

Tank Mixes and Callisto Weed Control

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Tank Mixing

- Putting more than one formulated product in the solution tank at one time
- Efficiency: reduced passes and trampling
- Resistance management: Effective MoA
- Improved performance: Broader pest control

Tank Mixing: The Bad

- Synergy
 - Good/bad depending on where it happens
 - Higher injury 'good' on pest but bad on crop
- Antagonism
 - Reduced performance
- Physical incompatibility
 - Gel
 - Foam
 - 'clumps'



How To Avoid Problems?

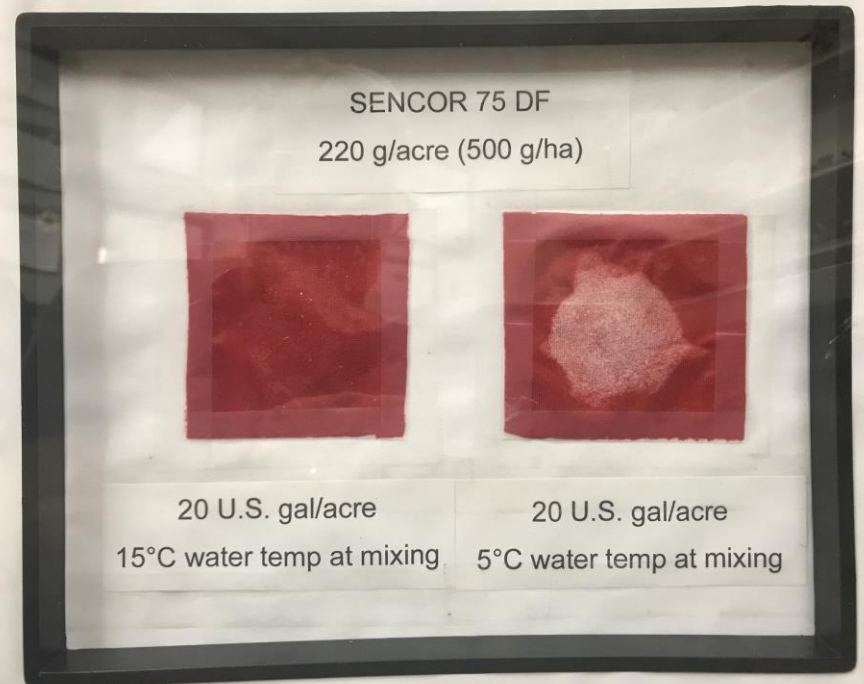
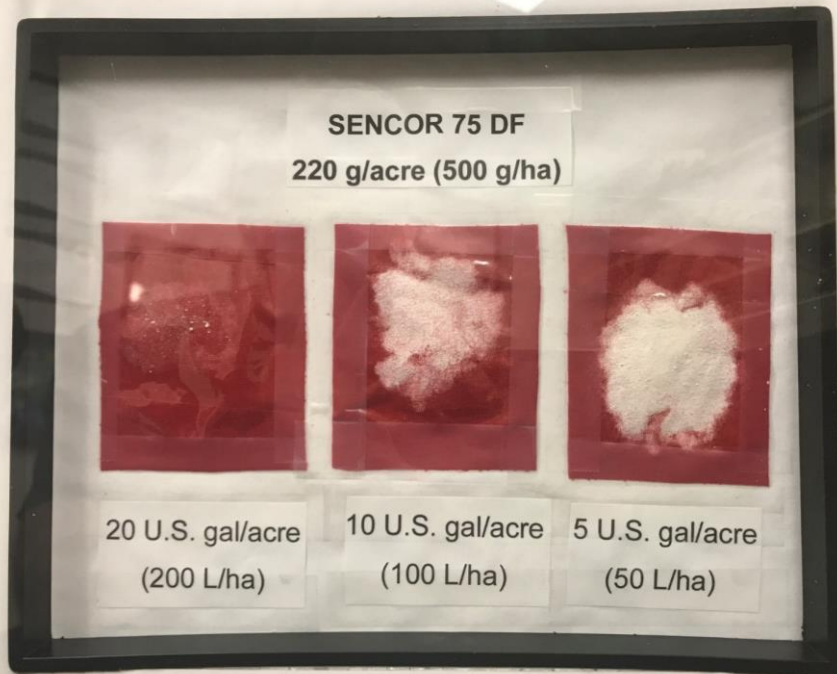
- More things in the tank, the higher the risk
- Avoid the last minute 'add-in', do the homework
- Contact manufacturer, sales reps, advisor, other growers
 - Usually know what's caused problems before
- Pesticide Label
 - PDF version, <ctrl> + F, text search
 - 'Tank Mix' , 'Do not mix', 'agitate'
 - Minor use crops – harder for specifics

Mixing Order

- Check label first....
- W.A.L.E.S
 - **W**ettable Powders (dry products)
 - **A**gitate
 - **L**iquid Flowables
 - **E**mulsifiable Concentrates
 - **S**urfactants
- Right 95% of the time
 - WAMLEGS, APPLES
- Keep Records

Suspension Issues: Dry Products

- Agitate: Not enough or leaving sit too long
- Low water volumes
- Temperature



Other Points

- Use WSB (soluble bags) first to make sure they 'open'
- Products may need time to 'mix' after addition
 - Take your time when adding products
- Could use a separate tank to pre-mix
 - Watch water volumes
- If you have no experience or guidance, do a jar test

Jar Test

- Filling a sprayer in miniature
 - Same ratios as sprayer
 - Easier to clean up if things go wrong
- Small scale and/or syringe
- Follow safety recommendations on label (PPE)
- Mixing order the same
 - 1 kg product in a 1,000 litre sprayer tank is 0.5 g product in a 500 ml jar test
- Leave sit and monitor for issues
- Only physical, not biological



For More Information

Sprayers 101

- Tank Mixing
- Jar Test
- Anything else spray related....

- What about cranberry and Callisto?



Callisto®

- Mesotrione
 - Generic versions
- Group 27
 - Bleaching symptom
- Root and shoot activity
 - PRE and POST
- Cornerstone of program



Label Rates

- In Canada:
 - PRE: 0.3 L/ha (4 fl. oz./ac)
 - POST: 0.21 L/ha (3 fl. oz/ac) + 0.2% v/v Agral 90
 - 2 applications: POST rate applied twice, 14 days min
- In United States
 - Up to 8 fl. oz/ac (0.58 L/ha) per application
 - Maximum 2 applications per season
 - NIS at 0.25% v/v or COC at 1% v/v
- Hope to deal with this difference...eventually

Weeds Controlled

- On Canadian label (low rates)
 - ‘Corn’ weeds
 - ‘Cranberry’ weeds: vetch and creeping buttercup suppression with one application, cinquefoil, goldenrod, rush and sedge with two applications



Difficulty in Rating Control



- Many perennial species are partially controlled
- Stage
- Rate
- Weather

New Nouveau
Brunswick
CANADA

Callisto® 480 SC Use in Cranberry

Callisto 480 SC (mesotrione) is a broadleaf herbicide which has been granted a User Requested Minor Use Label Expansion (URMULE) for the control or suppression of listed weeds in established cranberry beds. This fact sheet will give background information on the mode of action of this product, review considerations for proper application and outline the expected level of weed control, based on research and grower experience from the Atlantic region.

Mode of Action

The active ingredient in Callisto, mesotrione, is a Group 27 herbicide. Callisto has both pre-emergent (soil) and post-emergent (leaf) activity. This type of herbicide inhibits an enzyme called p-hydroxyphenyl pyruvate dioxygenase (HPPD) which is used to make pigments in the plant. In susceptible plants, the result of herbicide activity is bleaching symptoms, followed by plant death (Figure 1). Bleaching typically begins in leaf foliage and growing points 3-5 days after application with weed death 2-3 weeks later. The bleaching symptom may be noted on less susceptible plants (like tree species in cranberry production) but may not result in plant death.



Figure 1. Bleaching of vetch caused by Callisto.

Application Considerations

Callisto is registered for application in established cranberry beds. For bearing beds, the product should be applied after bud break, but before fruit set occurs. In addition, the bed should not be harvested or flooded within 60 days of application. In non-bearing beds, apply after bud break but 60 days prior to fall or winter flooding. Non-bearing beds should not be harvested within 365 days of application or flooded within 60 days of treatment. Three application timings/rates are registered:

Pre-emergent: Up to the 2 leaf weed stage, apply 0.30 L Callisto 480 SC/ha in 200 L water/ha. No surfactant is required.

Post-emergent: 3 to 8 leaf weed stage, apply 0.21 L Callisto 480 SC/ha in 100-200 L water/ha. A non-ionic surfactant, Agral 90, must be added at 0.2% v/v (2 L Agral 90 per 1000 L spray solution).

Sequential: For difficult to control weeds, apply two separate applications of 0.21 L Callisto 480 SC/ha in 100-200 L water/ha. A non-ionic surfactant, Agral 90, must be added at 0.2% v/v (2 L Agral 90 per 1000 L spray solution). A minimum of 14 days is required between applications.

Revised 2012

Agriculture, Aquaculture and Fisheries

New Nouveau
Brunswick

Crop Injury

- Higher at temperature extremes, high humidity
- May see some temporary yellowing
 - ‘Flashing’
- Some injury may hold on
 - Few leaves yellow in middle of upright
 - Likely new growth at application
- More injury from off-label application
 - Rate, surfactant, tank mix, timing
 - OP/Carbamate interaction



Tank Mixes

- No tank mixes currently registered on label in either country
 - Warning around EC grass herbicides on US label
 - Poast Ultra (Can.) has 4 day restriction
- Grass herbicide can help address a ‘gap’
 - Saves a pass
- Surfactant use?

Tank Mix – Canadian Rates

- Sethoxydim and clethodim
 - Alone and tank mixes with mesotrione
 - No effect +/- Agral in mix
- Vetch
 - Mesotrione once 80% control, 95% for 2 apps
- Barnyard grass
 - No difference between sethoxydim and clethodim for grass control



New Planting Trial

- Bud break, Hooking and Repeated with 3 rates
 - Hooking stage based on nearby producing bed
- Added tank mix with sethoxydim at Can. Rate



Broadleaf

Bud Break	Hook Rate	June 27	July 26	Aug. 30
0	0	0 f	0 d	0 h
100 g ai/ha	0	68 e	71 c	64 fg
190 g ai/ha	0	73 de	69 c	68 ef
280 g ai/ha	0	88 bc	88 ab	78 bcd
0	100 g ai/ha	73 de	70 c	58 g
0	190 g ai/ha	80 cd	75 c	69 def
0	280 g ai/ha	84 c	84 b	74 cde
100 g ai/ha	100 g ai/ha	93 ab	89 ab	84 ab
190 g ai/ha	190 g ai/ha	97 a	91 ab	88 a
280 g ai/ha	280 g ai/ha	97 a	93 a	88 a
seth+100 g ai	100 g ai/ha	95 ab	90 ab	80 abc
100 g ai/ha	seth+100 g ai	95 ab	93 a	86 ab
	LSD(0.05)	8.29	7.91	9.48

Conclusions for Mesotrione

- Mesotrione alone
 - Generally no difference between application timings
 - Lower (Can) rate applied twice effective for easy to control weeds like goldenrod and vetch
 - Higher (US) rate applied twice required for hard to control weeds like meadowsweet, sedge, rush
- Tank mix with graminicides safe at Canadian rates (no additional Agral 90)
- COC 'hotter' than Agral 90
- Check specific product labels

Clopyralid Dormant Applications

- Canadian Lontrel label – wiping only
 - Submission to PMRA to add US 24(c) Stinger label
- Dormant cranberry, but active weeds
 - Sheep sorrel, clover, Lotus spp.
 - Window much different in PNW than East Coast
- Be careful with cranberry ‘waking up’
- Nice addition for BC growers, when complete

Questions?

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