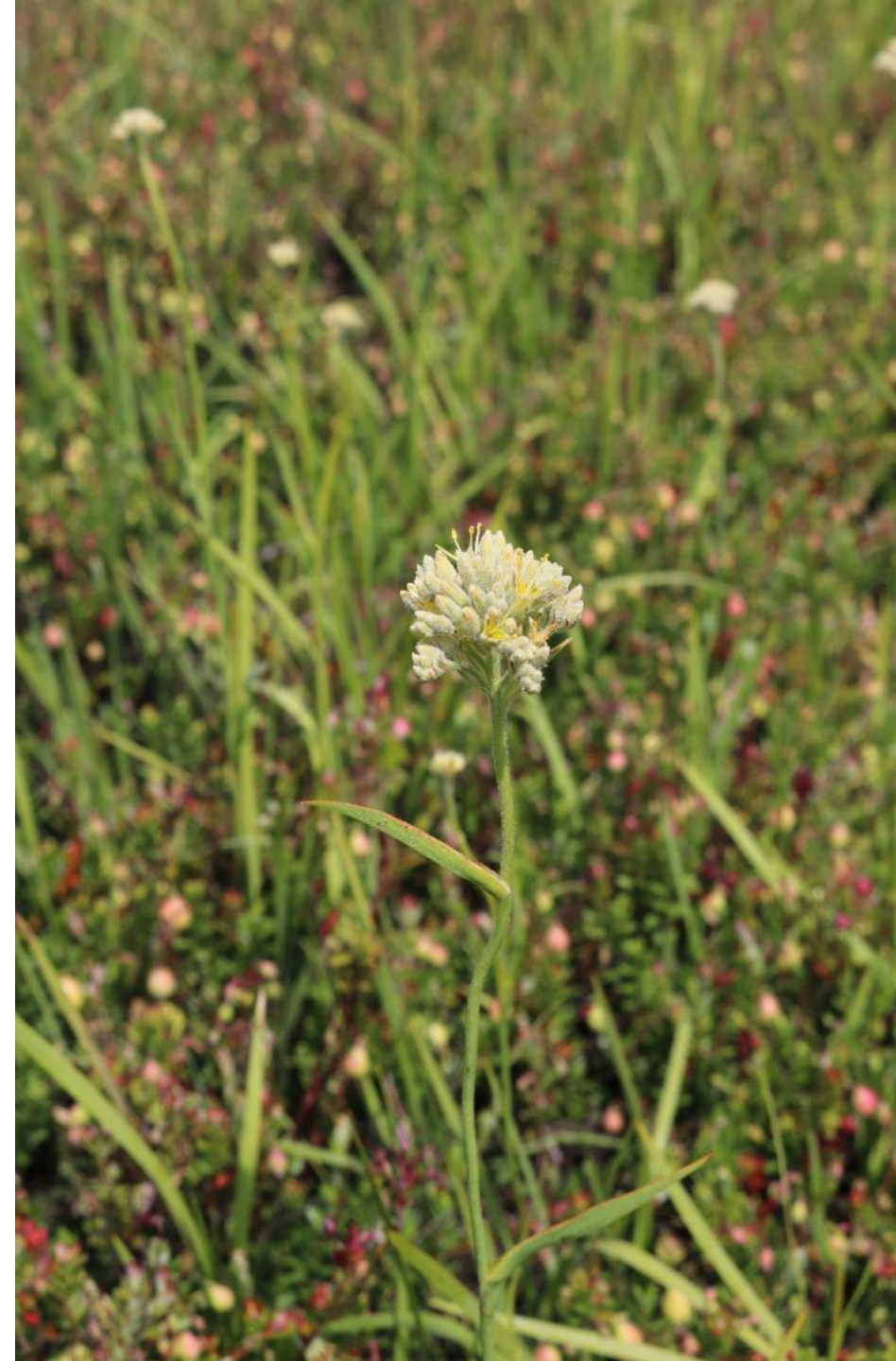


PRE-EMERGENCE HERBICIDE OPTIONS FOR CONTROLLING WEEDS IN CRANBERRY

Pacific Northwest Cranberry Congress 2021

February 18, 2021

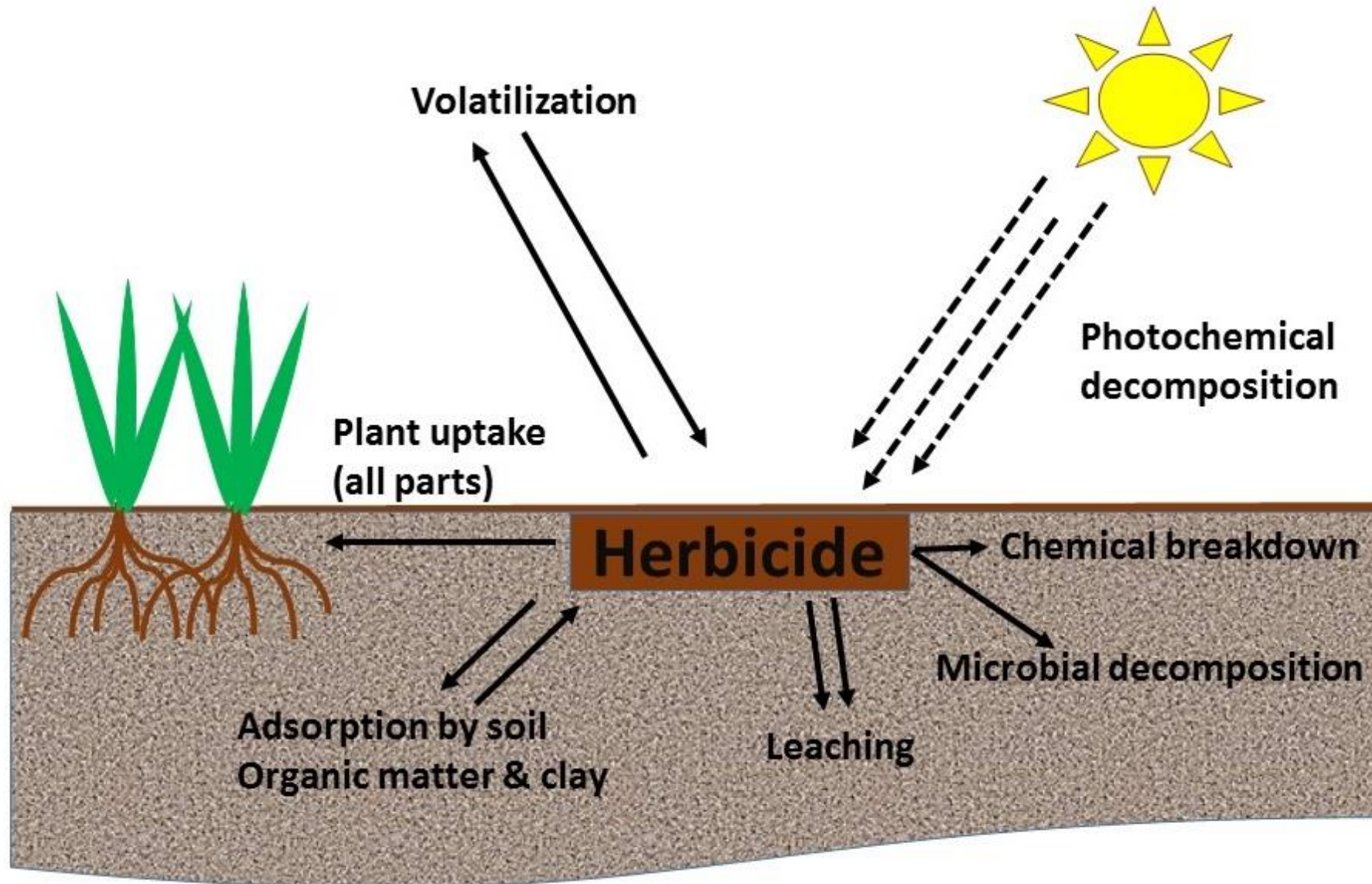


Preemergence Herbicides

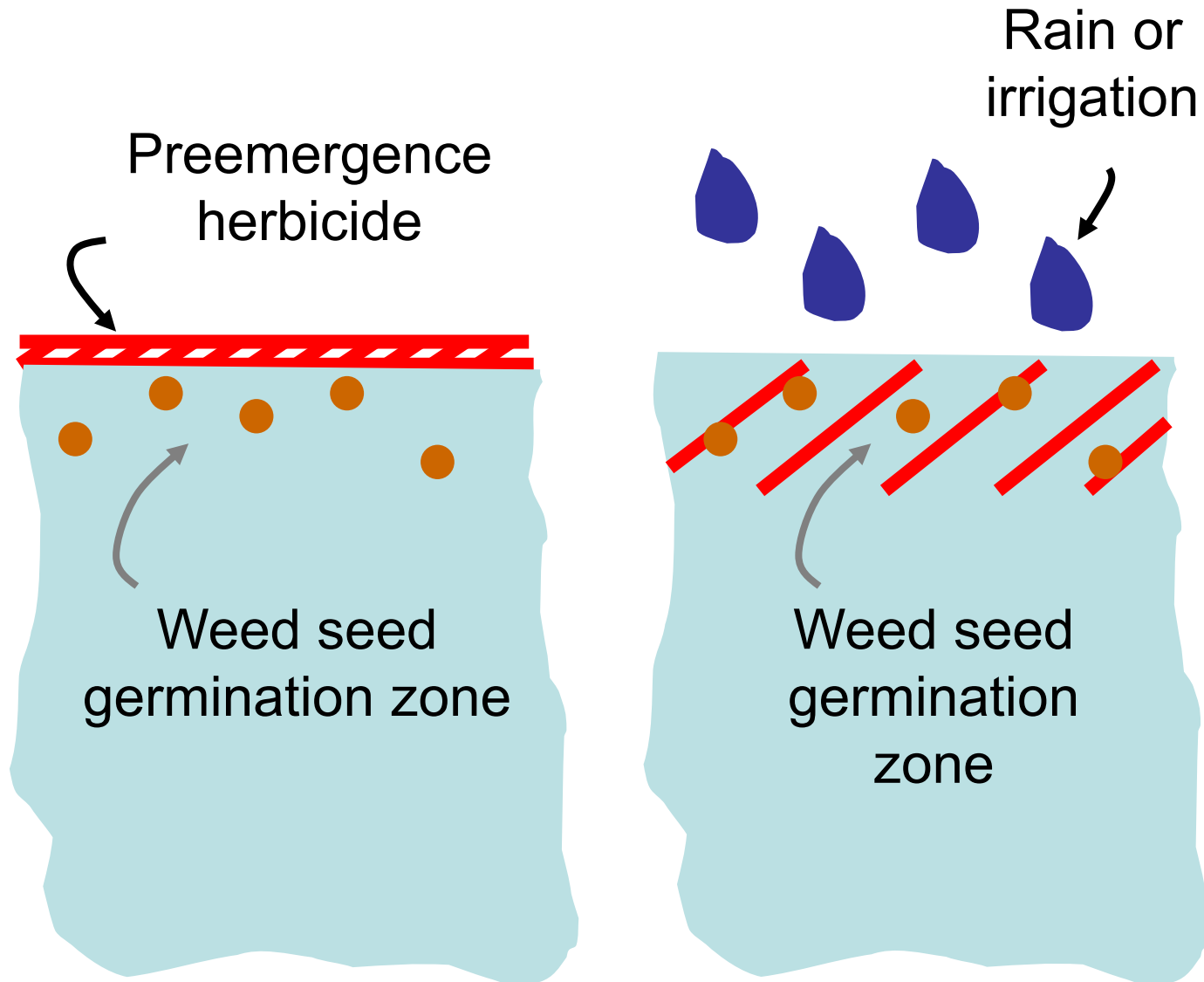
- ❑ Do not prevent seed from germinating...
- ❑ Do not kill dormant seeds...
- ❑ **Will NOT kill emerged weeds present at time of application...** Even small weeds have roots large enough to escape effect of PRE herbicides
- ❑ Typical herbicidal activity
 1. Hypocotyl and epicotyl emerge from the seed.
 2. Grow through chemical barrier
 3. Herbicide is absorbed and weed is killed or stunted.
- ❑ Activation (incorporation) is required – at least ½-inch rainfall or irrigation.



Herbicide fate after application



Preemergence herbicide activation



Benefits:

Herbicide move to the weed seed germination zone

Herbicide protected from:

- volatilization
- photodegradation

Why preemergence herbicides may not perform well?

- Applied after weed emergence!
- No activating rainfall / irrigation
- Excessive rain after application...
- Poor site drainage
- Gaps in herbicide ground coverage
- Herbicide rate not adapted to soil texture
- Humidity and heat will speed up microbial degradation...

2020 Northeast United States Cranberry Pesticide Chart

Including but not limited to the states of Maine, Massachusetts, New Jersey and Rhode Island

Toxicity	Herbicide	Rate per acre	MAX	PHI (days)	REI	HRAC	(Active Ingredient) - Notes
	Casoron 4G	Up to 100 lbs.	100 lbs.	See note	12 hrs.	20	<i>(Dichlobenil)</i> . Apply early spring or post-harvest.
	Devrinol 50DF	6 to 18 lbs.	See label	See label	24 hrs.	15	<i>(Napropamide)</i> . 24(c) for MA. Similar product: Devrinol DF-XT.
	Devrinol 2XT	6 to 18 qts.					24(c) for MA, NJ
	Evital 5G	80 to 160 lbs.	1 app	See note	12 hrs.	12	<i>(Norflurazon)</i> . Apply once in early spring or post-harvest.
	‡ Simazine 4L	4 qts.	4 qts.	150	12 hrs.	5	Rates apply to MA. Other areas must use half rate.
	‡ Simazine 90 WD	4.4 lbs.	4.4 lbs.				

Spring Preemergence Herbicides for Grass Control in Cranberry

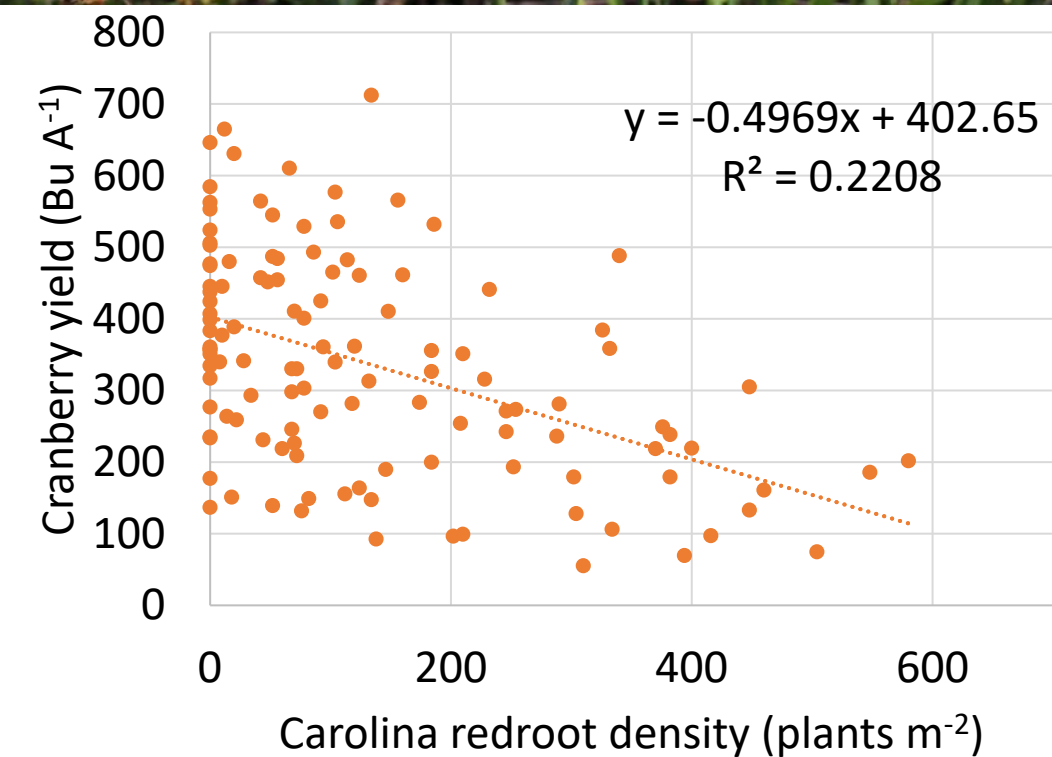
Herbicide	Annual		Perennial	
	Grasses	Broadleaf	Grasses	Broadleaf
Devrinol 2XT	G	P	nc	nc
Evital 5G	G	F	F	nc

Active ingredient: Napropamide

- 2 formulations:
 - Devrinol DF-XT – 8 to 18 lb/A depending on soil texture
 - Devrinol 2XT - 8 to 18 qt/A depending on soil texture
- Will not control existing weeds
- Apply before spring growth begins.
- Irrigate within 24 hours after application or product will decompose with ultraviolet light.
- Controls a narrow range of weeds, mostly annual grasses



**Carolina redroot, the most
troublesome weed in New
Jersey cranberry bogs!**



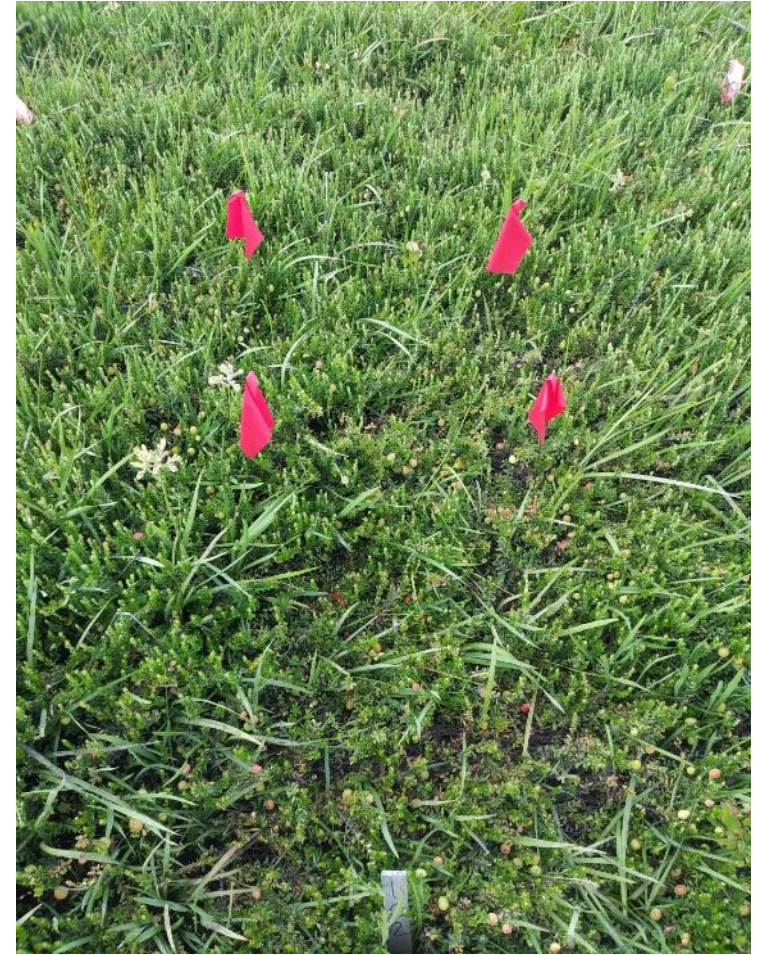
July 25, 2019 (90 days after initial preemergence application)



Untreated check



**Casoron
50 lb/A + 50 lb/A**



**Devrinol DF-XT
12 lb/A**

July 25, 2019 (90 days after initial preemergence application)



**Devrinol DF-XT 18 lb
fb Callisto 1x**



**Devrinol DF-XT 9 lb + 9 lb
fb Callisto 1x**



**Devrinol DF-XT 9 lb + 9 lb
fb Callisto 2x**

24 (c) Special Local Need label for NJ since December 2019

- Allow split applications of Devrinol for extending residual control later in the season.
- **ONLY** for Devrinol 2XT
- For new and established beds, max. of 18 qt/A/season
- Recommendation:
 - ⇒ 9 qt/A before growth begins.
 - ⇒ Renew application 5 to 6 weeks later before bloom



FIFRA Section 24(c)
SPECIAL LOCAL NEED LABEL

**FOR DISTRIBUTION AND USE ONLY WITHIN THE STATE OF
NEW JERSEY**

DEVIRINOL® 2-XT SELECTIVE HERBICIDE

EPA REG NO. 70506-301

EPA SLN NO. NJ-190003

This label expires Dec. 31, 2022

DIRECTIONS FOR USE ON CRANBERRIES

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling. Follow all applicable directions, restrictions and precautions on the EPA registered label. This label and the container label must be in the possession of the user at the time of pesticide application.

Established beds (over one year old): For control of Carolina Redroot (*Lachnanthes caroliniana*), nutsedge (*Cyperus dentatus*), Western panicgrass (*Panicum acuminatum*), broomsedge bluestem (*Andropogon virginicus*), rice cutgrass (*Leersia oryzoides*) and purplestem beggarticks (*Bidens connata*). Apply DEVIRINOL 2-XT at a rate indicated below to a weed free soil surface before bloom or in the fall after harvest. Do not apply when beds are under winter flood.

In Beds with Sandy Soils: Apply 8-18 quarts (4-9 lbs ai) DEVIRINOL 2-XT per acre through ground application equipment or through the sprinkler irrigation system. Do not apply more than 18 quarts (9 lbs ai) DEVIRINOL 2-XT per acre per year.

New and established plantings: Apply up to 9 quarts (4.5 lbs ai) DEVIRINOL 2-XT per acre to a weed free soil surface after planting using ground spray equipment or through the sprinkler irrigation system. Multiple applications may be made, but do not apply more than 18 quarts (9 lbs ai) DEVIRINOL 2-XT per acre per year.

Active ingredient: Norflurazon

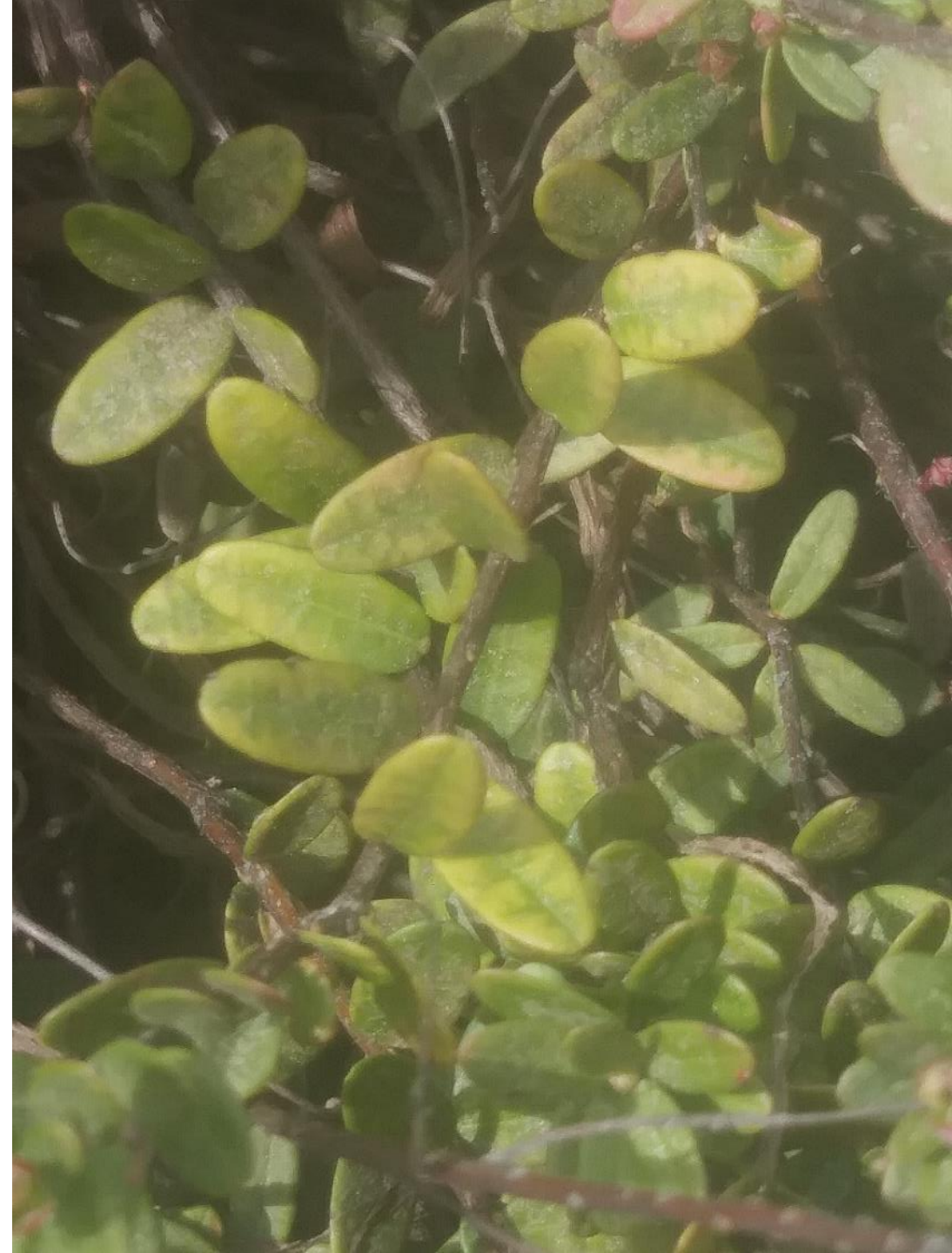
- Apply as a single application in early spring after removal of winter flood and before weed growth resumes.
- Do not exceed 80 lb/A with spring application
- Do not apply on bogs that have drainage problems or sensitive varieties (Stevens, McFarlin)
- Suppress some tough-to-control weeds: broomsedge grass, needlegrass, spike rush, annual sedges
- Not recommended on new plantings....

Spring Preemergence Herbicides for Broadleaf Control in Cranberry

Herbicide	Annual		Perennial	
	Grasses	Broadleaf	Grasses	Broadleaf
Simazine	nc / F	G	nc	nc
Callisto	nc	G	nc	nc
Casoron 4G	F	G	F	F

Active ingredient: Dichlobenil

- Effective against both grasses and broadleaf weeds.
- Work on some perennial species (loosestrife, sorrel, asters).
- Apply in early spring (pre-budbreak) while perennial weeds are still dormant and annual weeds have not started to germinate.
- Temperature and Precipitation are critical:
 - ⇒ Air and soil temp < 60F.
 - ⇒ ½ to 1" rainfall in the next 72H for activation.
- Do not sand (spring or fall) on top of a Casoron application.



Active ingredient: Mesotrione

Both preemergence and postemergence herbicide.

- Effective mainly against annual broadleaf weeds.
- Also suppression of rushes and sedges.
- Cranberry very tolerant to mesotrione – good choice for newly planted bed in addition to Devrinol.
- Reserve Callisto for postemergence applications and spray when weeds are <5 inches tall.





Section 24(c) Special Local Need Label

FOR DISTRIBUTION AND USE ONLY WITHIN THE STATE OF NEW JERSEY

Callisto® Herbicide
Spot Treatment Application for Weed Control in Cranberry

EPA Reg. No. 100-1131
EPA SLN No. NJ-180004

This label expires and must not be distributed or used in accordance with this SLN
registration after December 31, 2022

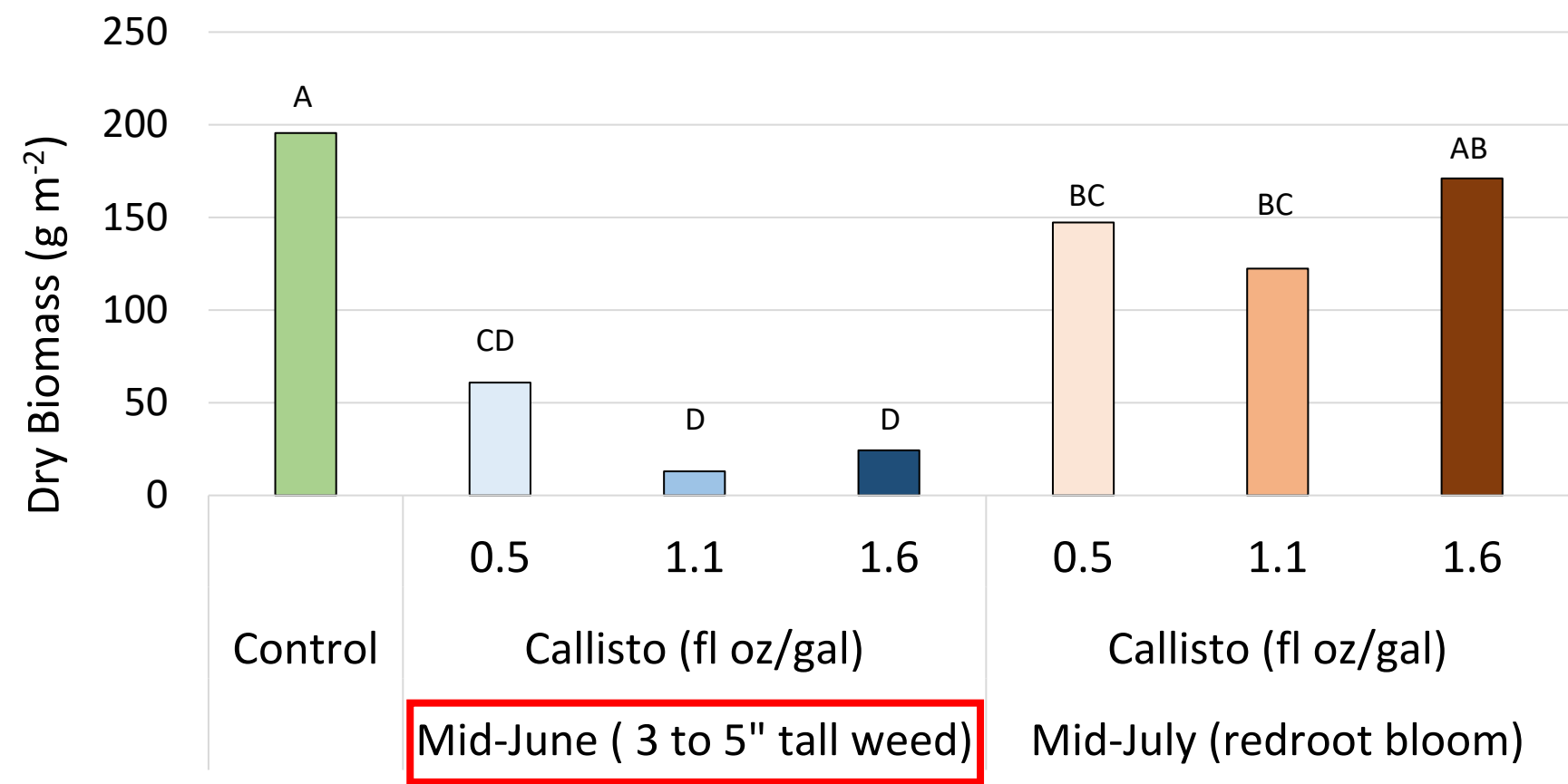
Amounts of Callisto® Herbicide per gallon of water for spot-treatments:

Callisto® Herbicide /Gallon	Maximum Solution per Acre per Application	Solution Description
0.8 teaspoon	30 to 60 gal	approximates 4 oz/acre rate
1.6 teaspoons	30 gal	approximates 8 oz/acre rate
3 tablespoons	5.3 gal	very concentrated, for woody weeds like poison ivy

→ 0.13 fl oz/gal
→ 0.27 fl oz/gal
→ 1.5 fl oz/gal

**For control of troublesome
perennial weeds: poison
ivy, dewberry, Carolina
redroot...**

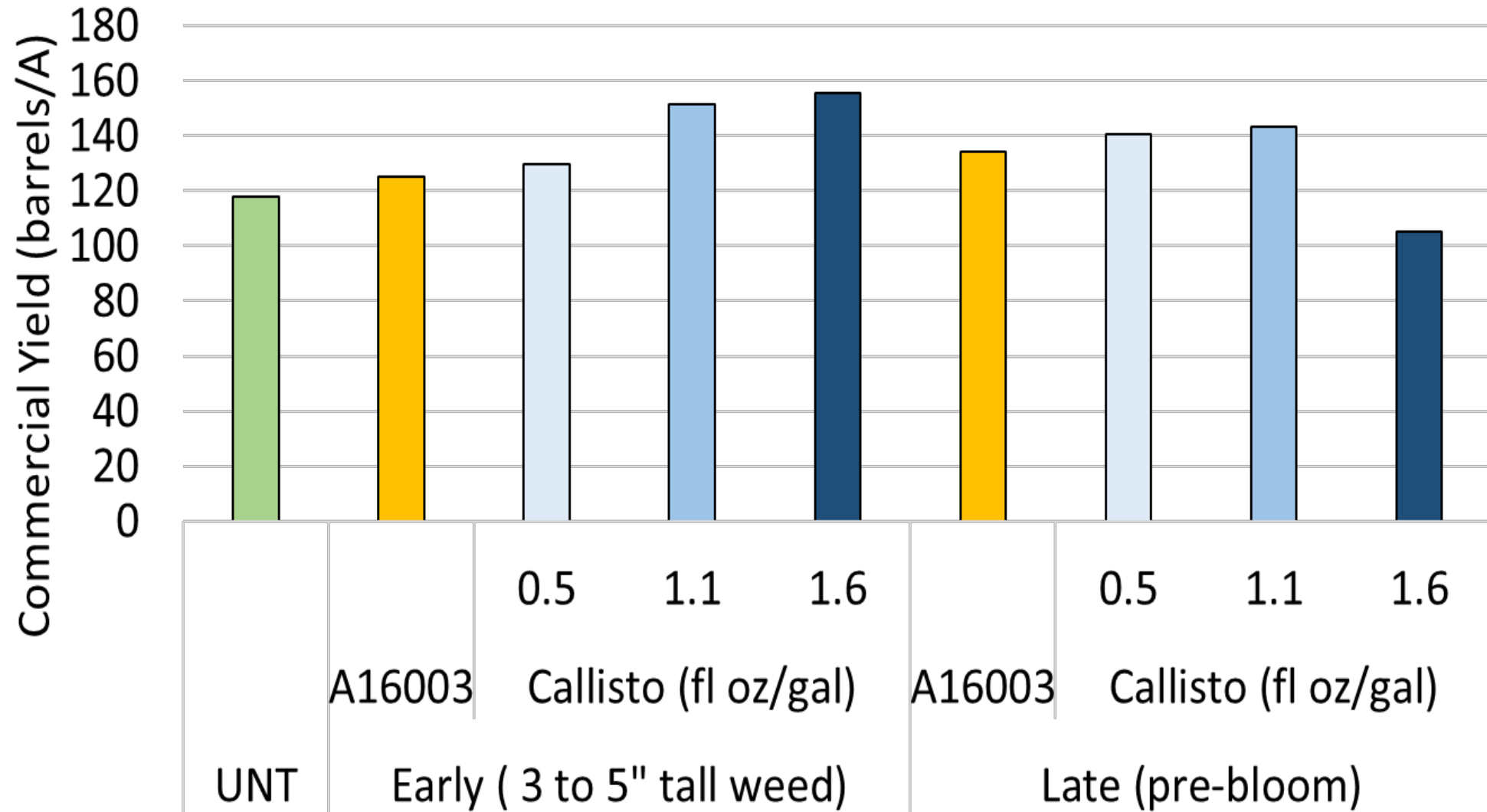
Carolina redroot biomass - September 11, 2019



Ideal time for targeting redroot with spot applications of Callisto

Means with the same letter are not significantly different according to Fisher's Protected LSD (P ≤ 0.05)

Cranberry Commercial Yield - September 11, 2019



Means were not significantly different according to Fisher's Protected LSD ($P \leq 0.05$)

Newest labeled herbicide for cranberry



EPA SLN No.: NJ-200002

**24(c) Special Local Need
Label For Control of Haircap
Moss in Cranberry**

**FOR DISTRIBUTION AND USE
ONLY IN NEW JERSEY**

EPA Reg. No. 279-3220

This label for Zeus XC Herbicide expires and must not be distributed or used in accordance with this SLN registration after December 31, 2022.

IT IS A VIOLATION OF FEDERAL LAW TO USE THIS PRODUCT IN A MANNER INCONSISTENT WITH ITS LABELING. ALL APPLICABLE DIRECTIONS, RESTRICTIONS AND PRECAUTIONS ON THE EPA REGISTERED LABEL MUST BE FOLLOWED.

**THESE USE DIRECTIONS MUST BE IN THE POSSESSION OF THE USER
AT THE TIME OF PESTICIDE APPLICATION.**

CRANBERRY

Zeus XC 24(c) Special Local Need label

- Only labeled for preemergence spring application before bud scales begin to loosen.
- 8 to 12 fl oz/A with a max. of 12 fl oz/A
- Chemigation / boom application
- Weeds controlled: haircap moss, numerous summer broadleaf weeds – weak on grasses
- Sedge suppression

Cranberry commercial yield response to sulfentrazone method of application (2019 / 2020)

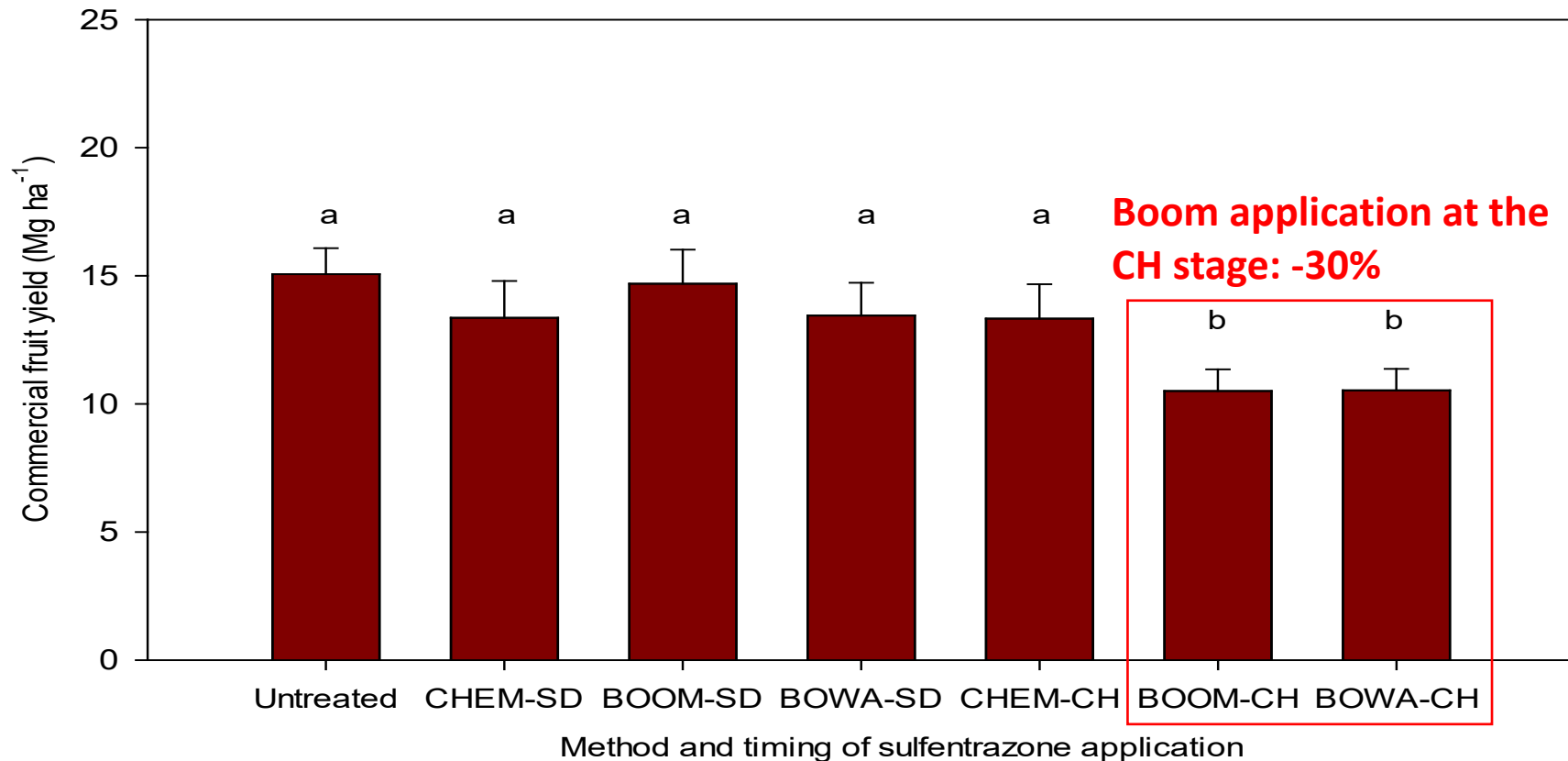
CHEM: chemigation at 3,740 L Ha⁻¹

BOOM: boom application at 190 L Ha⁻¹

BOWA: boom application at 190 L Ha⁻¹ + 0.25 cm irrigation

SD: spring dormant stage

CH: cabbage head stage



Thank You for Your Time Questions?

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