

4-26-2022

2022 Pesticide Safety: Pesticide Restrictions and MRLs

Martha Sylvia

Katherine Ghantous

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Pesticide Restrictions and MRL's

Marty Sylvia and Katie Ghantous
UMass Cranberry Station
UMass Cranberry Pesticide Safety
April 26th 2022



RESTRICTED USE PESTICIDE
TOXIC TO FISH AND AQUATIC ORGANISMS
FOR RETAIL SALE TO AND USE ONLY BY CERTIFIED APPLICATORS OR PERSONS UNDER THEIR DIRECT SUPERVISION AND ONLY FOR THE USES COVERED BY THE CERTIFIED APPLICATOR'S CERTIFICATION.

Fanfare® EC GROUP 3 INSECTICIDE

ACTIVE INGREDIENT: % BY WT.
Bifenthrin (2-methyl (1E)-isopropyl)-5-(2-chloro-3,3,3-trifluoro-isopropyl)-2,2-dimethyl-cyclopropanecarboxylate* 24.0%

OTHER INGREDIENTS:** 76.0%

TOTAL: 100.0%

*Cis isomers 97% minimum, trans isomers 3% maximum.
**Contains petroleum distillates.
This product contains 2 pounds active ingredient per gallon.

EPA Reg. No. 65222-261
EPA Est. No. 37429-GA-001¹; 37429-GA-002²
Letter(s) in lot number correspond(s) to superscript in EPA Est. No.

KEEP OUT OF REACH OF CHILDREN
WARNING/AVISO
Si usted no entiende la etiqueta, busque a alguien para que se lo explique o usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)

How can we help? 1-866-406-6262

INSECTICIDE/ MITICIDE

ADAMA ESSENTIALS

AGENDA

- 8:00 WPS and Pesticide Safety Update – Marty
- 8:30 Insects of the Day – Anne
- 9:00 Herbicide Use Patterns and Reminders – Hilary
- 9:30 **Pesticide Restrictions and MRL's – M+K**
- 10:00 STRETCH BREAK
- 10:05 KQF and Frost Update – Peter
- 10:20 Pesticide Resistance and Modes of Action – M+K
- 10:45 Pathology Review – Leela
- 11:10 Herbicide and Weed Research Update – Katie
- 11:35 Chemigation Review – Gavin Bartlett, ADM
- 12:00 Meeting Wrapup



Restricted Use Products (RUP)

About 15% of all active ingredients we have in cranberry are restricted use

About 25% of all applications we put on cranberry are restricted use

Product Name	Active Ingredient	% of all apps
Altacor	Chlorantraniliprole	18%
Bravo	Chlorothalonil	14%
Proline	Prothioconazole	9%
Avaunt	Indoxacarb	7%
Actara	Thiamethoxam	7%
Callisto	Mesotrione	6%
EBDC	EBDC	5%
Delegate	Spinetoram	5%
Intrepid	Methoxyfenozide	4%
QuadrisTop	Difen+Ab	4%
Glyphosate-based	Glyphosate	4%
Select, Intensity	Clethodim	3%
Indar	Fenbuconazole	2%
Copper	Copper	2%
Diazinon	Diazinon	2%
Phosphites	Phosphite	2%
Abound	Azoxystrobin	1%
Devrinol	Napropramide	1%
Exirel	Cyantraniliprole	1%
Casoron	Dichlobenil	1%
Sevin	Carbaryl	1%
Belay	Clothianidin	1%

Do use!

- Chlorothalonils
- Thiamethoxam
- Methoxyfenozide
- Diazinon

Don't use much

- Simazine
- Pronamide
- Dinotefuran
- Fumigants

New

- Fanfare
- Zeus

BOLD is
federally
restricted

Which compounds are RUP's??

Restricted Use Products

- ▶ **Bifenthrin**
 - ▶ Chlorothalonils
 - ▶ ~~Chlorpyrifos~~
 - ▶ Diazinon
 - ▶ Dinotefuran
 - ▶ Methoxyfenozide
 - ▶ Pronamide
 - ▶ Simazine
 - ▶ Sulfentrazone
 - ▶ Thiamethoxam
 - ▶ **Basamid and Vapam**
- ▶ ▶ **Fanfare**
 - ▶ ▶ Bravo, Echo, Initiate
 - ▶ ▶ ~~Lorsban~~
 - ▶ ▶ Diazinon
 - ▶ ▶ Scorpion, Venom
 - ▶ ▶ Intrepid, Invertid
 - ▶ ▶ Kerb
 - ▶ ▶ Simazine
 - ▶ ▶ Zeus
 - ▶ ▶ Actara
 - ▶ ▶ **Fumigants!**

Why is it restricted use??



HUMAN TOXICITY?

▶ Federally restricted

- ▶ **Bifenthrin FANFARE** Toxic to Fish and Aquatic Organisms
- ▶ **Diazinon DIAZINON** Avian and Aquatic Toxicity Concerns
- ▶ ~~Chlorpyrifos~~ **LORSBAN**
May Be Fatal If Swallowed · May Be Fatal If Inhaled
- ▶ **Basamid and Vapam FUMIGANTS**
Due to Acute Inhalation Toxicity to Humans

Why is it restricted use??

▶ Federally restricted

- ▶ Bifenthrin **FANFARE**
- ▶ Diazinon **DIAZINON**
- ▶ Chlorpyrifos ~~**LORSBAN**~~
- ▶ Basamid and Vapam **FUMIGANTS**

- EPA revised certification standards for pesticide applicators
- Set age limit at 18 years
- Competency standards, annual training, photo id...



HUMAN TOXICITY

Why is it restricted use??

▶ State restricted

- ▶ Actara *thiamethoxam**
- ▶ Bravo *chlorothalonil**
- ▶ Intrepid *methoxyfenozide*
- ▶ Kerb *pronamide**
- ▶ Simazine *simazine*
- ▶ Scorpion, Venom *dinotefuran*
- ▶ Zeus *sulfentrazone*

*=likely human carcinogen

Groundwater Protection List

List of pesticide active ingredients that could affect groundwater

The Groundwater Protection List refers to a list of pesticide active ingredients that could potentially impact groundwater due to their chemical characteristics and toxicological profile.

[Search for registered products in Massachusetts](#)

Active Ingredients by Category

Herbicides	Insecticides	Fungicides
<ul style="list-style-type: none">• Acetochlor*• Acifluoren• Alachlor• Aldicarb• Atrazine• Bentazon• Bromacil• Cyanazine• Chlorthal-Dimethyl**• Dimethanamid• Diuron• Flufenacet• Fluthiacet-methyl• MCPA• Metolachlor• Metribuzin• PCP• Pronamide• Propazine• Simazine• Sulfentrazone	<ul style="list-style-type: none">• Aldicarb• Carbofuran• Dinotefuran• Disulfoton• Fenamiphos• Fonofos• Lindane• Methoxyfenozide• PCP• Propoxur• Terbufos• Thiamethoxam	<ul style="list-style-type: none">• Chlorothalonil• Cyflufenamid• Cyproconazole• Folpet• Kresoxim-Methyl• Triticonazole• Sedaxane

Active Ingredients by Category

Groundwater Protection List, MDAR adds to MA Restricted Use Products List

Herbicides	Insecticides	Fungicides
<ul style="list-style-type: none">MetolachlorMetribuzinPCPPronamidePropazineSimazineSulfentrazone	<ul style="list-style-type: none">AldicarbCarbofuranDinotefuranDisulfotonFenamiphosFonofosLindaneMethoxyfenozidePCPPropoxurTerbufosThiamethoxam	<ul style="list-style-type: none">ChlorothalonilCyflufenamidCyproconazoleFolpetKresoxim-MethylTriticonazoleSedaxane

Put on list based on **Leaching potential** criteria and based on **toxicological concern**

- Water solubility greater than or equal to 3 ppm
- Koc less than or equal to 1900 “potential to leach”
- Soil half life greater than or equal to seven days

LEACHING POTENTIAL

Koc \leq 1900

Soil $\frac{1}{2}$ life \geq 7 days

Water solubility \geq 3 ppm

Compounds are not the same!

Highly mobile

Moderately mobile

Relatively immobile

Actara

Thiamethoxam

- Koc 70 ml/g
(low adsorption)
- Half life in soil:
• 385 days
- Solubility: 4000 ppm
highly soluble

Intrepid

Methoxyfenozide

- Koc 490 ml/g
- Half life in soil:
• 336-1100 days
- Solubility: 3.3 ppm

Diazinon

- Koc 1000 ml/g
(higher adsorption)
- Half Live in soil:
• 40 days
- Solubility: 60 ppm

Most leachable compound we have!

TOXICOLOGICAL CONCERN

ACTARA

- Thiamethoxam has a toxicological classification as a likely human carcinogen

BRAVO

- Chlorothalonil has a toxicological classification as a probable human carcinogen (B2).

KERB

- Pronamide was listed as a toxicological classification as a probable human carcinogen (B2) but was removed after further testing.

PESTICIDES IN CRANBERRY BOG SYSTEMS

- Monitoring for pesticides on Groundwater Protection List
- Targeted monitoring based on Notifications
- 2018: Three bog systems; Sampling of bog ditches



Pesticide	Highest Detection (ppb)	Human Health Standard (ppb)
Chlorothalonil	0.022	500
Methoxyfenozide	3.54	600
Thiamethoxam	0.044	77

TESTING SURFACE WATER IN CRANBERRY

		methoxyfenozide	chlorothalonil	thiamethoxam
		Intrepid	Bravo	Actara
South Carver		.892 ppb	ND	ND
		no app		
		collection 7/30		
South Carver		3.54 ppb	ND	0.044 ppb
		App on 7/27		App of Actara in May
		collection 7/30		
Rochester		0.008 ppb	0.022 ppb	ND
		no app	App on 7/18	
		collection 7/30	collection 7/30	
Halifax		0.0792 ppb	ND	0.008 ppb
Human Standards	acute	-	-	2300
Benchmark	chronic	600	500	77
Fish	acute	>2100	5.25	>5000
	chronic	530	3	2000
Aquatic	acute	25	1.8	17.5
Invertebrates	chronic	6.3	0.6	-

Bogs With IWPA & Zone II



*Check that you
are not in zone ii
before you apply
these compounds*

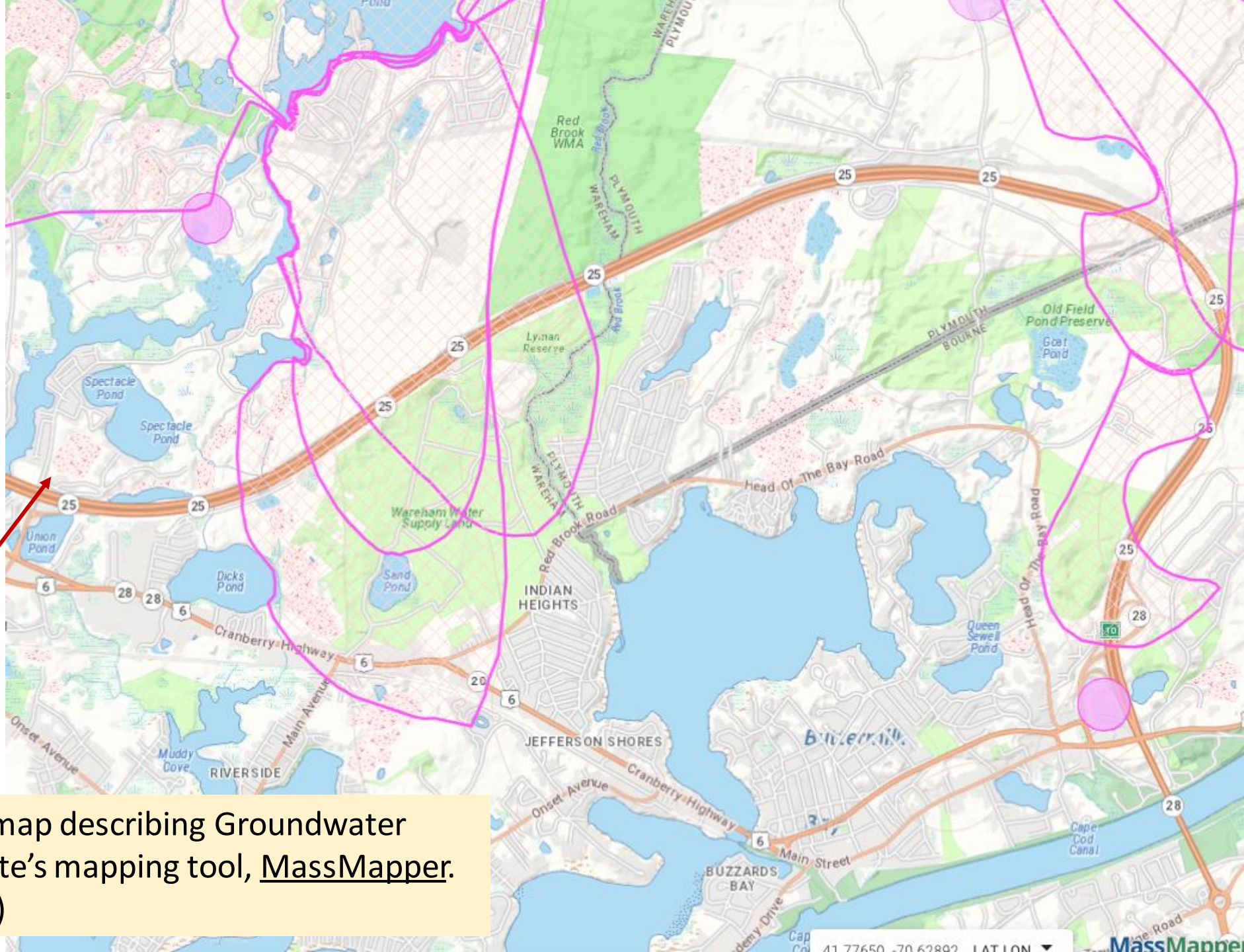


Base Map

Bogs are shown as pink with red speckles

- Click on layers at upper right
- 2021 aerial image

State Bog



The state's most up-to-date map describing Groundwater Recharge Areas using the state's mapping tool, [MassMapper](#). (Oliver map system is retired)

Zone II's are pink cross hatched areas

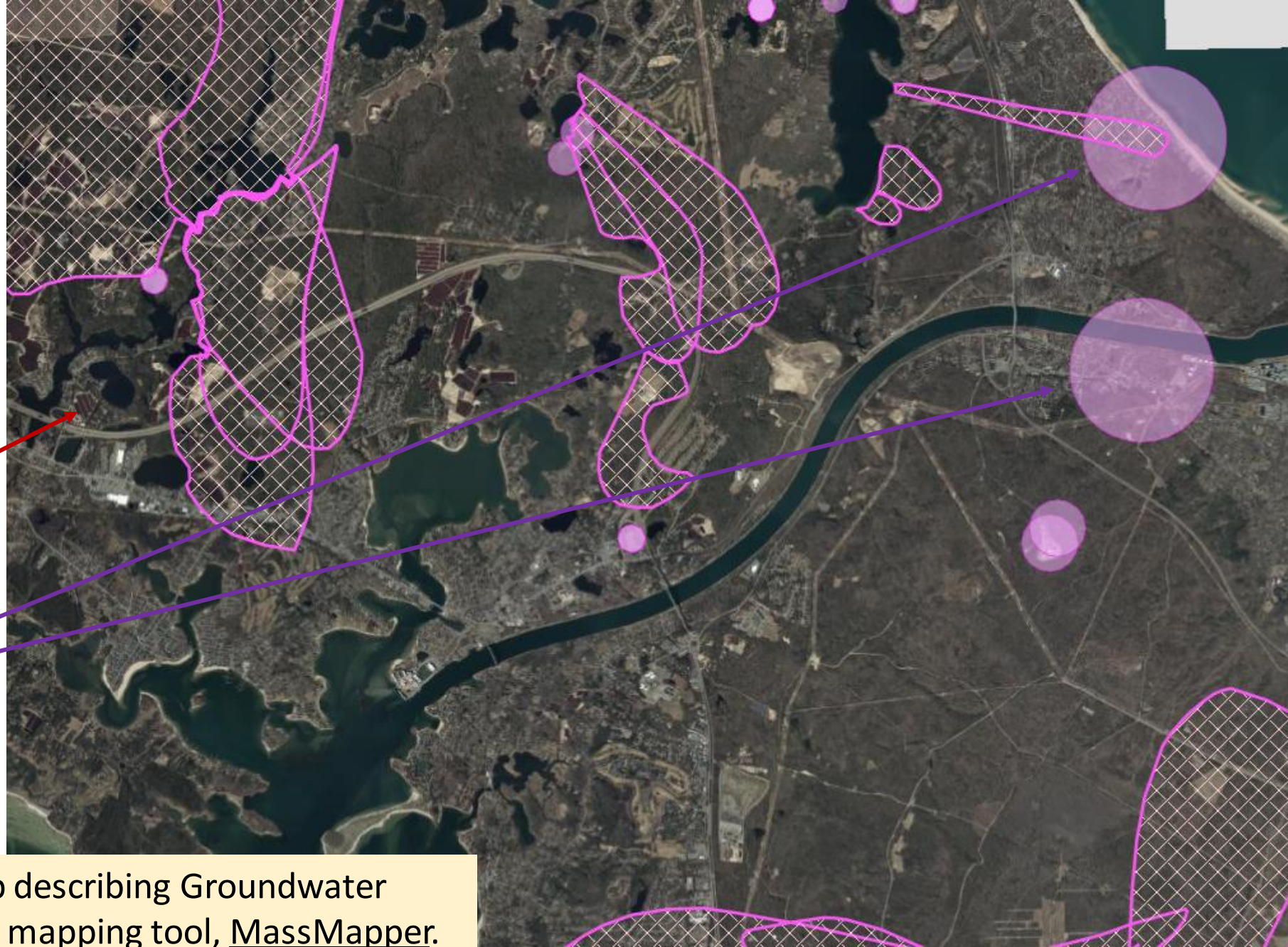
IWPA are pink circles

- Note, only the largest sized IWPA's are jurisdictional for agriculture, all of the others are not.

State Bog

- To understand which IWPA is the largest, the IWPA's by the Eastern edge of the Cape Cod Canal are the largest size.

The state's most up-to-date map describing Groundwater Recharge Areas using the state's mapping tool, [MassMapper](#). (Oliver map system is retired)





Zone II Groundwater Protection

Cannot apply in Zone II unless...

- **Actara**
- **Bravo**
- **Intrepid**
- **Kerb**
- **Scorpion**
- **Simazine**
- **Zeus**
- **Chart book**
- **letter**
- **letter**
- **letter**
- **NO**
- **NO**
- **Chart book**

Letter to cover you, cleared through MDAR Hotze Wijnja



Cranberry Research & Outreach
An Affiliate of the UMass Amherst
Center for Agriculture, Food and the Environment

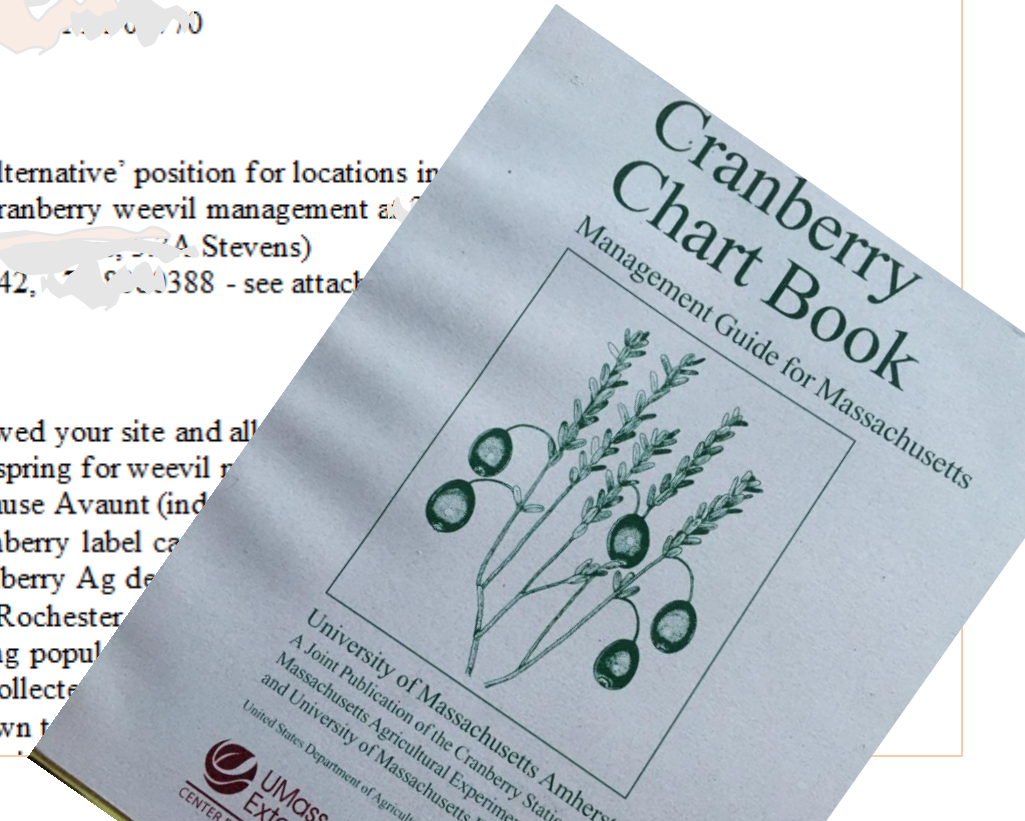
One State Bog Road, P.O. Box 569 • East Wareham, MA 02538-0569 • p: 508.295.2212 • f: 508.295.6387 • umass.edu/cranberry

April 16, 2021

[Redacted]
[Redacted]
[Redacted] 0770 [Redacted]
[Redacted] 0770

Re: Memo to justify 'no viable alternative' position for locations in
Actara (thiamethoxam) for cranberry weevil management at
1500 [Redacted] 112 A [Redacted] Stevens)
property entrance is 41 [Redacted] 742, [Redacted] 6388 - see attach

Dear [Redacted],
This letter to confirm we have reviewed your site and all
(thiamethoxam) on the acreage this spring for weevil
for weevil in your Zone II bogs because Avaunt (ind
Belay (clothianidin) has had the cranberry label ca
no longer available through our cranberry Ag de
weevil for years on your acreage in Rochester
sweeping and trying to manage spring popul
over threshold. However, weevils collect
in the last 2 years in the lab and shown t



Zone II Groundwater Protection

Cannot apply in Zone II unless...

- **Actara** • Chart book
- Bravo • letter
- **Intrepid** • letter
- Kerb • letter
- Scorpion • NO
- Simazine • NO
- **Zeus** • Chart book

But no matter what, if you apply in
Zone II, you must report it to MDAR

Groundwater Protection Program Notification Form

You must notify us when you apply a pesticide product which is listed on the groundwater protection list. Notifications must be made within ten days of the end of the calendar month. Please submit one form per site.

Fields marked with an * are required.

Name *

First Name

Last Name

PESTICIDE LICENSE NUMBER *

CONTACT

Hotze Wijnja

 Phone

617-626-1771

 Online

Hotze.Wijnja@mass.gov

Changes!! Lorsban (chlorpyrifos) GONE

- **Chlorpyrifos is no longer allowed for use on cranberries**
- EPA issues a final ruling August 2021, effective in October 2021
- All tolerances expired February 2022 on food crops
- Existing stock can NOT be used, haz waste → → →



Usually when we lose a product, the label is canceled but the tolerance stands for a while to use “existing stock” even though new product can’t be purchased (like with Belay and Princep). This is NOT the case here since the tolerance is being revoked first (a very unusual situation).



Diazinon fighting to keep

OKAY for now!

- But likely several challenges in next few years
- Fisheries and Wildlife review
- EPA Registration review in 2024

Mitigation measures may be imposed in areas deemed critical habitat for the endangered species of concern

- National Marine Fisheries Services
- In these area, may lose full rate options and limit number of apps



endangered species zones in green

Fanfare Full EPA Registration, Supplemental Label allowing use on Cranberry



Really only want you using
for Resistant Cranberry Weevil



IN MAY

CRANBERRY

PEST	DOSAGE		COMMENTS
	LB AI/A	FL OZ/A	
Sparganothis fruitworms, cranberry fruitworms, fireworms, spanworms, tip worms, flea beetles, and white grub adults	0.10	6.4	Ground application: Apply in water in a minimum of 24 gallons per acre.
<ul style="list-style-type: none"> Do not apply more than 0.3 lb. active ingredient (19.2 ounces formulated) per acre per year. Do not apply to running water. Repeat applications if needed to maintain control, but do not make applications less than 7 days apart. Preharvest interval 30 days. 			

Fanfare Full EPA Registration Supplemental Label allowing use on Cranberry

Rate is 6.4 fl oz
Chemigation OK
Cost is cheap

2 ~~3~~ formulations
~~2EC~~, EC and ES

RESTRICTED USE PESTICIDE TOXIC TO FISH AND AQUATIC ORGANISMS

FOR RETAIL SALE TO AND USE ONLY BY CERTIFIED APPLICATORS OR PERSONS UNDER THEIR DIRECT SUPERVISION AND ONLY FOR THE USES COVERED BY THE CERTIFIED APPLICATOR'S CERTIFICATION.

Fanfare® EC

GROUP 3 INSECTICIDE

ACTIVE INGREDIENT: % BY WT.
Bifenthrin: (2-methyl[1,1'-biphenyl]-3-yl)methyl 3-(2-chloro-3,3,3-trifluoro-1-propenyl)-2,2-dimethyl-cyclopropanecarboxylate* 24.0%
OTHER INGREDIENTS:** 76.0%
TOTAL: 100.0%

*Cis isomers 97% minimum, trans isomers 3% maximum.

**Contains petroleum distillates.

This product contains 2 pounds active ingredient per gallon.

EPA Reg. No. 66222-261

EPA Est. No. 37429-GA-001^{PT}; 37429-GA-002^{SD}

Letter(s) in lot number correspond(s) to superscript in EPA Est. No.

KEEP OUT OF REACH OF CHILDREN WARNING/AVISO

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)

How can we help? 1-866-406-6262



INSECTICIDE/
MITICIDE

ADAMA
ESSENTIALS

**RESTRICTED USE PESTICIDE
TOXIC TO FISH AND AQUATIC ORGANISMS**
For retail sale to and use only by certified applicators or persons under their direct supervision and only for the uses covered by the certified applicator's certification

FANFARE® EC INSECTICIDE/MITICIDE Use on Cranberry Supplemental Labeling

This label expires on 12/31/2024 and must not be distributed or used after that date.

Read the entire label for Fanfare® EC Insecticide/Miticide before proceeding with the use directions in this supplemental labeling.

ACTIVE INGREDIENT:
Bifenthrin: (2-methyl[1,1'-biphenyl]-3-yl)methyl 3-(2-chloro-3,3,3-trifluoro-1-propenyl)-2,2-dimethyl-cyclopropanecarboxylate* 24.0%
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WARNING LABEL

CDMS WEBSITE

Label and MSDS website

<http://www.cdms.net/LabelsSDS/home>



Find what you're looking for.



Advanced Search

Product Search

Manzate



[Manufacturers](#)

Product List

Search results for Manzate

Manzate® Max
UPL NA Inc.
MANCOZEB
70506-194

Manzate® Max Fungicide
UPL AgroSolutions Canada Inc.
33299

Manzate® Max T&O
UPL NA Inc.
MANCOZEB
70506-194

Manzate® Pro-Stick™
UPL NA Inc.
MANCOZEB
70506-234

Manzate® Pro-Stick™ T&O
UPL NA Inc.
MANCOZEB
70506-234

Manzate® Pro-Stick® Fungicide
UPL AgroSolutions Canada Inc.
28217

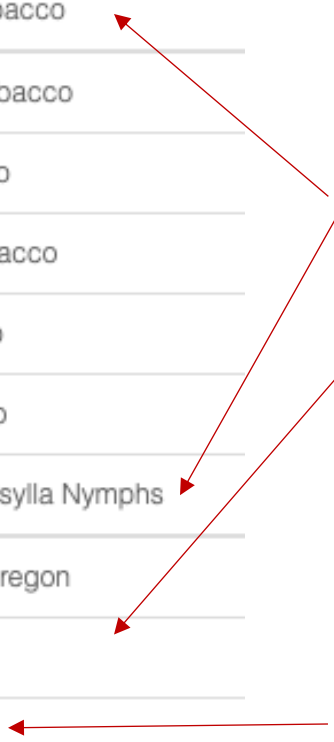
State Availability
Labels / SDS
Specimen Label, Rev. 12/3/2014 (012915-5209)
24(c) Registration, KY-110033 Rev. 05/03/2019 For Suppression of Tobacco Diseases In Tobacco
24(c) Registration, MA-150001 Rev. 03/18/2019 For Suppression of Tobacco Diseases in Tobacco
24(c) Registration, NC-080002 Rev. 5/5/11 For Suppression of Tobacco Diseases in Tobacco
24(c) Registration, OH-080003 Rev. 3/12/2013 For Suppression of Tobacco Diseases in Tobacco
24(c) Registration, PA-080001 Rev. 5/5/11 For Suppression of Tobacco Diseases in Tobacco
24(c) Registration, SC-080004 Rev. 5/5/11 For Suppression of Tobacco Diseases in Tobacco
24(c) Registration, WA-120007 Rev. 11/15/2017 For Use on Pears for Suppression of Pear Psylla Nymphs
2(ee) Recommendation, Rev. 3/22/11 For Suppression of Pear Psylla Nymphs on Pears in Oregon
2(ee) Recommendation, Rev. 4/2/2018 Control of Walnut Blight in Walnuts (CA)
SDS, 02-Jan-2019
SDS, 20-Nov-2018

SPECIMEN LABEL

The many 24C Labels

2ee Recommendations

SDS Safety Data Sheet





Preparation Date 01-May-2015

Revision date 02-Jan-2019

Revision Number: 4

Safety Data Sheet

State Availability**Labels / SDS**

Specimen Label, Rev. 12/3/2014 (012915-5209)

24(c) Registration, KY-110033 Rev. 05/03/2019 For Supp

24(c) Registration, MA-150001 Rev. 03/18/2019 For Supp

24(c) Registration, NC-080002 Rev. 5/5/11 For Suppress

24(c) Registration, OH-080003 Rev. 3/12/2013 For Supp

24(c) Registration, PA-080001 Rev. 5/5/11 For Suppressi

24(c) Registration, SC-080004 Rev. 5/5/11 For Suppress

24(c) Registration, WA-120007 Rev. 11/15/2017 For Use

2(ee) Recommendation, Rev. 3/22/11 For Suppression o

2(ee) Recommendation, Rev. 4/2/2018 Control of Walnut

SDS, 02-Jan-2019

SDS, 20-Nov-2018

1. Identification of the Substance/Preparation and of the Company/Undertaking**Product identifier****Product Description:** Manzate Pro-Stick**Other means of identification****Product code** 12-371A**UN/ID no.** UN3077**Registration number(s)** 70506-234**Recommended use of the chemical and restrictions on use****Recommended use** Fungicides.**Uses advised against** Activities contrary to label recommendation**Details of the Supplier of the Safety Data Sheet****Supplier Address**UPL NA Inc.
630 Freedom Business Center
Suite 402
King of Prussia, PA 19406**Emergency telephone number****Company Phone Number**

1-800-438-6071

Emergency telephone number

Chemtrec: (800) 424-9300 (24hrs) or (703) 527-3887

Medical: Rocky Mountain Poison Control Center

(866) 673-6671 (24hrs)

2. Hazards Identification

← SDS Safety Data Sheet



Safety Data Sheet

State Availability
Labels / SDS
Specimen Label, Rev. 12/3/2014 (012915-5209)
24(c) Registration, KY-110033 Rev. 05/03/2019 For Suppre
24(c) Registration, MA-150001 Rev. 03/18/2019 For Suppre
24(c) Registration, NC-080002 Rev. 5/5/11 For Suppressor
24(c) Registration, OH-080003 Rev. 3/12/2013 For Suppre
24(c) Registration, PA-080001 Rev. 5/5/11 For Suppressor
24(c) Registration, SC-080004 Rev. 5/5/11 For Suppressor
24(c) Registration, WA-120007 Rev. 11/15/2017 For Use on Pears for Suppression of Pear Psylla Nymphs
2(ee) Recommendation, Rev. 3/22/11 For Suppression of Pear Psylla Nymphs on Pears in Oregon
2(ee) Recommendation, Rev. 4/2/2018 Control of Walnut Blight in Walnuts (CA)
SDS, 02-Jan-2019
SDS, 20-Nov-2018

WARNING

Hazard Statements

Harmful in contact with skin
 May cause an allergic skin reaction
 Suspected of damaging fertility or the unborn child



11. Toxicological Information

Manzate Pro Stick :

Oral LD50 (rat) = >5,000 mg/kg
 Dermal LD50 (rabbit) = > 2,000 mg/kg
 Inhalation LC50 (rat) 4 hr = >5.4 mg/L

ecotoxicity

Manzate:

96 hr LC50
 Rainbow trout -= 0.73 mg/L
 Fathead minnow = 0.57 mg/L
 Bluegill sunfish = 0.84 mg/L
 72 hr EC50
 Freshwater algae = 0.43 mg/L

← SDS Safety Data Sheet

HANDLER DRIVEN RESTRICTIONS

You must check handler restrictions each year before putting out a spray!

- BRAVO for export
- Quadris Top, Zeus – new compounds don't have history for residues
- EU restricted compounds
- Added PHI restrictions

LPC Pesticide Chart | 2022

EU Qualified Fruit – Processed & Fresh

Compound	Trade Name	Restriction
thiamethoxam	ACTARA	45 day PHI
chlorothalonil	BRAVO	No use allowed after bud elongation* and 120 day PHI. To be used only for upright dieback control
sulfoxaflor	CLOSER SC	Pre-bloom application only
fenpropathrin	DANITOL	No use allowed
novaluron+acetamiprid	CORMORAN	75 day PHI

itions made to acreage under contract with Lassonde relevant state and local laws in addition to this chart applied, a particular chemical in a manner outside 18 immediately.

ed	Comment
	Do not apply after first scattered bloom or 6/22, whichever occurs first.
	LPC 60-day PHI

120 Day PHI for Fanfare If Export!

- May 27 means harvest Sept 24
- June 6 means harvest Oct 4
- Have to consider time for pesticide screen timing (10 days!)

MAY 2022						
SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	1	2	3	4
5	6	7	8	9	10	11

JUNE 2022						
SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
29	30	31	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	1	2
3	4	5	6	7	8	9

JULY 2022						
SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
26	27	28	29	30	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	1	2	3	4	5	6

AUGUST 2022						
SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
31	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	1	2	3
4	5	6	7	8	9	10

SEPTEMBER 2022						
SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
28	29	30	31	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	1
2	3	4	5	6	7	8

OCTOBER 2022						
SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
25	26	27	28	29	30	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31	1	2	3	4	5

Handlers and Residues for FANFARE (bifenthrin)

IR-4 TRIAL in 2014

Table C.3: Residue Data from Cranberry Field Trials

Trial ID	Trial Location (City, State)	NAFTA Growing Region	Trial Start Year	Crop	Variety	Commodity	Total Rate lbs ai/A ¹	PHI (days)	Residues from Treated Samples		
									Bifenthrin (ppm)		Mean Res. ² (ppm)
MA222	East Wareham, MA	1	2014	Cranberry	Stevens	Fruit	0.301	30	0.435	0.687	0.561
NJ309	Chatsworth, NJ	2	2014	Cranberry	Stevens	Fruit	0.301	28	0.185	0.223	0.204
OR388	Warrenton, OR	13	2014	Cranberry	Pilgrim	Fruit	0.304	28	0.251	0.279	0.265
WI486	Warrens, WI	5	2014	Cranberry	Stevens	Fruit	0.299	18	0.808	0.619	0.7135
								23	0.557	0.538	0.5475
								30	0.466	0.638	0.552
								35	0.551	0.596	0.5735
								41	0.634	0.625	0.6295
WI487	Wisconsin Rapids, WI	5	2014	Cranberry	Stevens	Fruit	0.313	29	0.631	0.765	0.698

¹ Three foliar applications of Fanfare 2 EC

Based on

3 applications, 7 days apart, 6.4 fl oz/app, 30 day PHI

Table C.4: Summary of Residue Data from Cranberry Field Trials

Commodity	Treatment	Total Application Rate, lb ai/A	PHI (days)	Analyte	Treated Sample Residue Levels (ppm)					
					n	Min.	Max.	HAFT ³	Mean	Std. Dev.
Cranberry	Fanfare 2 EC	0.299-0.313	28-30	Bifenthrin	10	0.185	0.765	0.698	0.456	0.215

³HAFT = Highest Average Field Trial

Residue ~0.5 ppm

US MRL = 3 ppm

EU MRL = 0.01 ppm

Domestic Allowed, 45 day PHI, one app

Export Allowed, 120 PHI, one app

Poll Questions

- I have my handler restriction in my hand already.
 - Yes and looked at
 - Yes but have not reviewed yet
 - No
 - N/A



- What does MRL stand for?
 - Minimum Residue Limit
 - Maximum Residue Limit
 - Main Resistance Load
 - Maximum Resistance Limitation

TOLERANCES / MAXIMUM RESIDUE LEVELS (AKA MRLS)

There must be a cranberry “tolerance” for an a.i. in order for a pesticide to be registered in the US

- Maximum safe and acceptable amount of residue on fruit
- Set by EPA
- Based on testing to see how much residue is left on/in fruit after use and PHI interval has passed
- What is “safe” is determined by many factors, including the “Risk Cup”
 - The Food Quality Protection Act of 1996 (FQPA)
 - Increased protection for infants and children from pesticides

THE FOOD QUALITY PROTECTION ACT OF 1996 (FQPA) AGGREGATE EXPOSURE, "THE RISK CUP"

- Total level of acceptable exposure to a pesticide = Reference Dose (RfD)
 - Level of exposure to a pesticide that a person could receive every day over a seventy-year period without significant risk of a long-term or chronic non-cancer health effect
- The full cup represents the total RfD
 - Each use of the pesticide contributes a specific amount of exposure that adds to the cup
- As long as the cup is not full (combined total of all estimated sources of exposure not 100% of the RfD) EPA can consider registering additional uses and setting new tolerances
- If the risk cup is full, no new uses approved until the risk level is lowered

- Before passage of FQPA, the EPA considered only dietary exposure to pesticides.



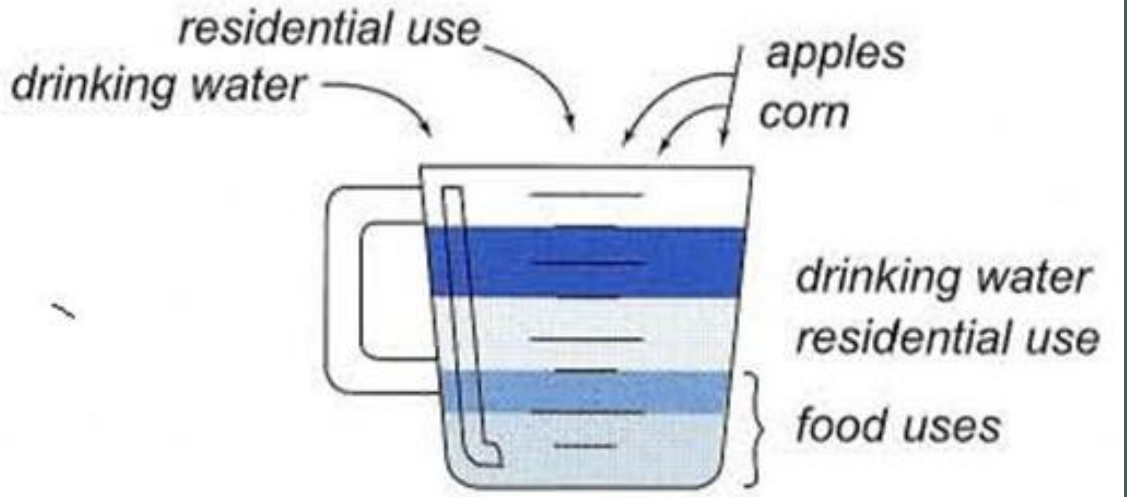
The risk cup held only dietary sources.

- Under FQPA, the EPA considers total or "aggregate" exposure to pesticides in the diet plus exposure to pesticides in drinking water and all other nonoccupational sources, such as pesticides used around the home and on lawns and pets.



When all sources of pesticide exposure are totaled, the risk cup fills up.

By [Peter J Jentsch](#)



Aggregate Risk Cup

Hotze Wijnja

DOMESTIC VS INTERNATIONAL MRLS

- Different countries have different approaches and standards
 - Goal is “harmonization” across different markets
 - Reality is very different for most countries/compounds!
- When handlers are making decisions about restricting chemicals...
 - More than 70 pesticides to consider
 - More than 15 different markets to consider

FOREIGN MRLS



- Some markets have “import tolerances” that allow food imported to have a residue, even if that chemical is not registered in that country
- Concerns?
 - Environmental – may consider
 - Human health (applicator exposure) – may consider
 - Human health (dietary, risk from consumption) – will not consider!

With Brexit, the UK now has its own rules (independent from EU)!

REGISTRATION REVIEW



- EPA reviews each registered pesticide at least every 15 years
 - Ensure pesticide can carry out its intended function without creating unreasonable adverse effects to:
 - Human health
 - The environment

Outcomes

- No changes
- Label changes to mitigate risk
- Loss of use

* Approx 30 compounds used the cranberry industry are in reg review!

CRANBERRY PESTICIDES IN REGISTRATION REVIEW PROCESS

Acephate

Acetamiprid

Bacillus thuringiensis

Carbaryl

Chlorothalonil

Clothianidin

Diazinon

Difenoconazole ✓

Dinotefuran

Fenbuconazole

Ferbam

Fluxapyroxad

Imidacloprid

Mancozeb

Mesotrione ✓

Napropamide ✓

Norflurazon

Phosmet

Pronamide

Propiconazole

Propiconazole

Prothioconazole

Pyrethrins

Spiromesifen

Tebuconazole

Tetraconazole

Thiamethoxam

THE GOOD NEWS - PESTICIDES IN PIPELINE

Fungicides

- 3 compounds with completed trials
 - All awaiting analysis or awaiting registrant submission
- 1 compounds nominated for 2022 field trials

▪ Herbicides

- 2 compounds with completed field trials
 - 1 submitted to EPA, other on hold due to reg review

Insecticides

- 1 compound recently registered