.027	lb ai/a	LPRE	10.0	1.0	6.3	5.0	3.7	6.0
	sulfentrazone	3.15	SE	0.243	lb ai/a	LPRE						
4	carfentrazone	0.35	SE	0.027	lb ai/a	LPRE	6.7	1.0	3.3	7.0	3.0	5.3
	sulfentrazone	3.15	SE	0.243	lb ai/a	LPRE						
	oryzalin	4	L	2	lb ai/a	LPRE						
5	carfentrazone	0.35	SE	0.027	lb ai/a	LPRE	7.7	1.0	4.0	4.0	6.0	5.7
	sulfentrazone	3.15	SE	0.243	lb ai/a	LPRE						
	norflurazon	80	DF	2.5	lb ai/a	LPRE						
6	oxyfluorfen	4	SC	1.25	lb ai/a	LPRE	10.0	1.0	4.7	5.7	5.7	8.0
	diuron	80	DF	1.6	lb ai/a	LPRE						
7	flazasulfuron	25	WG	0.033	lb ai/a	LPRE	10.0	1.0	9.3	5.0	10.0	2.0
	glyphosate	5.5	L	0.95	lb ai/a	LPRE						
8	flazasulfuron	25	WG	0.045	lb ai/a	LPRE	9.0	1.0	4.0	4.0	9.0	1.0
	glyphosate	5.5	L	0.95	lb ai/a	LPRE						
9	indaziflam	1.67	SC	0.065	lb ai/a	LPRE	10.0	1.0	4.0	6.7	6.0	2.0
	glufosinate	2.34	L	0.88	lb ai/a	LPRE						
10	mesotrione	4	SC	0.188	lb ai/a	LPRE	6.7	1.0	5.0	10.0	7.7	1.3
	glyphosate	5.5	L	0.95	lb ai/a	LPRE						
11	rimsulfuron (M)	25	DF	0.031	lb ai/a	LPRE	9.3	1.0	7.0	7.7	9.3	1.7
	glyphosate	5.5	L	0.95	lb ai/a	LPRE						
12	diuron	80	DF	3	lb ai/a	LPRE	7.0	1.0	5.0	2.0	8.7	2.0
	glyphosate	5.5	L	0.95	lb ai/a	LPRE						
	pyraflufen	0.177	SC	0.00553	lb ai/a	LPRE						
	NIS	100	SL	0.25	% v/v	LPRE						
LSD (P=.05)							3.55	0.00	7.17	6.22	3.96	4.02
Standard Deviation							2.10	0.00	4.23	3.68	2.34	2.37
CV							26.33	0.0	92.95	70.01	34.67	73.05

Weed Control in Grape – HTRC 2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	HOWE	VIPW	WHCA		CABR	COMA	FIBW
Pest Code													
Crop Code										GRAPE			
Rating Date							15/Jun/11	15/Jun/11	15/Jun/11	6/Jul/11	6/Jul/11	6/Jul/11	6/Jul/11
Rating Type							RATING	RATING	RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10	1-10	1-10
1	Untreated						4.3	7.0	1.0	1.0	1.0	7.0	3.0
2	flumioxazin	51	WDG	0.191	lb ai/a	LPRE	4.0	10.0	8.3	1.0	1.0	6.7	2.0
3	carfentrazone	0.35	SE	0.027	lb ai/a	LPRE	4.7	10.0	8.0	1.0	1.7	4.0	4.7
	sulfentrazone	3.15	SE	0.243	lb ai/a	LPRE							
4	carfentrazone	0.35	SE	0.027	lb ai/a	LPRE	4.0	7.0	3.3	1.0	3.3	4.7	4.3
	sulfentrazone	3.15	SE	0.243	lb ai/a	LPRE							
	oryzalin	4	L	2	lb ai/a	LPRE							
5	carfentrazone	0.35	SE	0.027	lb ai/a	LPRE	4.0	7.7	4.3	1.0	3.0	4.0	5.7
	sulfentrazone	3.15	SE	0.243	lb ai/a	LPRE							
	norflurazon	80	DF	2.5	lb ai/a	LPRE							
6	oxyfluorfen	4	SC	1.25	lb ai/a	LPRE	4.3	8.3	9.7	1.0	5.7	4.0	5.3
	diuron	80	DF	1.6	lb ai/a	LPRE							
7	flazasulfuron	25	WG	0.033	lb ai/a	LPRE	4.7	10.0	10.0	1.0	9.0	10.0	1.3
	glyphosate	5.5	L	0.95	lb ai/a	LPRE							
8	flazasulfuron	25	WG	0.045	lb ai/a	LPRE	7.0	10.0	10.0	1.0	7.0	10.0	1.7
	glyphosate	5.5	L	0.95	lb ai/a	LPRE							
9	indaziflam	1.67	SC	0.065	lb ai/a	LPRE	4.7	10.0	10.0	1.0	2.7	10.0	1.7
	glufosinate	2.34	L	0.88	lb ai/a	LPRE							
10	mesotrione	4	SC	0.188	lb ai/a	LPRE	7.7	10.0	5.7	1.0	5.0	7.0	1.7
	glyphosate	5.5	L	0.95	lb ai/a	LPRE							
11	rimsulfuron (M)	25	DF	0.031	lb ai/a	LPRE	7.3	10.0	9.3	1.3	7.0	7.0	2.7
	glyphosate	5.5	L	0.95	lb ai/a	LPRE							
12	diuron	80	DF	3	lb ai/a	LPRE	7.3	10.0	7.0	1.0	4.0	3.0	2.7
	glyphosate	5.5	L	0.95	lb ai/a	LPRE							
	pyraflufen	0.177	SC	0.00553	lb ai/a	LPRE							
	NIS	100	SL	0.25	% v/v	LPRE							
LSD (P=.05)							7.85	3.74	4.95	0.28	5.73	6.13	2.93
Standard Deviation							4.63	2.21	2.92	0.17	3.38	3.62	1.73
CV							86.86	24.1	40.47	16.22	80.65	56.14	56.66

Weed Control in Grape – HTRC 2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	HOWE	WHCL		COMA	FIBW	HOWE	PRKW
Pest Code							HOWE	WHCL		COMA	FIBW	HOWE	PRKW
Crop Code									GRAPE				
Rating Date							6/Jul/11	6/Jul/11	9/Aug/11	9/Aug/11	9/Aug/11	9/Aug/11	9/Aug/11
Rating Type							RATING	RATING	RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10	1-10	1-10
1	Untreated						6.3	4.0	1.0	10.0	1.0	7.0	4.0
2	flumioxazin	51	WDG	0.191	lb ai/a	LPRE	7.0	6.3	1.0	7.0	4.7	5.7	4.3
3	carfentrazone	0.35	SE	0.027	lb ai/a	LPRE	1.7	7.3	1.0	1.7	4.3	4.0	3.0
	sulfentrazone	3.15	SE	0.243	lb ai/a	LPRE							
4	carfentrazone	0.35	SE	0.027	lb ai/a	LPRE	5.0	3.0	1.0	7.0	5.0	4.3	1.7
	sulfentrazone	3.15	SE	0.243	lb ai/a	LPRE							
	oryzalin	4	L	2	lb ai/a	LPRE							
5	carfentrazone	0.35	SE	0.027	lb ai/a	LPRE	4.0	8.0	1.0	4.3	6.7	3.7	3.3
	sulfentrazone	3.15	SE	0.243	lb ai/a	LPRE							
	norflurazon	80	DF	2.5	lb ai/a	LPRE							
6	oxyfluorfen	4	SC	1.25	lb ai/a	LPRE	3.0	7.3	1.0	7.0	5.7	6.3	5.3
	diuron	80	DF	1.6	lb ai/a	LPRE							
7	flazasulfuron	25	WG	0.033	lb ai/a	LPRE	4.7	9.3	1.0	6.3	3.7	8.0	4.3
	glyphosate	5.5	L	0.95	lb ai/a	LPRE							
8	flazasulfuron	25	WG	0.045	lb ai/a	LPRE	6.7	9.7	1.0	10.0	3.3	8.0	7.7
	glyphosate	5.5	L	0.95	lb ai/a	LPRE							
9	indaziflam	1.67	SC	0.065	lb ai/a	LPRE	8.0	9.0	1.0	3.0	3.0	7.0	6.3
	glufosinate	2.34	L	0.88	lb ai/a	LPRE							
10	mesotrione	4	SC	0.188	lb ai/a	LPRE	9.0	7.0	1.0	7.0	2.3	10.0	3.0
	glyphosate	5.5	L	0.95	lb ai/a	LPRE							
11	rimsulfuron (M)	25	DF	0.031	lb ai/a	LPRE	6.7	7.3	1.0	6.0	4.0	7.3	3.3
	glyphosate	5.5	L	0.95	lb ai/a	LPRE							
12	diuron	80	DF	3	lb ai/a	LPRE	7.7	7.0	1.0	1.3	5.0	8.3	4.0
	glyphosate	5.5	L	0.95	lb ai/a	LPRE							
	pyraflufen	0.177	SC	0.00553	lb ai/a	LPRE							
	NIS	100	SL	0.25	% v/v	LPRE							
LSD (P=.05)							5.65	5.87	0.00	6.23	3.84	4.54	4.86
Standard Deviation							3.33	3.46	0.00	3.68	2.27	2.68	2.87
CV							57.44	48.71	0.0	62.46	55.87	40.36	68.44

Weed Control in Raspberry – CRC 2011

Project Code: 131-11-01 **Location: Clarksville, MI**

Personnel: Bernard H. Zandstra, Rodney Tocco
Crop: Raspberry **Variety: Caroline**
Planting Method: Transplant **Planting Date: 2009**
Spacing: Solid row **Row Spacing: 10 ft**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 5.5 ft wide x 30 ft long

Soil Type: Lapeer Sandy Loam **OM: 4.0%** **pH: 6.7**
Sand: 35% **Silt: 41%** **Clay: 24%** **CEC: 9.7**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
EPRE	4/21/11	11:00 am	52/44	F	Good	1-3 NE	58	13% Cloudy	N
EPOS/DIR	6/2/11	3:30 pm	69/73	F	Damp	3 E	42	0% Cloudy	N
LPOSDIR	6/23/11	10:30	66/68	F	Damp	1 SW	91	100%Cloudy	Y

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
4/21	RASP = raspberry		Dormant. 100%	
4/21	HAFE = hard fescue	2-4″		Many
4/21	LACG = large crabgrass			
4/21	PERG = perennial ryegrass	2-4″		Many
4/21	DAND = dandelion	3-6″		Many
4/21	HOWE = horseweed	4-3″		Few
4/21	PRLE = prickly lettuce	2-5″		Few
4/21	RESO = red sorrel	3-6″, 1-2″		Many
4/21	WHCL = white clover	6-12″, 1-2″		Many
6/2	RASP = raspberry	12-18″	Foliar	
6/2	QUGR = quackgrass	12-18″	Pre-boot	Moderate
6/23	RASP = raspberry	12-24″	Foliar	
6/23	QUGR = quackgrass	12-18″		Moderate
6/23	HAFE = hard fescue	4-6″		Many
6/23	DAND = dandelion	4-6″		Moderate
6/23	ROFB = rough fleabane	12-18″		Few

Notes and Comments
1. EPOS & LPOS applications directed to base of crop row. Spray applied with 2 nozzle, directed boom (32″) on each side of row. Same information as boom below.
2. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
3. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.
4. Caroline is a primocane-bearing raspberry. The plants were mowed to the ground in fall 2010. PRE treatments were applied, broadcast, over the rows before growth began in spring 2011.

Weed Control in Raspberry – CRC 2011

Weed Control in Raspberry - CRC 2011

Trial ID: 131-11-01 Protocol ID: 131-11-01
Location: Clarksville, MI Study Director: Rodney Tocco
Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	RASP 2/Jun/11 RATING 1-10	QUGR 2/Jun/11 RATING 1-10	RASP 23/Jun/11 RATING 1-10	HAFE 23/Jun/11 RATING 1-10	QUGR 23/Jun/11 RATING 1-10	DAND 23/Jun/11 RATING 1-10
1	diuron	80	DF	2	lb ai/a	EPRE	2.3	7.0	1.3	6.7	8.3	1.7
	halosulfuron	75	WG	0.047	lb ai/a	EPRE						
	halosulfuron	75	WG	0.047	lb ai/a	LPOS DIR						
	NIS	100	SL	0.25	% v/v	EPRE, LPOS						
2	diuron	80	DF	2	lb ai/a	EPRE	2.7	4.7	1.7	7.3	8.3	2.7
	halosulfuron	75	WG	0.094	lb ai/a	EPRE						
	halosulfuron	75	WG	0.094	lb ai/a	LPOS DIR						
	NIS	100	SL	0.25	% v/v	EPRE, LPOS						
3	diuron	80	DF	2	lb ai/a	EPRE	3.0	4.7	2.3	8.3	5.3	4.7
	carfentrazone	2	EC	0.008	lb ai/a	EPOS DIR						
	sethoxydim	1.53	EC	0.12	lb ai/a	EPOS DIR						
	COC	100	SL	1	% v/v	EPOS DIR						
4	diuron	80	DF	2	lb ai/a	EPRE	2.7	2.0	2.0	5.3	4.3	2.7
	carfentrazone	2	EC	0.016	lb ai/a	EPOS DIR						
	sethoxydim	1.53	EC	0.12	lb ai/a	EPOS DIR						
	COC	100	SL	1	% v/v	EPOS DIR						
5	diuron	80	DF	2	lb ai/a	EPRE	1.0	9.0	3.3	7.0	9.7	9.7
	clopyralid	3	L	0.25	lb ai/a	EPOS						
	clethodim	0.97	EC	.12	lb ai/a	EPOS						
6	diuron	80	DF	2	lb ai/a	EPRE	2.7	6.7	1.3	6.3	10.0	3.7
	clopyralid	3	L	0.25	lb ai/a	LPOS DIR						
	clethodim	0.97	EC	0.12	lb ai/a	LPOS DIR						
7	terbacil	80	WDG	1.6	lb ai/a	EPRE	1.0	9.3	1.3	8.3	10.0	5.3
8	simazine	90	WDG	2	lb ai/a	EPRE	4.3	7.3	3.0	7.7	7.7	3.7
	mesotrione	4	SC	0.188	lb ai/a	EPRE						
9	rimsulfuron (M)	25	DF	0.063	lb ai/a	EPRE	4.7	10.0	3.7	8.3	6.7	5.7
10	flumioxazin	51	WDG	0.191	lb ai/a	EPRE	3.0	4.0	3.0	4.7	5.3	6.7
11	indaziflam	1.67	SC	0.065	lb ai/a	EPRE	2.3	2.0	2.7	5.0	6.0	4.3
12	Untreated						2.3	1.0	2.3	2.7	2.7	3.3
LSD (P=.05)							1.74	4.56	1.69	3.24	4.21	3.99
Standard Deviation							1.03	2.69	1.00	1.91	2.49	2.35
CV							38.62	47.77	42.69	29.58	35.41	52.33

Weed Control in Raspberry – CRC 2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	ROFB 23/Jun/11 1-10	RASP 12/Jul/11 1-10	QUGR 12/Jul/11 1-10	ROFB 12/Jul/11 1-10	RASP 26/Aug/11 Harvest KG/PLOT	RASP 1/Sep/11 Harvest KG/PLOT
1	diuron	80	DF	2	lb ai/a	EPRE	1.9	2.3	7.7	9.3	0.778	1.487
	halosulfuron	75	WG	0.047	lb ai/a	EPRE						
	halosulfuron	75	WG	0.047	lb ai/a	LPOS DIR						
	NIS	100	SL	0.25	% v/v	EPRE, LPOS						
2	diuron	80	DF	2	lb ai/a	EPRE	9.0	1.7	6.3	10.0	0.493	1.460
	halosulfuron	75	WG	0.094	lb ai/a	EPRE						
	halosulfuron	75	WG	0.094	lb ai/a	LPOS DIR						
	NIS	100	SL	0.25	% v/v	EPRE, LPOS						
3	diuron	80	DF	2	lb ai/a	EPRE	7.0	3.3	3.7	4.0	0.520	1.480
	carfentrazone	2	EC	0.008	lb ai/a	EPOS DIR						
	sethoxydim	1.53	EC	0.12	lb ai/a	EPOS DIR						
	COC	100	SL	1	% v/v	EPOS DIR						
4	diuron	80	DF	2	lb ai/a	EPRE	6.3	2.0	4.7	4.3	0.323	1.580
	carfentrazone	2	EC	0.016	lb ai/a	EPOS DIR						
	sethoxydim	1.53	EC	0.12	lb ai/a	EPOS DIR						
	COC	100	SL	1	% v/v	EPOS DIR						
5	diuron	80	DF	2	lb ai/a	EPRE	10.0	1.7	8.7	10.0	0.615	1.987
	clopyralid	3	L	0.25	lb ai/a	EPOS						
	clethodim	0.97	EC	.12	lb ai/a	EPOS						
6	diuron	80	DF	2	lb ai/a	EPRE	3.7	2.0	9.3	9.0	0.330	1.500
	clopyralid	3	L	0.25	lb ai/a	LPOS DIR						
	clethodim	0.97	EC	0.12	lb ai/a	LPOS DIR						
7	terbacil	80	WDG	1.6	lb ai/a	EPRE	6.7	1.0	8.3	6.0	0.527	2.040
8	simazine	90	WDG	2	lb ai/a	EPRE	10.0	1.7	7.3	10.0	0.312	1.367
	mesotrione	4	SC	0.188	lb ai/a	EPRE						
9	rimsulfuron (M)	25	DF	0.063	lb ai/a	EPRE	9.3	2.7	4.7	4.7	0.762	1.520
10	flumioxazin	51	WDG	0.191	lb ai/a	EPRE	4.0	3.0	6.3	1.7	0.297	1.233
11	indaziflam	1.67	SC	0.065	lb ai/a	EPRE	3.7	2.0	6.3	3.0	0.518	1.360
12	Untreated						1.7	1.7	4.0	4.0	0.275	1.287
LSD (P=.05)							5.87	1.54	4.27	5.32	0.3522	0.7385
Standard Deviation							3.46	0.91	2.52	3.14	0.2080	0.4361
CV							56.68	43.62	39.14	49.61	43.41	28.6

Weed Control in Raspberry – CRC 2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	RASP 9/Sep/11 Harvest KG/PLOT	RASP 21/Sep/11 Harvest KG/PLOT	RASP Total KG/PLOT
1	diuron	80	DF	2	lb ai/a	EPRE	1.556	1.230	5.051
	halosulfuron	75	WG	0.047	lb ai/a	EPRE			
	halosulfuron	75	WG	0.047	lb ai/a	LPOS DIR			
	NIS	100	SL	0.25	% v/v	EPRE, LPOS			
2	diuron	80	DF	2	lb ai/a	EPRE	1.906	1.403	5.263
	halosulfuron	75	WG	0.094	lb ai/a	EPRE			
	halosulfuron	75	WG	0.094	lb ai/a	LPOS DIR			
	NIS	100	SL	0.25	% v/v	EPRE, LPOS			
3	diuron	80	DF	2	lb ai/a	EPRE	1.478	1.202	4.680
	carfentrazone	2	EC	0.008	lb ai/a	EPOS DIR			
	sethoxydim	1.53	EC	0.12	lb ai/a	EPOS DIR			
	COC	100	SL	1	% v/v	EPOS DIR			
4	diuron	80	DF	2	lb ai/a	EPRE	1.444	1.138	4.486
	carfentrazone	2	EC	0.016	lb ai/a	EPOS DIR			
	sethoxydim	1.53	EC	0.12	lb ai/a	EPOS DIR			
	COC	100	SL	1	% v/v	EPOS DIR			
5	diuron	80	DF	2	lb ai/a	EPRE	2.333	2.063	6.998
	clopyralid	3	L	0.25	lb ai/a	EPOS			
	clethodim	0.97	EC	.12	lb ai/a	EPOS			
6	diuron	80	DF	2	lb ai/a	EPRE	1.725	1.327	4.882
	clopyralid	3	L	0.25	lb ai/a	LPOS DIR			
	clethodim	0.97	EC	0.12	lb ai/a	LPOS DIR			
7	terbacil	80	WDG	1.6	lb ai/a	EPRE	2.079	1.703	6.349
8	simazine	90	WDG	2	lb ai/a	EPRE	1.710	1.122	4.510
	mesotrione	4	SC	0.188	lb ai/a	EPRE			
9	rimsulfuron (M)	25	DF	0.063	lb ai/a	EPRE	1.588	1.348	5.218
10	flumioxazin	51	WDG	0.191	lb ai/a	EPRE	1.498	0.972	3.999
11	indaziflam	1.67	SC	0.065	lb ai/a	EPRE	1.882	1.218	4.978
12	Untreated						1.678	1.325	4.565
LSD (P=.05)							0.8902	0.5546	2.0988
Standard Deviation							0.5257	0.3275	1.2394
CV							30.22	24.48	24.39

Crop Safety on Caneberry with Quinclorac – HTRC 2011

Project Code: 131-11-02 **Location: East Lansing, MI**

Personnel: Bernard H. Zandstra, Rodney Tocco
Crop: Raspberry **Variety: Caroline**
Planting Method: Transplant **Planting Date: 2009**
Spacing: 1 ft **Row Spacing: 10 ft**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 11 ft wide x 30 ft long

Soil Type: Capac Loam **OM: 1.4%** **pH: 7.0**
Sand: 60% **Silt: 24%** **Clay: 15%** **CEC: 6.0**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	5/9/11	10:15 am	59/51	F	Moist	0-3	56	0% Cloudy	N
LPOS	8/12/11	1:55	82/71	F	Dry	3-5 W	64	100%Cloudy	N

Crop and Weed Information at Application

	Height or Diameter	Growth Stage	Density

QUGR = quackgrass
BHPL = buckhorn plantain
CATH = Canada thistle
CUDO = curly dock
DAND = dandelion
WICA = wild carrot

Notes and Comments
1. Harvest 10 feet of each plot.
2. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
3. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.

Crop Safety on Caneberry with Quinclorac – HTRC 2011

Crop Safety on Caneberry with Quinclorac - HTRC 2011

Trial ID: 131-11-02 Protocol ID: 131-11-02
Location: East Lansing, MI Study Director: Sylvia Morse
Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	RASP	QUGR	BHPL	CATH	CUDO	DAND
Pest Code												
Crop Code												
Rating Date							18/May/11	18/May/11	18/May/11	18/May/11	18/May/11	18/May/11
Rating Type							RATING	RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10	1-10
1	Handweeded						1.0	8.3	8.5	8.3	8.0	7.3
2	quinclorac	3.8	L	0.375	lb ai/a	PRE, LPOS	1.3	3.5	6.3	7.0	5.8	2.8
	COC	100	SL	2.0	pt/a	PRE, LPOS						
3	quinclorac	3.8	L	0.75	lb ai/a	PRE, LPOS	1.5	8.5	9.5	9.3	7.5	7.8
	COC	100	SL	2.0	pt/a	PRE, LPOS						
4	s-metolachlor	7.62	EC	1.26	lb ai/a	PRE, LPOS	1.5	5.5	7.5	6.3	6.8	4.8
	COC	100	SL	2.0	pt/a	PRE, LPOS						
LSD (P=.05)							1.31	2.62	3.07	4.10	4.68	3.63
Standard Deviation							0.82	1.64	1.92	2.56	2.92	2.27
CV							62.53	25.4	24.15	33.32	41.79	40.3

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	WICA	RASP	QUGR	CATH	CUDO	DAND
Pest Code												
Crop Code												
Rating Date							18/May/11	26/May/11	26/May/11	26/May/11	26/May/11	26/May/11
Rating Type							RATING	RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10	1-10
1	Handweeded						8.5	1.0	4.5	4.5	5.8	4.5
2	quinclorac	3.8	L	0.375	lb ai/a	PRE, LPOS	8.8	1.0	9.0	9.8	10.0	8.8
	COC	100	SL	2.0	pt/a	PRE, LPOS						
3	quinclorac	3.8	L	0.75	lb ai/a	PRE, LPOS	10.0	1.0	5.8	8.0	6.3	5.8
	COC	100	SL	2.0	pt/a	PRE, LPOS						
4	s-metolachlor	7.62	EC	1.26	lb ai/a	PRE, LPOS	7.5	1.0	5.3	5.3	5.3	3.5
	COC	100	SL	2.0	pt/a	PRE, LPOS						
LSD (P=.05)							2.56	0.00	4.32	3.96	5.17	3.40
Standard Deviation							1.60	0.00	2.70	2.48	3.23	2.13
CV							18.43	0.0	44.13	36.04	47.45	37.83

Crop Safety on Caneberry with Quinclorac – HTRC 2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	WICA	RASP	QUGR	BHPL	CUDO	DAND
Pest Code												
Crop Code												
Rating Date							26/May/11	10/Jun/11	10/Jun/11	10/Jun/11	10/Jun/11	10/Jun/11
Rating Type							RATING	RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10	1-10
1	Handweeded						5.8	1.8	6.8	7.3	7.3	7.3
2	quinclorac	3.8	L	0.375	lb ai/a	PRE, LPOS	10.0	1.8	5.5	5.0	5.0	5.0
	COC	100	SL	2.0	pt/a	PRE, LPOS						
3	quinclorac	3.8	L	0.75	lb ai/a	PRE, LPOS	6.3	1.5	7.3	7.5	7.8	7.5
	COC	100	SL	2.0	pt/a	PRE, LPOS						
4	s-metolachlor	7.62	EC	1.26	lb ai/a	PRE, LPOS	5.3	1.3	6.3	6.3	6.3	6.3
	COC	100	SL	2.0	pt/a	PRE, LPOS						
LSD (P=.05)							5.17	1.07	2.45	2.87	2.97	2.87
Standard Deviation							3.23	0.67	1.53	1.80	1.86	1.80
CV							47.45	43.0	23.76	27.62	28.31	27.62

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	WICA	RASP	QUGR	BHPL	WHCL	WICA
Pest Code												
Crop Code												
Rating Date							10/Jun/11	29/Aug/11	29/Aug/11	29/Aug/11	29/Aug/11	29/Aug/11
Rating Type							RATING	RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10	1-10
1	Handweeded a						7.3	2.8	3.0	3.9	7.8	3.5
2	quinclorac	3.8	L	0.375	lb ai/a	PRE, LPOS	5.0	2.3	3.3	4.3	7.8	4.0
	COC	100	SL	2.0	pt/a	PRE, LPOS						
3	quinclorac	3.8	L	0.75	lb ai/a	PRE, LPOS	7.8	2.3	3.5	4.5	6.8	3.5
	COC	100	SL	2.0	pt/a	PRE, LPOS						
4	s-metolachlor	7.62	EC	1.26	lb ai/a	PRE, LPOS	6.3	2.3	3.0	4.8	7.5	3.5
	COC	100	SL	2.0	pt/a	PRE, LPOS						
LSD (P=.05)							2.97	1.03	1.77	3.06	1.85	1.48
Standard Deviation							1.86	0.65	1.11	1.88	1.16	0.93
CV							28.31	27.18	34.78	43.07	15.57	25.6

Crop Safety on Caneberry with Quinclorac – HTRC 2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	RASP 26/Aug/11 Harvest KG/PLOT	RASP 31/Aug/11 Harvest KG/PLOT	RASP 8/Sep/11 Harvest KG/PLOT	RASP TOTAL KG/PLOT
1	Handweeded						0.490	1.129	1.575	3.194
2	quinclorac	3.8	L	0.375	lb ai/a	PRE, LPOS	0.640	1.369	2.144	4.152
	COC	100	SL	2.0	pt/a	PRE, LPOS				
3	quinclorac	3.8	L	0.75	lb ai/a	PRE, LPOS	0.674	1.640	1.320	3.634
	COC	100	SL	2.0	pt/a	PRE, LPOS				
4	s-metolachlor	7.62	EC	1.26	lb ai/a	PRE, LPOS	0.697	1.442	1.541	3.679
	COC	100	SL	2.0	pt/a	PRE, LPOS				
LSD (P=.05)							0.5904	1.0261	0.6887	1.7386
Standard Deviation							0.3691	0.6415	0.4306	1.0870
CV							59.06	45.99	26.18	29.66

Crop Safety on Caneberry with Pendimethalin – HTRC 2011

Project Code: 131-11-03 **Location: East Lansing, MI**

Personnel: Bernard H. Zandstra, Rodney Tocco
Crop: Raspberry **Variety: Caroline**
Planting Method: Transplant **Planting Date: 2009**
Spacing: 1 ft **Row Spacing: 10 ft**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 11 ft wide x 30 ft long

Soil Type: Capac Loam **OM: 1.4%** **pH: 7.0**
Sand: 60% **Silt: 24%** **Clay: 15%** **CEC: 6.0**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE	5/9/11	9:45 am	59/52	F	Moist	0-3	58	0% Cloudy	N
POSHARV	9/12/11	10:40 am	78/65	F	Dry	1-3 SW	72	0% Cloudy	N

Crop and Weed Information at Application

	Height or Diameter	Growth Stage	Density

QUGR = quackgrass
BHPL = buckhorn plantain
CATH = Canada thistle
CUDO = curly dock
DAND = dandelion
HOWE = horseweed
WICA = wild carrot

Notes and Comments
1. Harvest 10 feet of each plot.
2. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
3. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.

Crop Safety on Caneberry with Pendimethalin – HTRC 2011

Crop Safety on Caneberry with Pendimethalin - HTRC 2011

Trial ID: 131-11-03 Protocol ID: 131-11-03
Location: East Lansing, MI Study Director: Sylvia Morse
Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	RASP	QUGR	BHPL	CATH	DAND	WICA
Crop Code												
Rating Date							9/May/11	9/May/11	9/May/11	9/May/11	9/May/11	9/May/11
Rating Type							RATING	RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10	1-10
1	Handweeded						2.0	5.0	6.0	7.5	3.0	4.0
2	pendimethalin	3.8	CS	3	lb ai/a	PRE, POSHARV	2.0	5.8	5.5	7.3	3.0	5.5
3	pendimethalin	3.8	CS	6	lb ai/a	PRE, POSHARV	2.3	5.3	6.3	9.0	2.3	6.0
4	s-metolachlor	7.62	EC	1.26	lb ai/a	PRE	2.0	5.5	5.3	7.0	2.3	5.0
LSD (P=.05)							1.51	0.96	1.25	1.73	1.33	1.28
Standard Deviation							0.95	0.60	0.78	1.08	0.83	0.80
CV							45.89	11.18	13.6	14.09	31.75	15.6

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	RASP	QUGR	BHPL	CUDO	DAND	WICA
Crop Code												
Rating Date							10/Jun/11	10/Jun/11	10/Jun/11	10/Jun/11	10/Jun/11	10/Jun/11
Rating Type							RATING	RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10	1-10
1	Handweeded						1.3	4.8	3.8	6.8	5.5	2.5
2	pendimethalin	3.8	CS	3	lb ai/a	PRE, POSHARV	1.3	5.5	5.3	8.8	6.3	5.8
3	pendimethalin	3.8	CS	6	lb ai/a	PRE, POSHARV	1.0	6.8	5.3	7.8	5.8	5.8
4	s-metolachlor	7.62	EC	1.26	lb ai/a	PRE	1.0	5.5	6.3	7.8	5.5	6.3
LSD (P=.05)							0.60	1.87	1.48	4.71	2.72	2.17
Standard Deviation							0.37	1.17	0.93	2.82	1.70	1.36
CV							33.13	20.74	18.11	36.33	29.56	26.8

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	RASP	QUGR	BHPL	CATH	DAND	RASP
Crop Code												
Rating Date							6/Jul/11	6/Jul/11	6/Jul/11	6/Jul/11	6/Jul/11	10/Oct/11
Rating Type							RATING	RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10	1-10
1	Handweeded						1.8	3.3	4.0	6.8	4.0	2.0
2	pendimethalin	3.8	CS	3	lb ai/a	PRE, POSHARV	1.5	4.3	5.0	7.3	4.5	2.5
3	pendimethalin	3.8	CS	6	lb ai/a	PRE, POSHARV	1.0	3.8	5.5	7.5	6.8	1.8
4	s-metolachlor	7.62	EC	1.26	lb ai/a	PRE	1.0	3.8	5.5	8.3	5.8	1.5
LSD (P=.05)							0.93	1.64	1.73	2.56	2.53	0.77
Standard Deviation							0.58	1.03	1.08	1.60	1.58	0.48
CV							44.44	27.4	21.6	21.52	30.12	24.71

Crop Safety on Caneberry with Pendimethalin – HTRC 2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	QUGR	BHPL	DAND	HOWE	RASP
Pest Code											
Crop Code											RASP
Rating Date							10/Oct/11	10/Oct/11	10/Oct/11	10/Oct/11	26/Aug/11
Rating Type							RATING	RATING	RATING	RATING	Harvest
Rating Unit							1-10	1-10	1-10	1-10	KG/PLOT
1	Handweeded						3.5	5.5	6.5	5.5	0.463
2	pendimethalin	3.8	CS	3	lb ai/a	PRE, POSHARV	3.3	6.8	4.0	4.0	0.720
3	pendimethalin	3.8	CS	6	lb ai/a	PRE, POSHARV	3.5	5.0	3.5	3.0	0.611
4	s-metolachlor	7.62	EC	1.26	lb ai/a	PRE	4.0	5.8	3.3	4.3	0.583
LSD (P=.05)							2.04	4.65	2.72	3.99	0.3913
Standard Deviation							1.25	2.91	1.70	2.50	0.2447
CV							35.23	50.54	39.46	59.6	41.15

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	RASP	RASP	RASP
Pest Code									
Crop Code							RASP	RASP	RASP
Rating Date							31/Aug/11	8/Sep/11	
Rating Type							Harvest	Harvest	TOTAL
Rating Unit							KG/PLOT	KG/PLOT	KG/PLOT
1	Handweeded						1.225	1.783	3.471
2	pendimethalin	3.8	CS	3	lb ai/a	PRE, POSHARV	1.316	1.853	3.889
3	pendimethalin	3.8	CS	6	lb ai/a	PRE, POSHARV	1.441	1.795	3.847
4	s-metolachlor	7.62	EC	1.26	lb ai/a	PRE	1.414	1.538	3.535
LSD (P=.05)							0.9779	1.3407	1.1201
Standard Deviation							0.6114	0.8382	0.7003
CV							45.33	48.12	19.0

Fall Weed Control in Perennial Strawberry – HTRC 2010-2011

Project Code: 126-11-01 **Location: East Lansing, MI**

Personnel: Bernard H. Zandstra, Rodney Tocco
Crop: Strawberry **Variety: Jewel**
Planting Method: Transplant **Planting Date: 4/18/08**
Spacing: 2 ft **Row Spacing: 6 ft**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 5.5 ft wide x 30 ft long

Soil Type: Spinks Loamy Sand **OM: 1.3%** **pH: 7.0**
Sand: 88% **Silt: 8%** **Clay: 4%** **CEC: 4.1**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
FALL10	11/1/10	2:00 pm	49/48	F	Dry	1-2 NW	39	0% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
11/1	STBE = strawberry		Dormant	
11/1	QUGR = quackgrass	4-6″		Moderate
11/1	WIRA = wild radish	2-6″		Few

Notes and Comments
1. Hard frost: 10/30, 10/31, 11/1. Most STBE had green foliage still.
2. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
3. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.

Fall Weed Control in Perennial Strawberry – HTRC 2010-2011

Fall Weed Control in Perennial Strawberry - HTRC 2010-2011

Trial ID: 126-11-01 Protocol ID: 126-11-01
Location: East Lansing, MI Study Director: Rodney Tocco
Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage						
Pest Code								ANBG	QUGR	DAND	HOWE		QUGR
Crop Code							STBE					STBE	
Rating Date							12/May/11	12/May/11	12/May/11	12/May/11	12/May/11	1/Jun/11	1/Jun/11
Rating Type							RATING	RATING	RATING	RATING	RATING	RATING	RATING
Rating Unit							1-10	1-10	1-10	1-10	1-10	1-10	1-10
1	carfentrazone	0.35	SE	0.5	oz/a	FALL10	2.3	9.0	8.0	4.7	7.3	1.7	8.3
	sulfentrazone	3.15	SE	4.5	oz/a	FALL10							
	NIS	100	SL	0.25	% v/v	FALL10							
2	carfentrazone	0.35	SE	0.75	oz/a	FALL10	2.0	10.0	7.7	5.3	9.0	2.0	7.7
	sulfentrazone	3.15	SE	6.75	oz/a	FALL10							
	NIS	100	SL	0.25	% v/v	FALL10							
3	carfentrazone	0.35	SE	1	oz/a	FALL10	3.3	10.0	8.3	6.3	7.0	2.3	10.0
	sulfentrazone	3.15	SE	9	oz/a	FALL10							
	NIS	100	SL	0.25	% v/v	FALL10							
4	carfentrazone	0.35	SE	0.5	oz/a	FALL10	2.7	6.3	5.7	5.0	8.7	1.7	6.7
	sulfentrazone	3.15	SE	4.5	oz/a	FALL10							
	COC	100	SL	1	% v/v	FALL10							
5	carfentrazone	0.35	SE	0.75	oz/a	FALL10	2.3	4.3	6.7	4.0	6.3	1.7	6.7
	sulfentrazone	3.15	SE	6.75	oz/a	FALL10							
	COC	100	SL	1	% v/v	FALL10							
6	carfentrazone	0.35	SE	1	oz/a	FALL10	2.0	6.0	4.0	5.7	7.7	1.3	3.3
	sulfentrazone	3.15	SE	9	oz/a	FALL10							
	COC	100	SL	1	% v/v	FALL10							
7	sulfentrazone	4	F	0.25	lb ai/a	FALL10	2.7	7.0	6.0	4.0	6.7	2.0	6.7
	NIS	100	SL	0.25	% v/v	FALL10							
8	acifluorfen	2	L	0.375	lb ai/a	FALL10	2.3	4.0	2.0	4.3	3.7	2.0	1.0
9	terbacil	80	WDG	0.4	lb ai/a	FALL10	1.7	9.0	6.7	7.0	9.7	2.0	5.3
10	Untreated					FALL10	1.3	5.7	5.0	4.7	5.0	1.3	8.7
LSD (P=.05)							2.71	6.26	5.17	5.98	5.81	1.87	5.54
Standard Deviation							1.58	3.65	3.02	3.48	3.39	1.09	3.23
CV							69.81	51.18	50.27	68.33	47.72	60.58	50.22

Fall Weed Control in Perennial Strawberry – HTRC 2010-2011

Dept. of Horticulture, MSU

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	HOWE	STBE	STBE	STBE	STBE	STBE
Pest Code												
Crop Code								STBE	STBE	STBE	STBE	STBE
Rating Date							1/Jun/11	14/Jun/11	17/Jun/11	21/Jun/11	24/Jun/11	
Rating Type							RATING	Harvest	Harvest	Harvest	Harvest	Total
Rating Unit							1-10	KG/PLOT	KG/PLOT	KG/PLOT	KG/PLOT	KG/PLOT
1	carfentrazone	0.35	SE	0.5	oz/a	FALL10	7.3	2.293	1.580	2.080	0.992	6.945
	sulfentrazone	3.15	SE	4.5	oz/a	FALL10						
	NIS	100	SL	0.25	% v/v	FALL10						
2	carfentrazone	0.35	SE	0.75	oz/a	FALL10	3.3	2.447	1.673	2.207	0.716	7.043
	sulfentrazone	3.15	SE	6.75	oz/a	FALL10						
	NIS	100	SL	0.25	% v/v	FALL10						
3	carfentrazone	0.35	SE	1	oz/a	FALL10	6.3	2.060	1.647	1.800	0.603	6.110
	sulfentrazone	3.15	SE	9	oz/a	FALL10						
	NIS	100	SL	0.25	% v/v	FALL10						
4	carfentrazone	0.35	SE	0.5	oz/a	FALL10	6.3	2.413	1.887	2.893	1.195	8.388
	sulfentrazone	3.15	SE	4.5	oz/a	FALL10						
	COC	100	SL	1	% v/v	FALL10						
5	carfentrazone	0.35	SE	0.75	oz/a	FALL10	3.3	2.087	2.033	1.767	1.469	7.356
	sulfentrazone	3.15	SE	6.75	oz/a	FALL10						
	COC	100	SL	1	% v/v	FALL10						
6	carfentrazone	0.35	SE	1	oz/a	FALL10	4.0	2.053	1.400	2.887	1.017	7.357
	sulfentrazone	3.15	SE	9	oz/a	FALL10						
	COC	100	SL	1	% v/v	FALL10						
7	sulfentrazone	4	F	0.25	lb ai/a	FALL10	7.3	1.913	1.480	1.327	0.796	5.516
	NIS	100	SL	0.25	% v/v	FALL10						
8	acifluorfen	2	L	0.375	lb ai/a	FALL10	2.0	1.560	1.793	2.240	0.893	6.486
9	terbacil	80	WDG	0.4	lb ai/a	FALL10	8.0	2.327	2.053	3.280	1.561	9.221
10	Untreated					FALL10	2.3	2.540	1.427	3.153	1.179	8.299
LSD (P=.05)							4.73	0.8437	1.1081	1.9873	0.8363	3.9627
Standard Deviation							2.75	0.4918	0.6459	1.1585	0.4875	2.3100
CV							54.73	22.67	38.06	49.02	46.78	31.77

Fall and Spring Weed Control in Strawberry – HTRC 2010-2011

Project Code: 126-11-02 **Location: East Lansing, MI**

Personnel: Bernard H. Zandstra, Rodney Tocco
Crop: Strawberry **Variety: Jewel**
Planting Method: Transplant **Planting Date: 4/28/10**
Spacing: 2 ft **Row Spacing: 6 ft**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 5.5 ft wide x 30 ft long

Soil Type: Thetford Loamy Sand **OM: 1.4%** **pH: 7.0**
Sand: 88% **Silt: 8%** **Clay: 4%** **CEC: 4.1**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
FALL10	10/29/11	2:00 pm	49/49	F	Dry	3-5 NW	36	0% Cloudy	N
SPRING 11	4/2/11	3:00 pm	61/56	F	Good	1-3 N	31	10% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
10/29	STBE = strawberry	4-6″	Dormant	
10/29	WHCA = white campion	4-5″		Few
10/29	YERO = yellow rocket	6″, 4-6″		Many
4/21	STBE = strawberry	4-12″, 1-3″	Greening	
4/21	LACG = large crabgrass	3-4″		Moderate
4/21	DAND = dandelion	1-3″		Few
4/21	HOWE = horseweed	1-2″		Moderate
4/21	WHCA = white campion	1-3″		Few
4/21	WIRA = wild radish	2-4″, 3-5″		Many

Notes and Comments
1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.

Fall and Spring Weed Control in Strawberry – HTRC 2010-2011

Fall and Spring Preemergence Weed Control in Strawberry - HTRC 2010-2011

Trial ID: 126-11-02 Protocol ID: 126-11-02
Location: East Lansing, MI Study Director: Rodney Tocco
Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	STBE	QUGR	WHCA	YERO	STBE	QUGR
	Crop Code											
	Rating Date						12/May/11	12/May/11	12/May/11	12/May/11	1/Jun/11	1/Jun/11
	Rating Type						RATING	RATING	RATING	RATING	RATING	RATING
	Rating Unit						1-10	1-10	1-10	1-10	1-10	1-10
1	terbacil	80	WDG	0.4	lb ai/a	FALL10	2.3	7.3	1.3	7.0	2.0	7.0
2	sulfentrazone	4	F	0.25	lb ai/a	FALL10	2.7	4.0	1.0	3.3	3.0	3.0
3	acifluorfen	2	L	0.375	lb ai/a	FALL10	1.0	5.3	1.3	6.3	2.0	6.3
4	flumioxazin	51	WDG	0.096	lb ai/a	FALL10	3.0	7.3	1.0	5.3	2.7	7.7
5	napropamide-UV	50	DF	4	lb ai/a	SPRING11	1.0	8.7	1.0	7.0	2.0	6.3
6	pendimethalin	3.8	CS	1.5	lb ai/a	SPRING11	1.7	2.3	1.0	2.3	3.0	1.7
7	terbacil	80	WDG	0.4	lb ai/a	SPRING11	2.0	8.0	6.0	9.3	1.3	6.0
8	s-metolachlor	7.62	EC	1.3	lb ai/a	SPRING11	1.7	2.3	1.0	2.0	3.0	3.7
9	flumioxazin	51	WDG	0.096	lb ai/a	SPRING11*DIR	2.0	6.7	1.3	4.0	2.3	6.7
10	Untreated						1.3	4.3	1.0	2.7	3.3	4.0
LSD (P=.05)							1.52	4.82	0.72	3.49	1.71	4.64
Standard Deviation							0.88	2.81	0.42	2.03	0.99	2.71
CV							47.36	49.91	26.35	41.19	40.31	51.73

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage	WHCA	STBE	STBE	STBE	STBE	STBE
	Crop Code											
	Rating Date						1/Jun/11	13/Jun/11	16/Jun/11	20/Jun/11	23/Jun/11	
	Rating Type						RATING	Harvest	Harvest	Harvest	Harvest	Total
	Rating Unit						1-10	KG/PLOT	KG/PLOT	KG/PLOT	KG/PLOT	KG/PLOT
1	terbacil	80	WDG	0.4	lb ai/a	FALL10	6.0	1.470	0.189	0.233	0.948	2.839
2	sulfentrazone	4	F	0.25	lb ai/a	FALL10	1.3	1.053	0.103	0.111	0.576	1.843
3	acifluorfen	2	L	0.375	lb ai/a	FALL10	3.7	1.047	0.224	0.347	1.574	3.192
4	flumioxazin	51	WDG	0.096	lb ai/a	FALL10	4.7	0.923	0.127	0.179	0.635	1.863
5	napropamide-UV	50	DF	4	lb ai/a	SPRING11	3.0	1.319	0.145	0.321	0.772	2.557
6	pendimethalin	3.8	CS	1.5	lb ai/a	SPRING11	3.0	1.028	0.138	0.148	0.595	1.910
7	terbacil	80	WDG	0.4	lb ai/a	SPRING11	5.7	1.279	0.165	0.265	0.726	2.435
8	s-metolachlor	7.62	EC	1.3	lb ai/a	SPRING11	3.3	1.005	0.136	0.256	0.656	2.053
9	flumioxazin	51	WDG	0.096	lb ai/a	SPRING11*DIR	6.0	1.595	0.205	0.273	1.565	3.638
10	Untreated						3.7	0.876	0.141	0.137	0.522	1.675
LSD (P=.05)							5.76	0.6961	0.0806	0.1909	0.6699	1.1900
Standard Deviation							3.36	0.4058	0.0470	0.1113	0.3905	0.6937
CV							83.29	34.99	29.92	49.0	45.58	28.9

Preemergence Weed Control in Everbearing Strawberry – HTRC 2011

Project Code: 126-11-03 **Location: East Lansing, MI**

Personnel: Bernard H. Zandstra, Rodney Tocco
Crop: Strawberry **Variety: Seascape**
Planting Method: Transplant **Planting Date: 4/28/10**
Spacing: 2 ft **Row Spacing: 6 ft**
Tillage Type: Conventional **Study Design: RCB** **Replications: 3**
Plot Size: 5.5 ft wide x 30 ft long

Soil Type: Thetford Loamy Sand **OM: 1.4%** **pH: 7.0**
Sand: 88% **Silt: 8%** **Clay: 4%** **CEC: 4.1**

Herbicide Application Information

Timing	Date	Time	Air/Soil	T	Soil Surf	Wind	RH	Sky	Dew
PRE/DIR	4/21/11	3:30 pm	31/56	F	Good	1-3 N	31	15% Cloudy	N

Crop and Weed Information at Application

		Height or Diameter	Growth Stage	Density
4/21	STBE = strawberry	6″, 2″	Greening, 100%	
4/21	BYGR = barnyardgrass	3-6″		Many
4/21	LACG = large crabgrass	3-6″		Many
4/21	DAND = dandelion	3-6″		Moderate
4/21	HOWE = horseweed	1-3″		Moderate
4/21	WHCA = white campion	1-2″, 1-2″		Many
4/21	WIRA = wild radish	4-8″, 2-5″		Many

Notes and Comments
1. Spray applied with 4 nozzle boom. FF8002, 20 gpa, 30 psi, 3.2 mph, CO_2 backpack sprayer.
2. Crop and weed injury ratings on scale of 1-10; 1 = no injury, 10 = complete kill.

Preemergence Weed Control in Everbearing Strawberry – HTRC 2011

Preemergence Weed Control in Everbearing Strawberry - HTRC 2011

Trial ID: 126-11-03 Protocol ID: 126-11-03
Location: East Lansing, MI Study Director: Rodney Tocco
Investigator: Dr. Bernard Zandstra

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage		STBE	QUGR	WHCA	YERO	STBE	QUGR	WHCA
	Pest Code													
	Crop Code							STBE				STBE		
	Rating Date							12/May/11	12/May/11	12/May/11	12/May/11	1/Jun/11	1/Jun/11	1/Jun/11
	Rating Type							RATING	RATING	RATING	RATING	RATING	RATING	RATING
	Rating Unit							1-10	1-10	1-10	1-10	1-10	1-10	1-10
1	napropamide	50	DF	4	lb ai/a	PRE		2.0	5.7	5.0	4.7	2.0	5.7	5.0
2	napropamide-UV	50	DF	4	lb ai/a	PRE		1.7	4.3	3.0	5.0	2.3	3.3	7.0
3	terbacil	80	WDG	0.4	lb ai/a	PRE		2.7	5.0	4.0	9.0	2.0	5.0	7.3
4	carfentrazone	0.35	SE	0.027	lb ai/a	PRE		3.0	5.7	7.0	10.0	2.0	3.0	6.3
	sulfentrazone	3.15	SE	0.243	lb ai/a	PRE								
5	acifluorfen	2	SC	0.375	lb ai/a	PRE		1.7	1.3	2.0	6.0	2.3	2.7	7.3
6	pendimethalin	3.8	CS	1.4	lb ai/a	PRE		1.3	4.0	2.0	1.0	2.0	4.3	4.7
7	s-metolachlor	7.62	EC	1.3	lb ai/a	PRE		1.7	7.3	1.0	3.0	1.7	7.7	4.7
8	flumioxazin	51	WDG	0.064	lb ai/a	PRE	DIR	1.3	9.0	6.3	7.0	1.3	7.3	7.7
9	carfentrazone	2	EC	0.031	lb ai/a	PRE		2.3	4.7	6.3	9.3	2.0	4.0	6.7
10	Untreated							1.0	6.3	6.3	5.3	1.7	7.3	6.7
LSD (P=.05)								1.16	5.64	6.26	2.69	1.33	4.17	6.37
Standard Deviation								0.67	3.29	3.65	1.57	0.78	2.43	3.72
CV								36.16	61.65	84.88	26.01	40.19	48.35	58.66

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Growth Stage		STBE 13/Jun/11 Harvest KG/PLOT	STBE 17/Jun/11 Harvest KG/PLOT	STBE 20/Jun/11 Harvest KG/PLOT	STBE Total KG/PLOT
	Pest Code										
	Crop Code							STBE	STBE	STBE	STBE
	Rating Date							13/Jun/11	17/Jun/11	20/Jun/11	
	Rating Type							Harvest	Harvest	Harvest	Total
	Rating Unit							KG/PLOT	KG/PLOT	KG/PLOT	KG/PLOT
1	napropamide	50	DF	4	lb ai/a	PRE		0.681	0.373	0.323	1.3777
2	napropamide-UV	50	DF	4	lb ai/a	PRE		0.456	0.287	0.245	0.9873
3	terbacil	80	WDG	0.4	lb ai/a	PRE		0.433	0.133	0.076	0.6423
4	carfentrazone	0.35	SE	0.027	lb ai/a	PRE		0.835	0.387	0.209	1.4310
	sulfentrazone	3.15	SE	0.243	lb ai/a	PRE					
5	acifluorfen	2	SC	0.375	lb ai/a	PRE		0.494	0.253	0.144	0.8913
6	pendimethalin	3.8	CS	1.4	lb ai/a	PRE		0.730	0.360	0.277	1.3663
7	s-metolachlor	7.62	EC	1.3	lb ai/a	PRE		0.831	0.373	0.217	1.4213
8	flumioxazin	51	WDG	0.064	lb ai/a	PRE	DIR	1.206	0.680	0.481	2.3677
9	carfentrazone	2	EC	0.031	lb ai/a	PRE		1.010	0.653	0.342	2.0053
10	Untreated							1.000	0.747	0.427	2.1730
LSD (P=.05)								0.4268	0.3373	0.2916	0.94836
Standard Deviation								0.2488	0.1966	0.1700	0.55283
CV								32.42	46.29	62.01	37.7