Cranberry Station Newsletter

JUNE 2012

UMass Cranberry Station
1 State Bog Road
P.O. Box 569
East Wareham, MA 02538
http://www.umass.edu/cranberry

Can I mix this with that?

At the Elks meeting in April 2012, I talked about pesticide compatibility. Will a convenient tank mix save you the time and cost of a second application? Or will it be a clumpy disaster in the tank? Do a JAR TEST to find out before you spray. Most labels call for a jar test if there are compatibility questions with the mix, but many give limited instructions. If a detailed jar test is described on the label, follow those instructions. However, if the label says something vague like "add the proportionate amounts to a quart of water," follow the guidelines presented here.

The basic strategy for a jar test is to add ingredients in the order of most difficult to disperse first, stir/shake vigorously, and see what the mixture looks like. Always wear label-required personal protective equipment when pouring or mixing pesticides. Do a jar test in a safe work space.

STEP 1. Add a pint of spray water — from the water source you will use to fill the tank **— to a clean, one-quart glass jar.**

STEP 2. Check spray water pH. If needed, adjust the spray water pH to the range required by pesticide label(s).

STEP 3. Add the materials you plan to use to the jar in the order listed in the chart. After adding each ingredient, stir or shake and observe the results. Do not add all materials and then shake. Shaking gives the best test as certain incompatibilities don't appear until a lot of energy is added.

Carolyn DeMoranville

Dr. Carolyn DeMoranville, Station Director

STEP 4. Stir the entire mixture. Feel the sides. A warm mixture suggests a chemical reaction occurred, which could degrade the pesticide(s) and potentially reduce pest control. If the mixture is smooth and free of visible clumps or particles, then the ingredients are physically compatible and can be mixed and applied. If you can see any clumping after stirring and shaking, then you probably have a problem.

The order of listing in the chart is a general approach that should work in most cases — but not all. If the mixture doesn't work following the chart order, and you really want to make the mixture work and the label offers no specific advice on mixing, change the mixing order and try again.

STEP 5. Triple-rinse and discard the jar when the test is finished.

Tested Cranberry Pesticides:

We tested 10 pesticides and 3 adjuvants in the lab for a quick "look-see" at compatibility. The attached color chart can be used as a quick reference guide when deciding on pesticide application choices. Combinations with "Green" showed no obvious incompatibility; "Yellow" indicates caution when combining, and "Red" is definitely a problem and should be avoided.

It is strongly recommended that you do your own jar test before mixing large batches of chemicals as formulations may vary from manufacturer to manufacturer.

Please let me know if you have experienced something different from what is reported here!

We tested all 2-way combinations except:

- Devrinol + any adjuvant (preemergence herbicide, adjuvants not recommended)
- Bravo products + any adjuvant (not recommended)
- Avaunt and Delegate + any adjuvant (not recommended)
- Intrepid and Confirm + adjuvants (they are recommended, so assumed good compatibility)
- Poast + any adjuvant (all NIS; COC recommended)
- Adjuvant combinations with each other

We figured our jar tests on the following field application rates:

Bravo Ultrex	WDG	3.8-6 lb
Bravo WeatherStik	SC	4-6.5 pt
Callisto	SC	4-8 oz
Poast	EC	2 oz/gal
QuinStar	L	up to 12.5 oz
Devrinol	DF	8-12 lb
Avaunt	DG	6 oz
Intrepid	F	10-16 oz
Delegate	WG	3-6 oz
Confirm	F	16 oz
Activator 90		0.25% v:v
Exit		0.25% v:v
Induce		0.50% v:v

RESULTS:

Separation of Pesticides and Precipitate on bottom –Avoid these combinations!

Delegate + Callisto
Delegate + QuinStar
Devrinol + Bravo Ultrex
Devrinol + Bravo Weatherstik

Some Precipitate on bottom, but agitation kept pesticides in solution

Ultrex + Avaunt
Ultrex + Delegate
Weatherstik + Avaunt
Weatherstilk + Delegate
Delegate + Avaunt
Devrinol + Avaunt
QuinStar + Callisto

Other

QuinStar + Exit formed some discoloration on the surface.

Jar Test Strategy

Combine the ingredients listed here to determine if a tank mix will save you the time and cost of a second application of a pesticide.

Material	order of mixing	Material amount to add to jar*
Water Soluble Pouches	1	1 tablespoon (Tbs) per pound
Wettable Powders	2	1 Tbs per pound
Dry flowables/water-dispersible granules	3	1 Tbs per pound
Suspension concentrates/FlowablesCapsule suspensions	4	1 teaspoon (tsp) per pint
Emulsifiable concentrates	5	1 tsp per pint
Soluble Liquids	6	1 tsp per pint
Soluble Powders	7	1 tsp per pound
Surfactants, oils, remaining adjuvants	8	1 tsp per pint
Fertilizers	9	1.1 grams** per pound

*Equivalent to underlined unit of pesticide or fertilizer per 100 gallons of final spray solution.
**Use an inexpensive postal scale to measure this amount.

Information on general jar test procedures taken from Franz Niederholzer, How to Do a Jar Test, University of California Cooperative Extension. May 25, 2011 (fact sheet).

Do you have Poverty Grass?

We are doing a survey of bogs that have poverty grass to see what species of grass are actually present out on the bogs. We will simply visit your bog and collect a few specimens for identification by the UMass Herbarium. We will let you know what we find, if you'd like.

If you have poverty grass, please call the IPM/Weed lab (x27) and leave your name and phone number with Chelsea or call me at ext. 21. You can email your information to hsandler@umext.umass.edu

Hilary Sandler, IPM Weed Specialist

Phragmites is becoming a problem!

Phragmites, or cord grass, has been an invasive weed in MA for many years. In the past few years, I have noticed it encroaching bog production areas and even on the bog in a few cases. This is a very serious weed and must be controlled as soon as it is noticed.

We hope to be visiting many bogs with our Poverty Grass survey, but would also like to know if you have seen **Phragmites** on or near your bog. Please call the IPM/Weed lab (x27) and leave your name and phone number with Chelsea or call me at ext. 21. You can email your information to hsandler@umext.umass.edu.

Phragmites australis

FINAL KEEPING QUALITY FORECAST

The Keeping Quality Forecast for June 2012 is for VERY POOR keeping quality if fungicides or late water are not used.

We calculated 2 of a possible 16 points to arrive at this forecast. We were awarded 1 point for March precipitation and 1 point for April precipitation. This is a year that you should definitely not reduce your fungicide rates and/or the number of fungicide applications. If you have a bed that had late water held this spring, you can still reduce your fungicide inputs in spite of the forecast. As usual, call me if you have any specific questions or concerns about a particular bed.

Frank L. Caruso,
Extension Plant Pathologist

UMASS EXTENSION
UNIVERSITY OF MASSACHUSETTS
P.O. BOX 569
EAST WAREHAM, MA 02538

OFFICIAL BUSINESS

Pesticide Jar Tests Compatibility Results 2012 - UMass Cranberry Station

	Ultrex	Wstik	Callisto	Poast	Devrinol	QuinStar	Avaunt	Intrepid	Delegate	Confirm	Activ 90	Exit	Induce
Bravo Ultrex													
WeatherStik													
Callisto													
Poast													
Devrinol													
QuinStar													
Avaunt													
Intrepid													
Delegate													
Confirm													
Activator 90													
Exit													
Induce													

incompatibility observed: separation, precipitate formed; avoid combination.

small amount of precipitate formed; use cautiously and agitate mix.

some discoloration observed; should be ok, but make another choice if possible.

not tested.

combination observed as compatible.

UMass Cranberry Station. Data from jar test study conducted December 2011.

UMass Extension

UNIVERSITY OF MASSSACHUSETTS/AMHERST
CRANBERRY STATION
EAST WAREHAM, MA 02538

A.L. Averill and M.M. Sylvia

REDUCED-RISK AND ORGANOPHOSPHATE REPLACEMENT INSECTICIDES IN CRANBERRY

2012

NAME active ingredient	RATE	TARGET INSECTS	PRIMARY ACTIVITY	MODE OF ACTION / IRAC GROUP*	RULES &METHODS TO MAXIMIZE FIELD EFFICACY REI=Re-entry Interval PHI=Pre-Harvest Interval
ALTACOR **chlorantraniliprole** *diamide*	3-4.5 oz/app 9 oz/season	cranberry fruitworm, blackheaded fireworm, spanworm, cutworms	Ingestion Limited contact Ovicidal	Neurotoxic Ryanodine receptor modulator IRAC Group 28	*Reduced risk/Organophosphate replacement* **REI = 4 HRS** --Rinse time under 8 minutes **PHI = 30 DAYS** --2 apps at top rate, 7 days between applications --long residual activity --Diamide chemistry targets muscle functioning
AVAUNT **indoxacarb** *oxadiazine*	6 oz/app 24 oz/season	cranberry weevil: spring population only (May/June) blackheaded fireworm spanworm, cutworms	Ingestion Limited contact	Neurotoxic Voltage-dependent sodium channel blocker IRAC Group 22	*Reduced risk/Organophosphate replacement* **REI = 12 HRS** --Rinse time under 8 minutes **PHI = 30 DAYS** --Hold water 1 day, no flow through bogs --Only 2 applications allowed targeting spring weevil --4 applications are allowed targeting other insects --7 days between applications
DELEGATE **spinetoram** **ENTRUST** **spinosad** **(organic option)** **SPINTOR** **spinosad** *All spinosyn products*	3-6 oz 19.5oz/A/season 1.25-3 oz/A 9 oz/A/season 6-10 oz/A 29 oz/A/season	cranberry fruitworm, *Sparganothis* fruitworm, blackheaded fireworm, false armyworm, brown/green spanworm, blossomworm, gypsy moth, winter moth flea beetle suppression	Contact Ingestion Translaminar	Neurotoxic Nicotinic acetylcholine receptor agonists IRAC Group 5	*Reduced risk* **REI = 4 HRS** --Rinse time under 8 min; good coverage is essential **PHI = 30 DAYS** --fast acting nerve poison but still reduced-risk (very low mammalian tox) --If caterpillar pests have reached a larger size, Delegate is better choice than Intrepid/Confirm HIGHLY TOXIC TO BEES but thoroughly dried residues are safe Delegate is compound of choice Entrust is organic formulation, not as long lasting or broad spectrum SpinTor is older formulation, not as long lasting or broad spectrum

*IRAC is a classification scheme that groups insecticides with the same mode of action. It is important for resistance management. Using same mode of action repeatedly may lead to loss of pest insect's sensitivity to all compounds in the same IRAC groups.

NAME **active ingredient**	**RATE**	**TARGET INSECTS**	**PRIMARY ACTIVITY**	**MODE OF ACTION / IRAC GROUP***	**RULES &METHODS TO MAXIMIZE FIELD EFFICACY** **REI=Re-entry Interval** **PHI=Pre-Harvest Interval**
ACTARA **thiamethoxam** **RESTRICTED USE** *neonicotinoid*	2-4 oz/A 12 oz/A/season	cranberry weevil; both spring (May/June) and summer (July) populations flea beetle suppression	Systemic (taken up by plant and transported to growing portions) Ingestion Translaminar	Neurotoxic Nicotinic acetylcholine receptor agonist/ antagonist IRAC Group 4	*Organophosphate replacement* **REI = 12 HRS** --Rinse time under 8 minutes; lower rates work well **PHI = 30 DAYS** --Not broad spectrum – ***will <u>not</u> hit caterpillars***! such as BHF or spag, etc. --***No Zone II area applications allowed*** (some exceptions if handler restricts Belay) Hold water 5 days Advise for <u>summer usage</u> only HIGHLY TOXIC TO BEES
BELAY **clothianidin** *neonicotinoid*	4 oz/app 12 oz/season	cranberry weevil: <u>summer</u> population only (after mid-July) Soil application for scarab grubs, striped colaspis, and flea beetle larvae	Systemic (taken up by plant and transported to growing portions) Ingestion Translaminar	Neurotoxic Nicotinic acetylcholine receptor agonist/antagonist IRAC Group 4	*Organophosphate replacement* **REI = 12 HRS** --slightly better than Actara on summer weevil **PHI = 21 DAYS** --Summer usage only HIGHLY TOXIC TO BEES For Soil App, apply as drench; irrigate (0.1-0.3") right after application --Very long residual in soil --Target eggs as they hatch; best control against very small larvae --Do not apply early season pre-bloom or during bloom --RESTRICTED BY SOME HANDLERS
ASSAIL 30SG **acetamiprid** *neonicotinoid*	4.0-6.9 oz/app 13.8 oz/A/season	blackheaded fireworm cranberry fruitworm *Sparganothis* fruitworm gypsy moth	Ingestion Systemic (taken up by plant and transported to growing portions)	Neurotoxic Nicotinic acetylcholine receptor agonist/antagonist IRAC Group 4	*Reduced Risk/Organophosphate replacement* **REI = 12 HRS** --Rinse time under 8 minutes **PHI = 1 DAY** --7 days between applications --2 applications maximum --RESTRICTED BY SOME HANDLERS
ADMIRE Pro **MANA ALIAS 4F** **ADMIRE 2F** **ALIAS 2F** **WIDOW** **All imidacloprid products** *neonicotinoid*	7-14 oz/A 8-16 oz/A 16-32 oz/A 32 oz/A/season	Soil insects: scarab grubs, striped colaspis, oriental beetle larvae	Systemic (taken up by plant and transported to growing portions) Ingestion Limited contact and translaminar	Neurotoxic Nicotinic acetylcholine receptor agonist/ antagonist IRAC Group 4	*Organophosphate replacement* **REI = 12 HRS** **PHI = 30 DAYS** --Apply as drench; irrigate (0.1-0.3") right after application --Target eggs as they hatch; best control against very small larvae --Very long residual in soil --Apply late July once at full rate drench --Do not use on saturated soil --Do NOT apply early season, pre-bloom, or while bees are foraging HIGHLY TOXIC TO BEES

*IRAC is a classification scheme that groups insecticides with the same mode of action. It is important for resistance management. Using same mode of action repeatedly may lead to loss of pest insect's sensitivity to all compounds in the same IRAC groups.

UMass Extension

UNIVERSITY OF MASSSACHUSETTS/AMHERST
CRANBERRY STATION, E. WAREHAM, MA 02538

A.L. Averill and M.M. Sylvia

INSECT GROWTH REGULATORS IN CRANBERRY

2012

NAME active ingredient	RATE	TARGET INSECTS	PRIMARY ACTIVITY	MODE OF ACTION / IRAC GROUP*	RULES &METHODS TO MAXIMIZE FIELD EFFICACY REI=Re-entry Interval PHI=Pre-Harvest Interval
INTREPID **Methoxyfenozide** **RESTRICTED USE** *IGR: Molting Hormone Agonist*	10-16 oz/A 64 oz/A/season Use spreader/binder	*Sparganothis* fruitworm blackheaded fireworm false armyworm brown/green spanworm cranberry blossomworm gypsy moth, winter moth	Ingestion	Insect growth regulator Ecdysone agonist/molting disruptor IRAC Group 18	*Reduced Risk/Organophosphate replacement* **REI = 4 HRS** --***No Zone II area applications allowed*** **PHI = 14 DAYS** --Must target ***small*** caterpillars, ***sweep in spring***, treat ASAP --Multiple applications are essential, especially in years of extended flight --Wait several days to assess control; long residual --Insects have to eat compound to die
CONFIRM **tebufenozide** *IGR: Molting Hormone Agonist*	16 oz/A 64 oz/A/season Use spreader/binder	*Sparganothis* fruitworm blackheaded fireworm false armyworm brown/green spanworm blossomworm gypsy moth, winter moth	Ingestion	Insect growth regulator Ecdysone agonist/molting disruptor IRAC Group 18	*Reduced risk* **REI = 4 HRS** --Confirm can be used in Zone II areas **PHI = 30 DAYS** --Confirm is less active than Intrepid; choose Intrepid if possible --Rinse time under 6 minutes, even less if possible --Wait several days to assess control; follow Intrepid notes for timing --Insects have to eat compound to die
RIMON 0.83EC **novaluron** *IGR: Chitin Synthesis Inhibitor*	12oz/app 36 oz/A/season NO surfactant	blackheaded fireworm cranberry fruitworm *Sparganothis* fruitworm spanworm cranberry weevil	Ingestion Systemic (taken up by plant and transported to growing portions)	Insect growth regulator Chitin synthesis inhibitor IRAC Group 15	*Reduced Risk/Organophosphate replacement* **REI = 12 HRS** --Rinse time under 6 minutes **PHI = 1 DAY** --This compound needs to be applied to the eggs when the eggs are hatching or being laid. --Multiple applications are essential, especially in years of extended flight --RESTRICTED BY SOME HANDLERS

*IRAC is a classification scheme that groups insecticides with the same mode of action. It is important for resistance management. Using same mode of action repeatedly may lead to loss of pest insect's sensitivity to all compounds in the same IRAC groups.

UMass Extension

UNIVERSITY OF MASSSACHUSETTS/AMHERST

CRANBERRY STATION, E. WAREHAM, MA 02538

A.L. Averill and M.M. Sylvia

ORGANOPHOSPHATE AND CARBAMATE INSECTICIDES IN CRANBERRY 2012

NAME active ingredient	RATE	TARGET INSECTS	PRIMARY ACTIVITY	MODE OF ACTION / IRAC GROUP*	RULES &METHODS TO MAXIMIZE FIELD EFFICACY REI=Re-entry Interval PHI=Pre-Harvest Interval
DIAZINON **diazinon** **RESTRICTED USE** *Organophosphate*	AG500 2-3 qt, 4-6 pt AG600 51-76.5 oz 50W4-6 lb	fireworm, cutworm cranberry fruitworm cranberry flea beetle striped colaspis	Contact	Neurotoxic Acetylcholinesterase inhibitor IRAC Group 1	AG500 --3 applications, 7 day interval AG600 --3 applications, 14 day interval 50W --3 applications, 14 day interval --Hold water 3 days **REI = 5 DAYS** **PHI = 7 DAYS**
IMIDAN **phosmet** *Organophosphate*	70W 1.33-4 lb	cranberry fruitworm fireworms	Contact	Neurotoxic Acetylcholinesterase inhibitor IRAC Group 1	--10 days between applications --little efficacy data available in MA **REI = 3 DAYS** **PHI = 14 DAYS**
LORSBAN **chlorpyrifos** **RESTRICTED USE** *Organophosphate*	4E, Advanced 3 pt 75 WG (not restricted)	fireworm, spanworm cranberry fruitworm *Sparganothis* fruitworm cranberry weevil, cutworms	Contact	Neurotoxic Acetylcholinesterase inhibitor IRAC Group 1	--Highly toxic to fish. *Hold water at least 5 days* --use only 2 times/season --Most populations of weevil and *Sparganothis* are resistant to Lorsban. Note 75 WG is not restricted --RESTRICTED BY HANDLERS AFTER JUNE 22 (or scattered bloom) **REI = 24 HRS** **PHI = 60 DAYS**
ORTHENE **acephate** *Organophosphate*	97, 97UP 1 lb 90WSP, 90WDG and 90Prill 1.1 lb	fireworm, spanworm gypsy moth, cutworms	Contact	Neurotoxic Acetylcholinesterase inhibitor IRAC Group 1	--only 1 application per season --beware bee toxicity --Warning! Do not use close to bloom! **REI = 3 DAYS** **PHI = 90 DAYS**
SEVIN **carbaryl** *Carbamate*	4F 1-2 qt 80S 1¼ -2½ lb XLR Plus 1 ½ - 2 qt	fireworms, cutworms, gypsy moth, winter moth, CB fruitworm, CB flea beetle, striped colaspis	Contact	Neurotoxic Acetylcholinesterase inhibitor IRAC Group 1	--5 applications, 7 day interval --avoid applications within 10 days of start of bloom --RESTRICTED BY HANDLERS AFTER AUGUST 1 **REI = 12 HRS** **PHI = 7 DAYS**

*IRAC is a classification scheme that groups insecticides with the same mode of action. It is important for resistance management. Using same mode of action repeatedly may lead to loss of pest insect's sensitivity to all compounds in the same IRAC groups.