Cranberry Station Extension meetings

Summer 8-18-2020

2020 Pesticide Safety August 18: Zeus, Callisto and Clethodim

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Zeus, Callisto, and Clethodim

Katie Ghantous - UMass Cranberry Station
August 18th, 2020
• 24c (Special Local Needs Label) new for 2020
  - First field use in cranberry

• For control of moss and other susceptible weeds
Zeus XC Use Patterns

Zeus XC is active in the soil
- Needs to be watered in (if no rain or frost protection) after application

Apply prior to cranberry breaking dormancy (sp
- Use spring dormant through cabbagehead, **BUT** recommended to apply **before** the cabbagehead stage
Zeus XC - sulfentrazone

- Group 14 herbicide (new group for cranberry)

- PPO inhibitor
  - Blocks an enzyme plants need to make chlorophyll
  - Toxic molecules build up inside plant cells that destroy cell membranes
Most common and “weedy” mosses in MA cranberry

**Haircap**
*(Polytrichum commune)*

**Sphagnum**
*(Multiple Sphagnum spp.)*
Sphagnum

- “Peat mosses”, 300+ species
- Lack root-like rhizoid structures
- Specialized cells covered with pores to absorb water and hold it like a sponge
- In cranberry, found in wet areas
  - bed and ditch edges
  - areas w/drainage problems and high soil moisture
Haircap Moss
(Polytrichum commune)

- Stems are attached to the soil by rhizoids (structures that resemble roots)
- Found in diverse habitats
- Can be interconnected underground creating large clonal patches
- Can reproduce vegetatively from buds on the rhizomes, or by spores that result from sexual reproduction
- In cranberry, can be widespread
Zeus XC Efficacy on Moss

- Some effects apparent within a month of treatment, but full effects can take months to develop
- Worked faster on sphagnum than haircap moss
- Treated haircap moss did not make reproductive structures
Haircap moss – initially, moss looks smokey/dusty
Untreated Moss on State Bog
Treated 4/15/20

1 Month after Zeus

2.5 Months after Zeus
Untreated Moss on State Bog (6/25/20)
Haircap moss lush and making spores
Lasting control on haircap 5 months after treatment
Sulfentrazone works on other weeds

- Annual grasses (stops seeds from germinating)
  - Lots listed on product label like crabgrass

- Some perennial grasses (stops seeds from germinating)
  - In our greenhouse trials like little bluestem (one of the “poverty grasses”) and deer-tongue grass in our greenhouse trials (but not broomsedge)

- Dodder (GH trials)

- Sedges (listed on label)
Zeus on new planting?
Needs research to determine if it is safe.
Concentrated Callisto for Spot-Treatments

- 1 – 1.5 oz per gallon water + COC or NIS
- Tough weeds (like poison ivy and dodder) that are not controlled by broadcast apps of 8 oz/A
- Spray “to wet”

*24c for this use is for Callisto brand only
Timing for Poison Ivy

PI has large underground rhizomes, lot of stored energy to overcome injury

Best results with two applications per year

- Mid-June + early July (min 14 days btw trts)
- PI fully leafed out for 1st treatment
- PI regrown leaves for 2nd treatment
Treated 2x/year 2013+2014

Treated 2x/year 2013 Only
Dodder Spot Treatments

Callisto by chemigation for dodder (4 oz or 8 oz/A rate)
- Some report no control of dodder with chemigated Callisto
- Dodder shows signs of whitening but then recovers

Concentrated Callisto on dodder patches
(1.5 oz + 1.5 oz COC / gallon)

Treatments
1. Prior to dodder flowering (7/7/14)
2. While dodder was flowering (7/29/14)
3. 2x - (7/7/14 and 3 weeks later on 7/29/14)
4. Untreated
More effective to treat dodder before it flowers!

Treated pre-flowering
Untreated (Early)  Callisto 1x  Callisto 2x

Treated at flowering
Untreated (Late)  Callisto 1x

# of seeds

A

B

B

a

b

Treated pre-flowering
Treated at flowering
DO NOT EXCEED 8 oz per acre per application (Callisto)

- regardless of how you apply (spot or chem)
- e.g. if you use 1 oz/gallon for spot treatment, you can only use 8 gallons of solution per acre

DO NOT EXCEED 2 applications per year

- Spot + Spot
- Chem + Spot
- Spot + Chem
- Chem + Chem
Mesotrione

Enters plants by both foliage and roots
  • Best mode of absorption may vary by weed species

**Chemigation** - 8oz/acre delivered in 400+ gallons
  • Dilute, available to plant roots as well as foliage
  • Studies show best for some weeds (i.e. nutsedge)

**Spot treating** - with concentrated rates
  • Better foliar absorption
  • Can work on tough weeds like PI that don’t get any control by chemigation
Mesotrione

More growers trying Callisto for preemergence spring application
  • Reports of 4 – 8 oz/A working well as a PRE

The problem...
  • We don’t have many POST options.
  • Use Callisto PRE, then you only have ONE app. left to use POST
  • We do have other PRE options (like Devrinol) but they are expensive!
Grass control

- Grass herbicides sethoxydim and clethodim work on grasses only
  - Is it really a grass, or sedge/rush?

- Sedges have edges
- Rushes are round
- Grasses have nodes/joints from their tips to the ground
Can apply sethoxoxydim or clethodim multiple times per season

- Early season grasses, and later for species like PG and deer-tongue grass (apps min 14 days apart)
- Best on actively growing grass before flowers
- **Do not recommend** clethodim applications during roughneck!
- Use correct adjuvant with grass herbicides. Needed for efficacy
- **ONLY** Intensity and Intensity One can be chemigated
Chemigating for Grass control

Intensity (26.4% a.i.) – 6 to 8 fl. oz/A

VS

Intensity One (12.6% a.i.) – 9 to 16 fl. oz/A

• Amount ACTIVE ingredient applied per acre is the same!

• Intensity One has less active ingredient per gallon, but has been formulated for better uptake by grasses.

Both NEED and adjuvant to be effective!
Absorbed through the grass leaves
- Very limited soil activity, not taken up by roots.
- Use a short injection time to leave maximum product on the leaves.

Use an adjuvant!
- Nonionic surfactant recc. for Intensity One
- Crop Oil Concentrate recc. with Intensity (but can use NIS)
Questions?