

## ***Oregon Cranberry School 2019***

**Funding for research provided by :**

- BC Cranberry Marketing Commission
- Washington State Cranberry Commission
- Oregon Cranberry Growers Association
- The Cranberry Institute
- Ocean Spray
- PCCRF



*World Class. Face to Face.*

### ***WSU Pesticide Policy***

"Some of the pesticides discussed in this presentation were tested under an experimental use permit granted by WSDA. Application of a pesticide to a crop or site that is not on the label is a violation of pesticide law and may subject the applicator to civil penalties up to \$7,500. In addition, such an application may also result in illegal residues that could subject the crop to seizure or embargo action by WSDA and/or the U.S. Food and Drug Administration. It is your responsibility to check the label before using the product to ensure lawful use and obtain all necessary permits in advance."

- Old herbicide – revisited.
- New herbicides
- Future herbicides

– Old herbicide – revisited.

- Roundup
- Devrinol
- Poast+Select
- Curio



## Label instructions



Post-Harvest Application in Cranberry Production  
USE INSTRUCTIONS: In cranberry bogs, apply this product after cranberry vines are dormant with a handheld sprayer, @ 0.4- to 0.7% solution.

PRECAUTIONS: Contact of this product with desirable vegetation could result in damage or severe plant injury. Cranberry plants that are directly sprayed could be killed.

## Useful or Bogus?

Does it damage cranberries?  
It is useful for weed control?

2017 data

bbl/ac

300

250

200

150

100

50

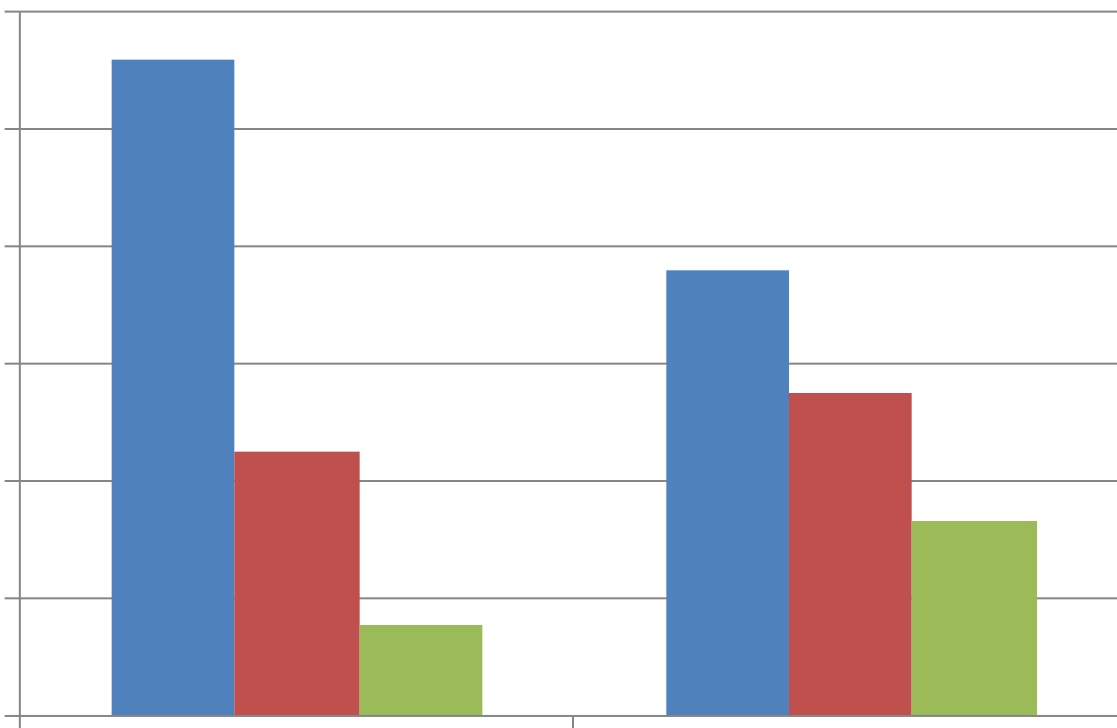
0

Stevens

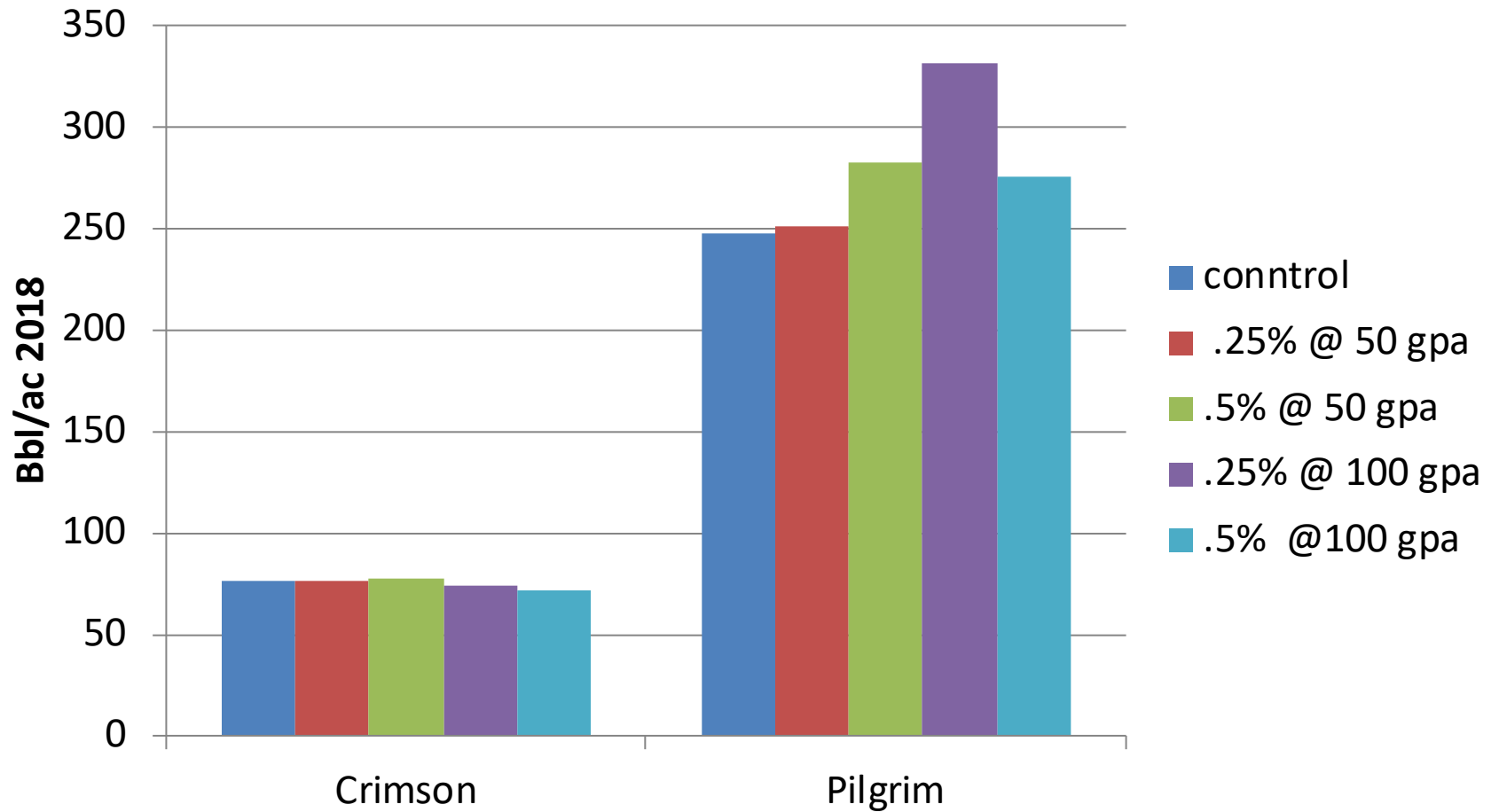
Crimson

Treated on 11/14/2016 at 100 gpa

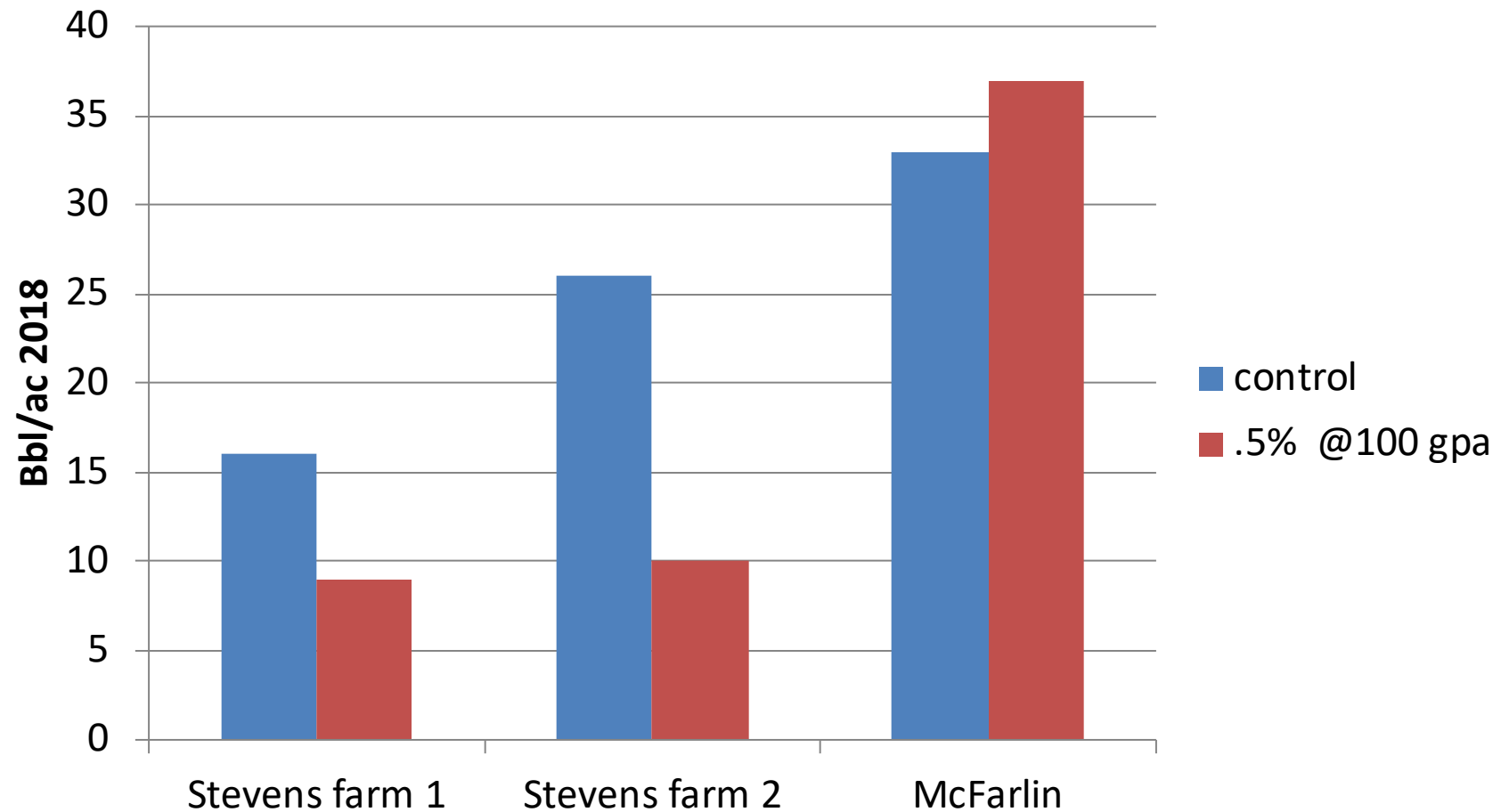
- control
- glyphosate 0.5%
- R.UP WeatherMax 0.5%



Round up weather max applied 1/3/18 and 1/22/18



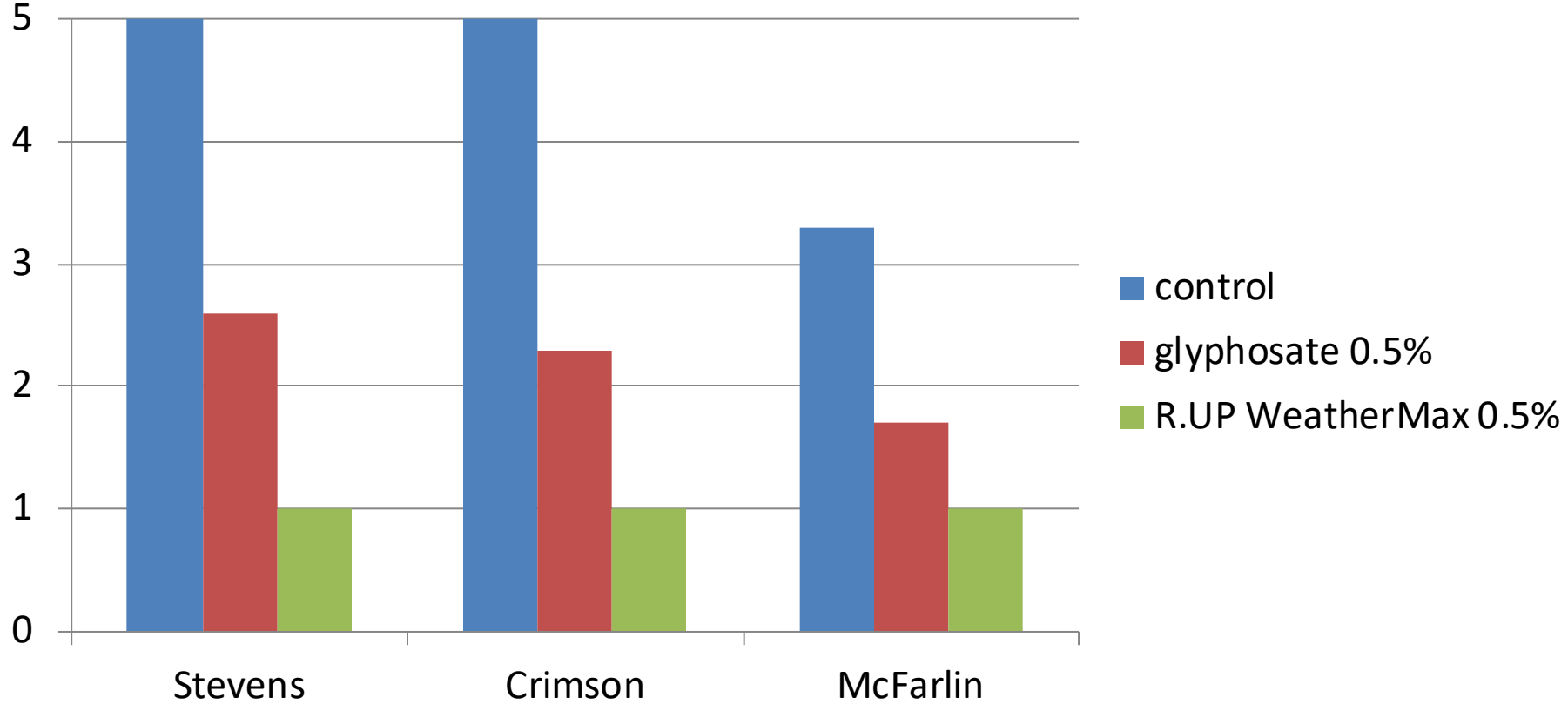
Round up weather max applied 1/22/18 and 2/7/18



Bloom Density 6/22/17

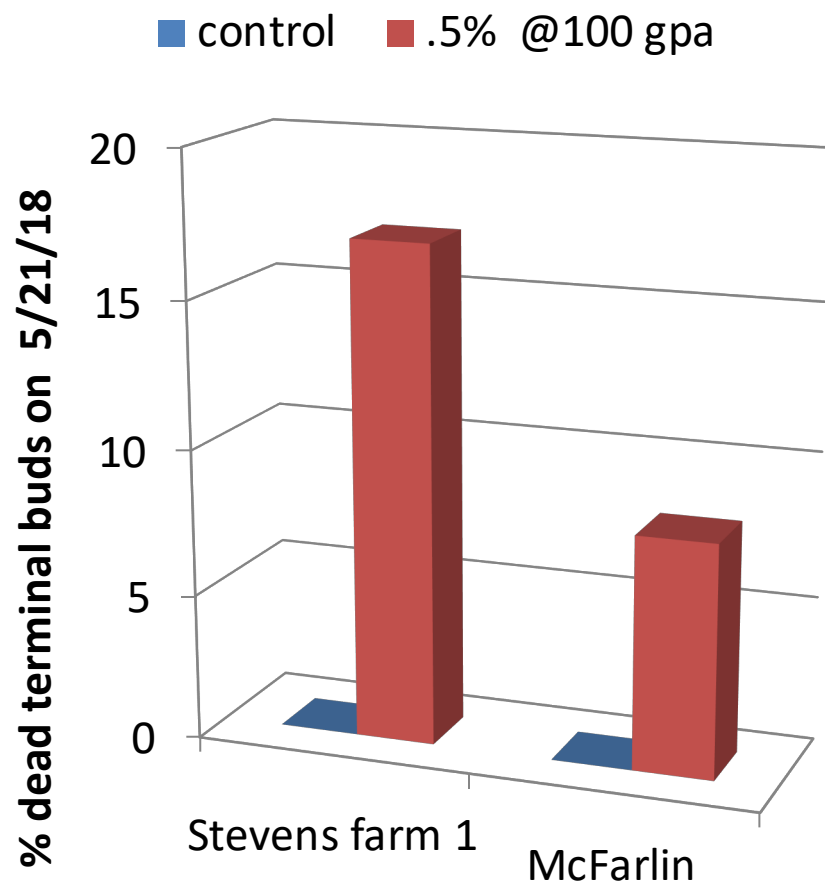
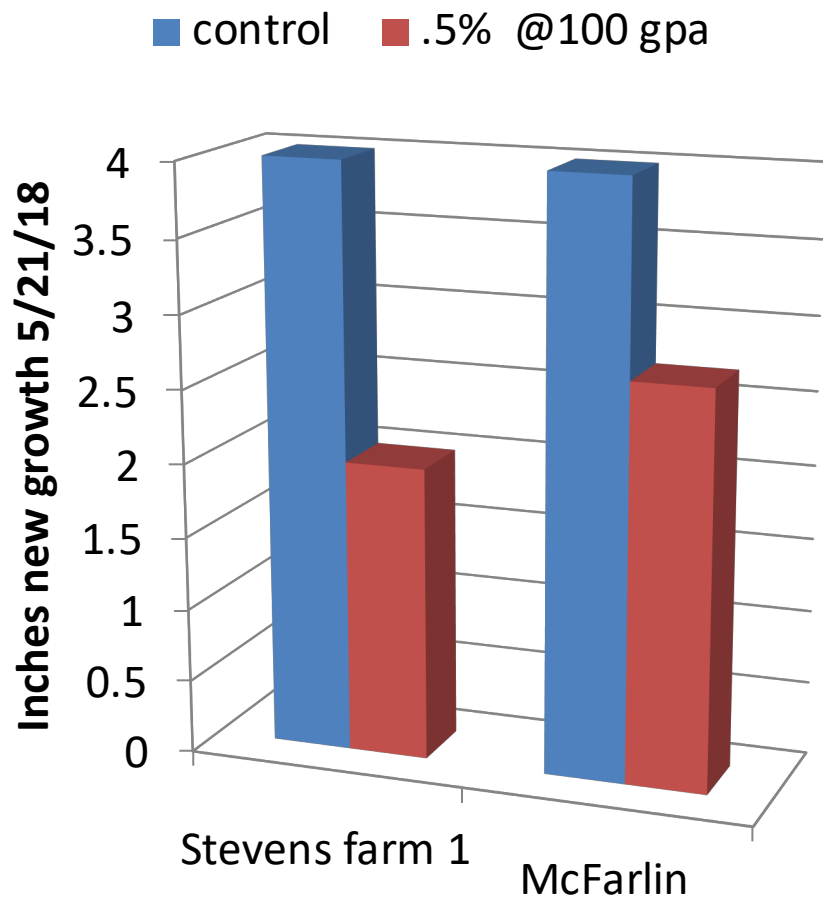
1- no viable bloom

5- thick bloom



Treated on 11/14/2016 at 100 gpa

Round up weather max applied 1/22/18 and 2/7/18



## Weeds control

Creeping blackberry) – moderate control, repeat annually for better control

Young Spruce – none

Sheep Sorrel – moderate early control, but control fades by mid-season

Lotus – good early suppression, but control fade by mid-season

Reedcanary grass – moderate early control, but control fades by mid-season

Slough sedge (cutgrass) – moderate to decent (depends on size)

## Crop damage

Narrow window for acceptable treatment

Effects new growth and bloom, but cranberries recover OK.

## Recommendations

- Accepting if spot treating brambles or cutgrass on crappy beds.
- Otherwise not worth the risk for the level of weed control obtained.



# DEVNRINOL®

## 2-XT

SELECTIVE HERBICIDE

For use on certain Nuts, Small Fruits, Vegetables and Tobacco

ACTIVE INGREDIENT

Clover  
(*Trifolium fimbriatum*)  
Aster  
(*Aster douglasii*)  
Silverweed Cinquefoil\*  
(silverleaf)  
(*Potentilla anserina*)  
Red Sorrel  
(sheep sorrel)  
(*Rumex acetosella*)  
Birdsfoot Trefoil  
(*Lotus corniculatus*)  
\*Suppression only

In Beds with  
Heavy Muck Soil:  
18 quarts/A  
(9 lbs. a.i.)

In Peat Beds:  
12-18 quarts/A  
(6-9 lbs. a.i.)

In Beds with  
Sandy Soils:  
8-18 quarts/A  
(4-9 lbs. a.i.)

Apply DEVNRINOL 2-XT at the rates indicated below to a weed free soil surface before spring growth begins in mid-February or before the end of March.

**In Beds with Heavy Muck Soil:** Apply through ground application equipment or through the overhead sprinkler system. See use directions for application through sprinkler irrigation systems.

**In Peat Beds:** Apply through ground application equipment or through the overhead sprinkler system.

**In Beds with Sandy Soils:** Apply through ground application equipment or through the sprinkler irrigation system.

**Restrictions:** Do not apply after buds start to swell. CAUTION: Do not apply in the spring to cranberry beds that do not have sprinkler systems for frost control. Do not apply more than 18 quarts DEVNRINOL 2-XT acre per acre per year.

Label also suggests beggarticks and nutsedge

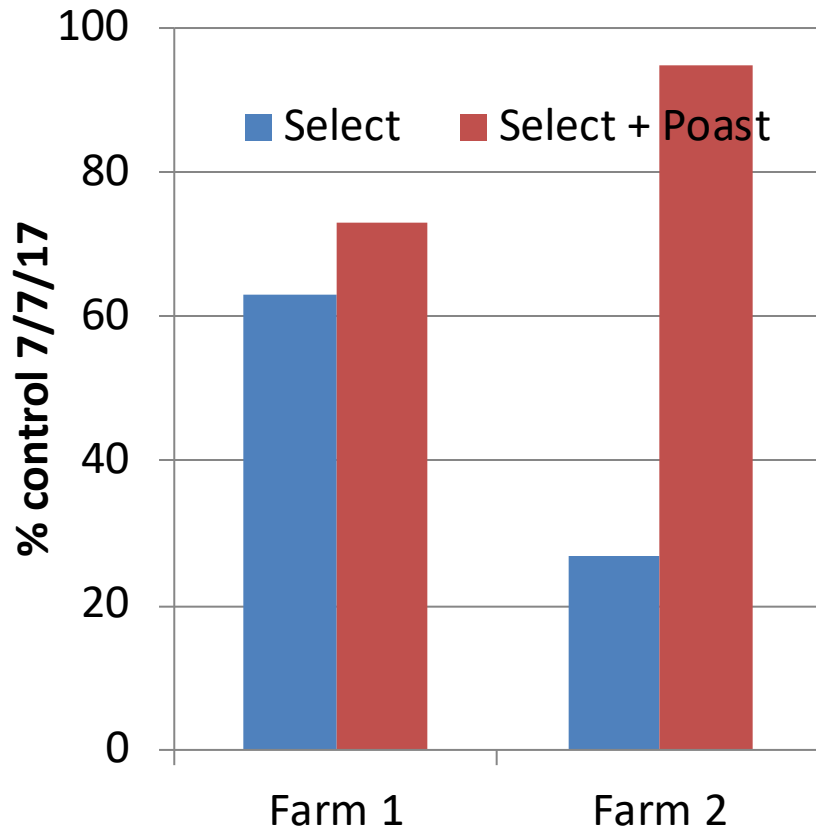


Group	1	Herbicide
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FYI: There are 31 other  
clethodim products with  
cranberry on the label

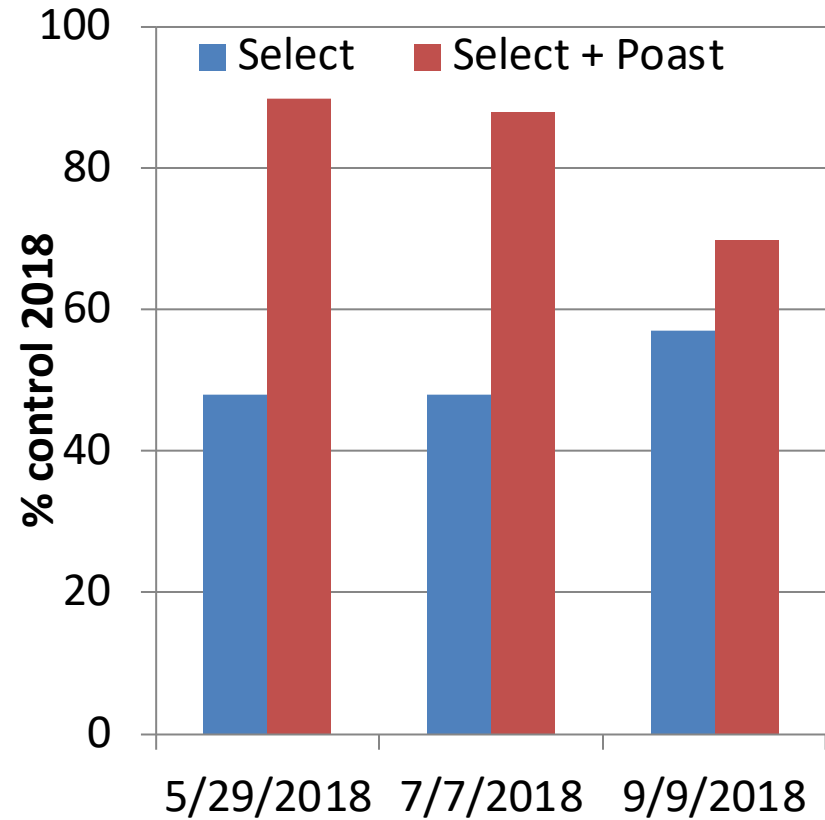
## Reedcanary grass control

2017



Applied 2/23/17 and 4/14/17

2018



Applied 4/24/18 and 7/2/18

Combination works better than single product.

# *Curio*<sup>TM</sup> *HERBICIDE*

DISPERSIBLE GRANULES  
FOR SELECTIVE POSTEMERGENCE CONTROL OF ACTIVELY  
GROWING WEEDS IN SOYBEANS AND PEANUTS

**ACTIVE INGREDIENT (by weight):**

Chlorimuron Ethyl

Ethyl 2-[[[(4-chloro-6-methoxypyrimidin-2-yl)amino]carbonyl]amino]sulfonyl]benzoate ..... 25.0%

**OTHER INGREDIENTS:** ..... 98.0%

**TOTAL:** ..... 100.0%

## **Oregon SLN APPLICATION DIRECTIONS**

Apply Curio herbicide as a spot or small area treatment, or as a broadcast at the rate of 0.5 oz./ acre in 20 to 40 gallons of water/acre. Do not make more than two applications per year.

**Warning:** Do not over apply. Over-application will likely cause damage. It is recommended that spot or small area applications be made using a calibrated boom to prevent misapplication, rather than a backpack sprayer.

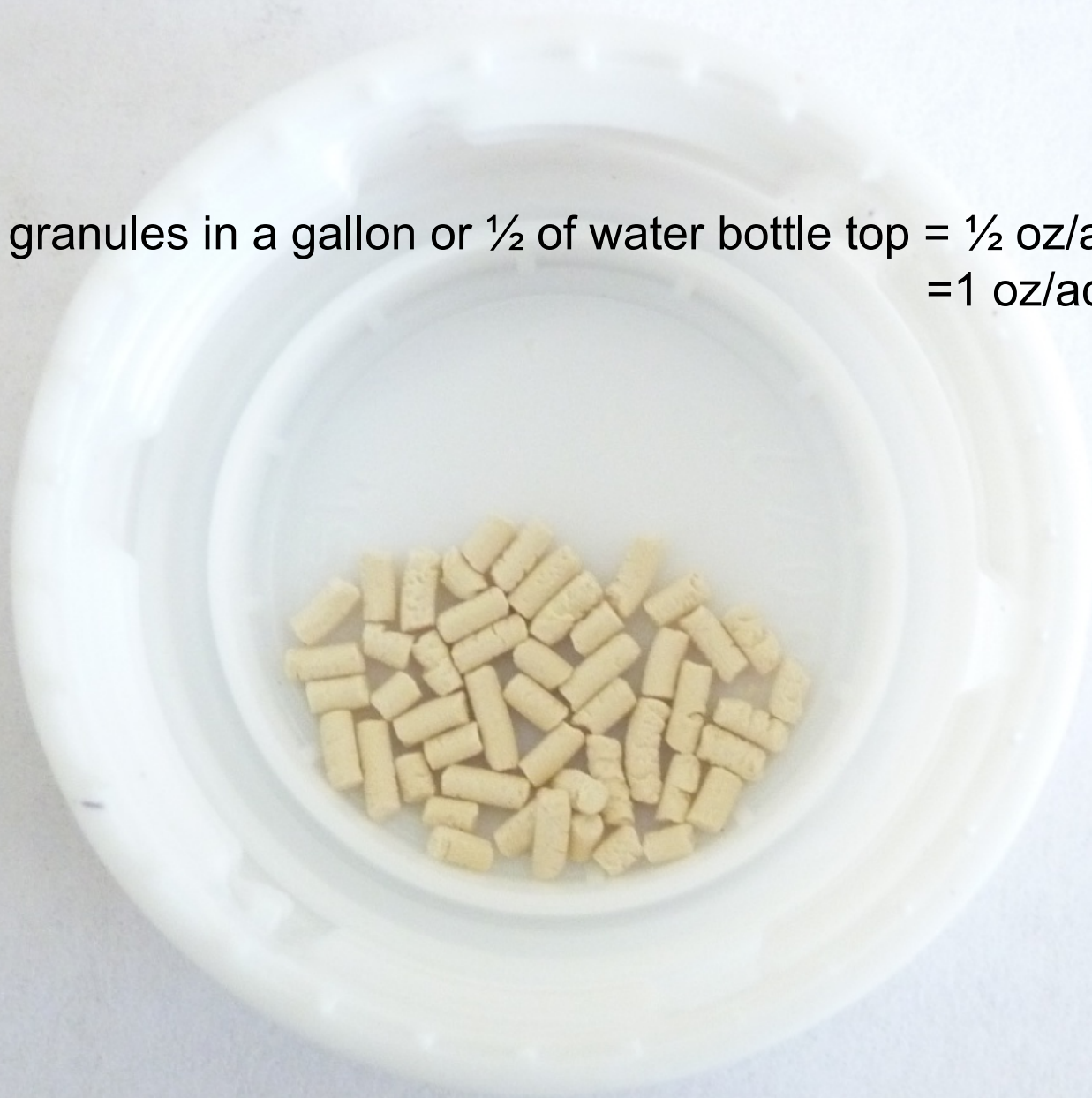
For optimum control of creeping buttercup, it is recommended that Curio be applied March to April. Other weeds controlled by Curio may germinate or emerge later in the season (May to July). Do not apply within 60 days of harvest.

Curio is a water dispersible granule that does not include a spray adjuvant. Applications must include one of the following adjuvants: a nonionic surfactant at the rate of 2 pints per 100 gallons of spray solution (0.25% v/v) or a crop oil concentrate at the rate of 2 pints per 100 gallons of spray solution (0.25%).

**Warning:** Do not over-apply. Over-application will likely cause damage. It is recommended that spot or small area applications be made using a calibrated boom to prevent misapplication, rather than a backpack sprayer.

- 0.5 oz/ac is very little material. Especially when spot-treated. Don't even think about double dipping. It is too easy to make a mistake.

~35 granules in a gallon or ½ of water bottle top = ½ oz/ac @ 100gpa  
=1 oz/ac @ 50 gpa



Curio is a water-dispersible granule that does not include a spray adjuvant.

- It doesn't mix well and settle out with time - agitation is important
- Do not add a capful of granules to 3 gallon backpack fill with water.
- Instead – pre-mix and dissolve in smaller batch of water, and then add to backpack.

Applications must include one of the following adjuvants: a nonionic surfactant at the rate of 2 pints per 100 gallons of spray solution (0.25% v/v) or a crop oil concentrate at the rate of 2 pints per 100 gallons of spray solution (0.25%).

- One tablespoon (1/2 oz) per 3 gallons = 0.25%
- NIS like X77 and R11 are safer to crops than COC
- The crop label recommends “Do not use a crop oil concentrate (either vegetable- or petroleum-based), as crop injury will result.”

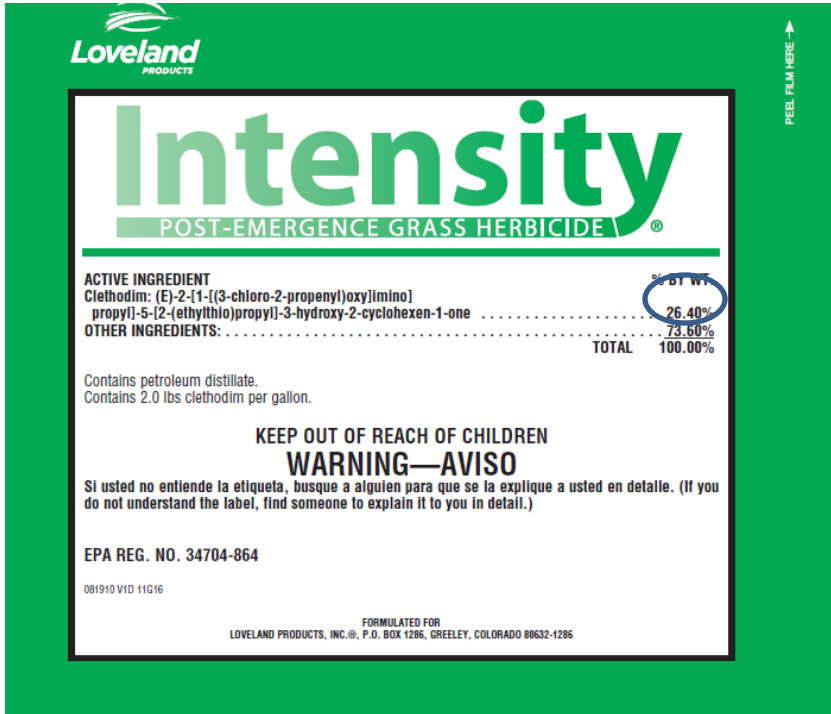


## Other fun facts about Curio:

- Efficacy best when applied spring (early post-emergent).
- No damage if applied prior to bud elongation
  - Vine damage if it occurs= tip reddening, potential death of new shoot.
- Mixing with Callisto or Callisto + Select is popular with growers.
- Weed control – takes time to be expressed.

– New or soon to be new herbicides

- Intensity and Intensity One
- Pruvion
- Aim



**Intensityone**  
POST-EMERGENCE GRASS HERBICIDE

GROUP 1 HERBICIDE



ACTIVE INGREDIENT:	
*Clethodim	12.6%
OTHER INGREDIENTS:	87.4%
<b>TOTAL</b>	<b>100.0%</b>

## SECTION 24(c) SPECIAL LOCAL NEED (SLN) LABEL

FOR DISTRIBUTION AND USE ONLY WITHIN THE STATE OF WASHINGTON

## INTENSITY POST EMERGENCE GRASS HERBICIDE®

EPA REG. NO. 34704-864

EPA SLN NO. WA-180004

CRANBERRY – APPLICATION BY CHEMIGATION FOR CONTROL OF GRASS WEEDS

Not sure about  
SLN for OR. If  
you don't have  
– you should  
apply for it.  
Easy to get.



## 2018 efficacy trials:

One chemigated applications  
of Intensity (July)

Barnyard grass ~ 100%  
control





## **2018 efficacy trials:**

### **Grasses with excellent control**

Sweet Vernal ~ 90 to 100 %

Barnyard grass ~ 100%

Velvet grass ~ 80 to 100%

### **Grasses with moderate control**

Fescues ~ 10 to 40%

Reed Canary grass ~ 50 - 75%

Creeping Bent grass ~ 40 to 80%

Salt Grass ~ 10 to 40%

### **Grasses with no control**

Fine Fescues

## **Cost per application:**

~ 5-7\$/ac

May require >1 application

## **Timing:**

Young actively growing

Early post-emergence

## **Two options – no differences**

Intensity

Intensity One

## **Effect on Crop:**

None noted

30 day PHI

Also highly recommend for new plantings with any grass problems







# Pruvin®

Dry Flowable

For weed control in Potatoes, Potatoes grown for seed, field grown Tomatoes, Citrus Fruit, Stone Fruit, Tree Nuts, Pome Fruit, Grapes and Field Corn; along Roadsides and Highway Medians\*, at Industrial Plant Sites\* and Utility Substations\*  
(\*Not Registered in New York)

ACTIVE INGREDIENT:	% BY WT.
Rimsulfuron: N-((4,6-dimethoxypyrimidin-2-yl)aminocarbonyl)-3-(ethylsulfonyl)-2-pyridinesulfonamide	25.0%
OTHER INGREDIENTS:	75.0%
TOTAL:	100.0%

EPA Reg. No. 66222-184

EPA Est. No. 61842-CA-001<sup>AF</sup>; 67545-AZ-001<sup>GM</sup>

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

**KEEP OUT OF REACH OF CHILDREN**  
**CAUTION / PRECAUCION**

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

#### PRECAUTIONARY STATEMENTS

##### HAZARDS TO HUMANS AND DOMESTIC ANIMALS

**CAUTION:** Causes moderate eye irritation.

Harmful if absorbed through the skin. Avoid contact with skin, eyes, and clothing. Avoid breathing dust or spray mist.

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

Manufactured for:

Makhteshim Agan of North America, Inc.

(d/b/a ADAMA)

3120 Highwoods Blvd., Suite 100

Raleigh, NC 27604

Net Contents

**20 ounces**



HERBICIDE  
**ADAMA**  
ESSENTIALS

## ‘Pruvin’ (rimsulfuron)

**What is it?**

**Is it legal to use?**

**What about export tolerance?**

**What do we use it for?**

**What are the rates and timing?**

**How much do I put in my backpack?**



## **'Pruvin' (rimsulfuron)**

**What is it?** Sulfonylurea herbicide (like Curio, but more effective on some weeds)

**Is it legal to use?** Yes, sort of. Has a federal registration with Cranberry on the label. New labels have not been printed yet. Adama has given me mixed answers on this. Be sure you have the correct label if you use it.

**Export fruit?** Ask your handler. Should be like Curio.

**'Pruvin' (rimsulfuron)**

**What do we use it for?**

**What are the rates and timing?**

**How much do I put in my backpack?**

## **Pre and Post-emergent (1-3" in height) weed activity (based on label)**

Grasses/sedges: Numerous grass species including baryardgrass, quackgrass, annual bluegrass, yellow nutsedge,

Broadleaves: Thistle, smartweed, dandelion, ragweed

## **Pre and Post-emergent weed activity in cranberry beds (based on observation)**

Numerous grasses, rushes and sedges: Efficacy varying by species, timing and rate

Broadleaves: Suppression to control of young silver leaf, small lotus, and small yellow weed, all size buttercup

## **Pre and Post-emergent weed activity in cranberry beds (hopefully suggestions)**

Arrowgrass –(rush): We have had mixed results. For best control treat right after harvest when still green, and use repeated applications. Experiment. Not convinced of any efficacy after frost damage.

Yellowweed: Suppression ? Yes, but can get damage to vines with spring timing. Experiment.

Sedges (cutgrass): Maybe if young and small. Experiment.

Other rushes (Spike rush): Maybe if young and small. Experiment

Sheepsorrel/sourgrass – no

Lily – no

# Rates

- Label rate is 2 oz/ac = 0.12 oz/3 gallon backpack @ 50 gpa
- Label rate is twice that of Curio
- What ever you did with Curio – double for Pruvion



~70 granules in a gallon = 2 oz/ac @ 50 gpa

# Rates

- During the dormant season cranberry vines are very tolerant
- Once bud set occurs in the summer cranberry vines are tolerant
- Cranberry are sensitive in the spring during new growth, just like Curio.

# Surfantant

- NIS, COC or MSO
- Use a NIS that is safe for cranberries during new growth
- MSO or COC will work better during dormant season.

# Mixing

- Same as Curio, pre-dissolve before adding to tank and continue to agitate



# Aim

- Recent labwl
  - No in code book
- Contact herbicide
- Activity on moss
- No PNW data for moss

- Future herbicides

- Chateau



# Moss Control w/ flumioxazin (Late November and Early February)

- Flumioxazin (Chateau) provides 80 to 100% permanent control of moss via chemigation or broadcast
- Application window is limited between Late November and Early February
- Recommended two applications at  $\frac{1}{2}$  x to 1x
- No negative effects on crop

# Moss Control w/ flumioxazin (Chateau)

- When will you get a label? 2022?
  - Residue data to be released from IR4 to EPA sometime early to mid- 2019.
  - Once the data is released, I can apply for a Section 18.
    - WSDA/ODA requires extensive data on crop loss from moss, product efficacy and crop safety for a Section 18.
    - Data has been collected, prepared and ready to go.
    - Expect Section 18 January 2020 ( I hope)

GROUP	14	HERBICIDE
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**CHATEAU®**  
HERBICIDE SW

FOR CONTROL AND/OR SUPPRESSION OF CERTAIN WEEDS IN ALFALFA, ARTICHOKE, ASPARAGUS, BUSHBERRIES, CELERY, COTTON, FIELD CORN, GARLIC, GRAPE, HOPS, MINT, NUT TREES (INCLUDING PISTACHIO), OLIVE, ONION (DRY BULB), POME FRUIT, POMEGRANATE, STONE FRUIT, STRAWBERRY, SWEET POTATO, NON-BEARING FRUIT TREES, FALLOW LAND AND TO MAINTAIN BARE GROUND ON NON-CROP AREAS OF FARMS, ORCHARDS AND VINEYARDS.

Active Ingredient	By Wt
Flumioxazin*	51%
Other Ingredients .....	49%
Total	100%

\* 2-[7-fluoro-3,4-dihydro-3-oxo-4-(2-propynyl)-2H-1,4-benzoxazin-6-yl]-4,5,6,7-tetrahydro-1H-isoindole-1,3(2H)-dione

Chateau® Herbicide SW is a water dispersible granule containing 51% active ingredient.

EPA Reg. No. 59639-99

EPA Est. 11773-IA-01®, 39578-TX-01®

Superscript is the first letter in lot number.

# Herbicides

Older products  
worth considering



**Poast**  
Herbicide

For broad-spectrum, postemergence selective control of weeds in corn and other use sites.



Legal, OR has new SLN

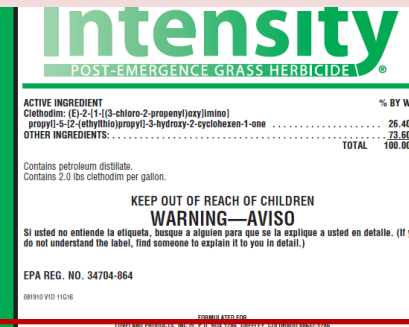
**Curio**<sup>TM</sup>  
HERBICIDE

DISPERSIBLE GRANULES  
FOR SELECTIVE POSTEMERGENCE CONTROL OF ACTIVELY  
GROWING WEEDS IN SOYBEANS AND PEANUTS

Legal for dormant  
spray, but!



Recently Approved in WA,  
OR needs SLN



Chemigation approved

Recently Approved

**Pruvin**<sup>®</sup>

Dry Flowable

For weed control in Potatoes, Potatoes grown for seed, field grown Tomatoes, Citrus Fruit, Stone Fruit, Tree Nuts, Pome Fruit, Grapes and Field Corn; along Roadsides and Highway Medians\*, at Industrial Plant Sites\* and Utility Substations\*  
(\*Not Registered in New York)

ACTIVE INGREDIENT:	% BY WT.
Bisulfuron: N-[[[4,6-dimethoxy-pyrimidin-2-yl]amino]carbonyl]-3-(ethylsulfonyl)-2-pyridinesulfonamide	25.0%
OTHER INGREDIENTS:	75.0%

Pending

**CHATEAU**  
HERBICIDE SW

FOR CONTROL AND/OR SUPPRESSION OF CERTAIN WEEDS IN ALFALFA, ARTICHOKE, ASPARAGUS, BUSHBERRIES, CELERY, COTTON, FIELD CORN, GARLIC, GRAPE, HOPS, MINT, NUT TREES (INCLUDING PISTACHIO), OLIVE, ONION (DRY BULB), POME FRUIT, POMEGRANATE, STONE FRUIT, STRAWBERRY, SWEET POTATO, NON-BEARING FRUIT TREES, FALLOW LAND AND TO MAINTAIN BARE GROUND ON NON-CROP AREAS OF FARMS, ORCHARDS AND VINEYARDS.

Active Ingredient	By Wt
Flumioxazin*	51%
Other Ingredients	49%
Total	100%

Legal, pending printing of  
new label

Possible use by January 2020, but would need a minor miracle (IR4 to EPA this summer, Section 18 submitted and approved by WSDA & registrant by January 2020)



# Happy spraying!



# Questions?