

Weed Management in Christmas Trees

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Presentation Outline

- ❑ Importance of weeds
 - Definition of a weed
 - Weed classification
- ❑ Current herbicide options
 - Preemergence
 - Postemergence
- ❑ Future research chemicals
 - Preemergence
 - Postemergence
- ❑ Weed identification quiz

Importance of Weeds

What is a Weed?

Why to Control Weeds?

What is a Weed?

❑ Common definitions:

- Plant whose virtue has not been discovered
- Plant growing where it is not wanted
- Plant out of place
- **Plant that is objectionable or interferes with the activities or welfare of man (WSSA)**



Monarch butterfly on milkweed

What is a Weed?



Why to Control Weeds?

□ Competition

- For water

- Nutrients

- Light

 - ✓ leading to reduced crop growth and quality

Why to Control Weeds?

- Harbor insect and disease pests
- Interfere with pruning and harvest
 - poison ivy, brambles
- Health hazard
 - poison ivy
- Provide cover for rodents

Weed Classification

Weed Classification

Morphology

- grasses
- broadleaf
- sedges

Life cycle

- annual
- biennial
- perennial

Family name

- asteraceae
- poaceae
- malvaceae
- polygonaceae
- leguminaceae
- onagraceae
- rubiaceae

Growth period

- winter
- summer

Habitat

- terrestrials
- aquatics

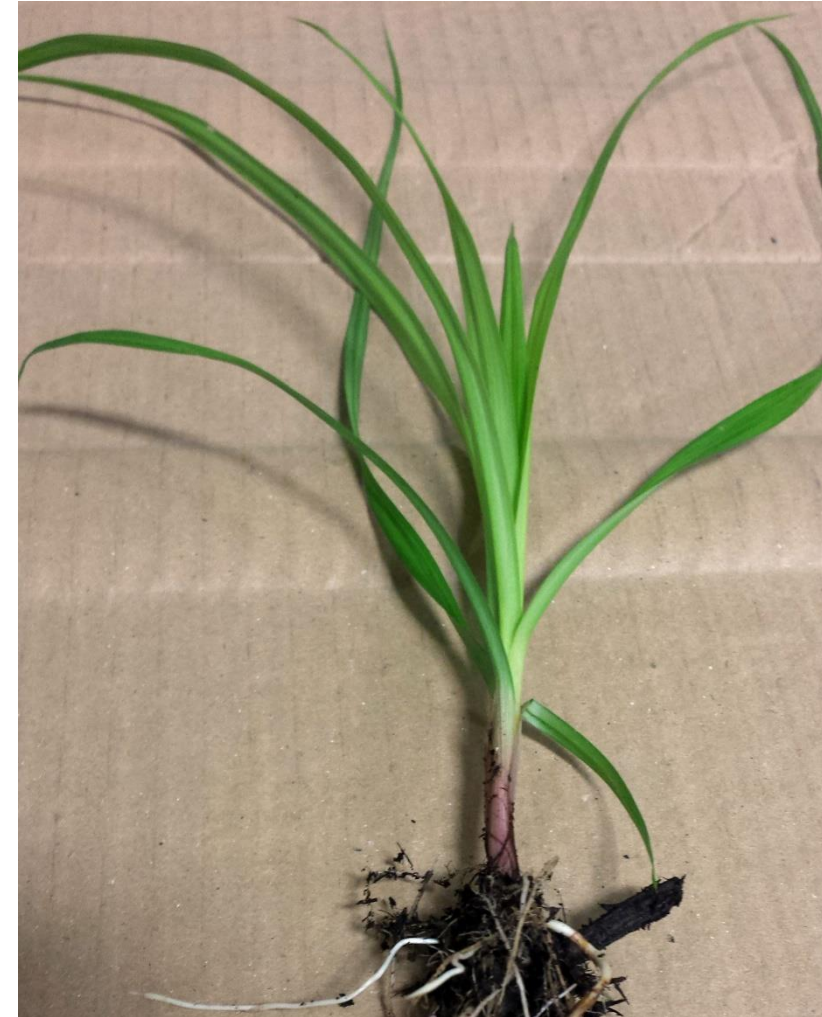
Morphology



cheeseweed/little mallow



broomesedge/poverty grass



yellow nutsedge

Can a Postemergence Grass Herbicide Control Sedges?

Yes or No

- No
 - A grass herbicide controls only grasses
 - Envoy plus, Select, Fusillade DX

Life Cycle-Annual

- Annuals: complete their life cycle in 1 year. examples- annual grasses -crabgrass, foxtails, barnyard grass – annual broadleaves-pigweed, ragweed etc.



crabgrass



giant foxtail



redroot pigweed



common ragweed

Life Cycle-Biennial

- Biennials: complete life cycle in 2 years. In the first year, complete vegetative growth. In the second year, produce flowers and seeds e.g. wild carrot, etc.



wild carrot



burdock



bull thistle



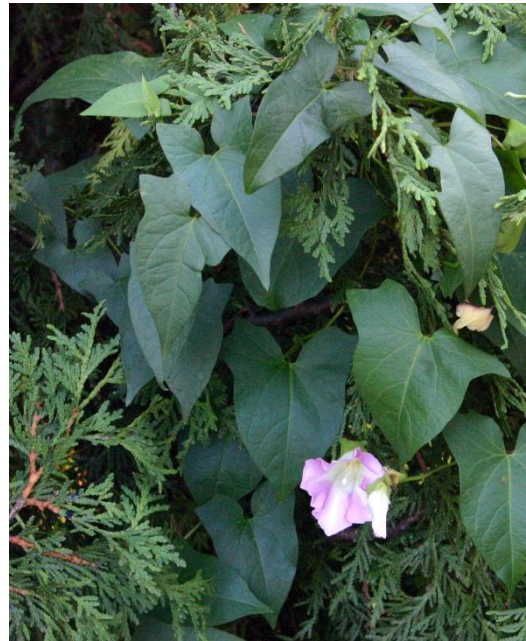
primrose

Life Cycle-Perennial

- Perennials: live many years by overwintering rootstocks, rhizomes, tubers, e.g. quackgrass, field bindweed, goldenrod, smooth bedstraw, etc.



quackgrass



bindweed



goldenrod



smooth bedstraw

Can Preemergence Herbicides Control Perennial Weeds?

☐ Yes and No

- Yes: some, when growing from seed
 - Quackgrass, Canada thistle, and field bindweed from seed
- No, when growing from rhizomes, tubers
 - Quackgrass, Canada thistle, and field bindweed from rhizomes

Family Name



asteraceae



poaceae



malvaceae

Family Name



polygonaceae



leguminaceae



onagraceae

Family Name



Rubiaceae

Will Herbicide “Stinger” Control Smooth Bedstraw?

Yes or No

No.

Why?

Bedstraw belongs to rubiaceae family

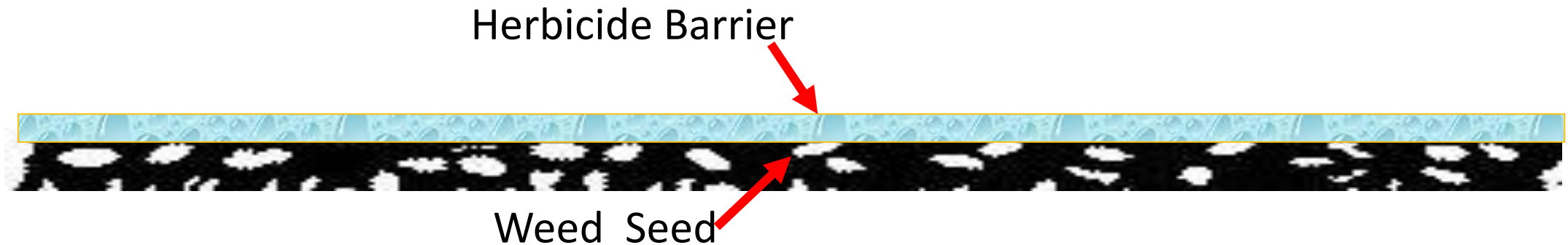
AND

Stinger (clopyralid) has activity only on weeds belonging to asteraceae, leguminaceae, and polygonaceae families.

Herbicides Currently
in Use
Preemergence Herbicides

Preemergence Herbicides

- Preemergence herbicides kill weeds before they emerge from the soil. They kill germinating weeds and not the weed seeds.



Preemergence Herbicides

Herbicide	Product name	Mode of action
Indaziflam	Specticle flo, Marengo	Cellulose biosynthesis inhibitor
Isoxaben	Gallery	Cellulose biosynthesis inhibitor
Flumioxazin	Sureguard	Protoporphyrinogen oxidase inhibitor
Oxyflourfen	Goal 2XL, Goal Tender, Galligan	Protoporphyrinogen oxidase inhibitor
Oxadiazon	Ronstar 2 G	Protoporphyrinogen oxidase inhibitor

Preemergence Herbicides

Herbicide	Product name	Mode of action
Pendimethalin	Pendulum 3.3 EC	Seedling root growth Inhibitor
Oryzalin	Surflan AS	Seedling root growth Inhibitor
Trifluralin	Treflan	Seedling root growth Inhibitor
Napropamide	Devrinol 50 DF	Seedling shoot growth Inhibitor
S-metolachlor	Pennant Magnum	Seedling shoot growth Inhibitor

Preemergence Herbicides

Herbicide	Product name	Mode of action
Simazine	Princep 4L, Princep 90 DF	Photosystem II Inhibitor
Atrazine	Atrazine 4L, Atrazine 90 DF	Photosystem II Inhibitor
Hexazinone	Velpar	Photosystem II Inhibitor
Hexazinone + Sulfometuron	Westar	Photosystem II + ALS Inhibitors
Oxyfluorfen + Prodiamine	Biathlon	PPO and seedling root growth inhibitors

Preemergence Herbicides

Grass active

- Surflan AS, **Pennant Magnum**, Pendulum 3.3 EC, Pendulum Aquacap, Treflan, Devrinol

Broadleaf active

- Atrazine, **Gallery**, **Gemini**, Goal 2XL, Marengo, Simazine, Specticle Flo, Sureguard, Westar, Velpar

Preemergence Herbicides

Indaziflam

- Marengo, Spectacle flo, Alion

Flumioxazin

- Sureguard, Sureguard SC

Isoxaban

- Gallery

Preemergence Herbicides

Isoxaban + Prodiamine

- Gemini

Hexazinone + Sulfometuron

- Westar

Prodiamine + Oxyfluorfen

- Biathlon

Indaziflam

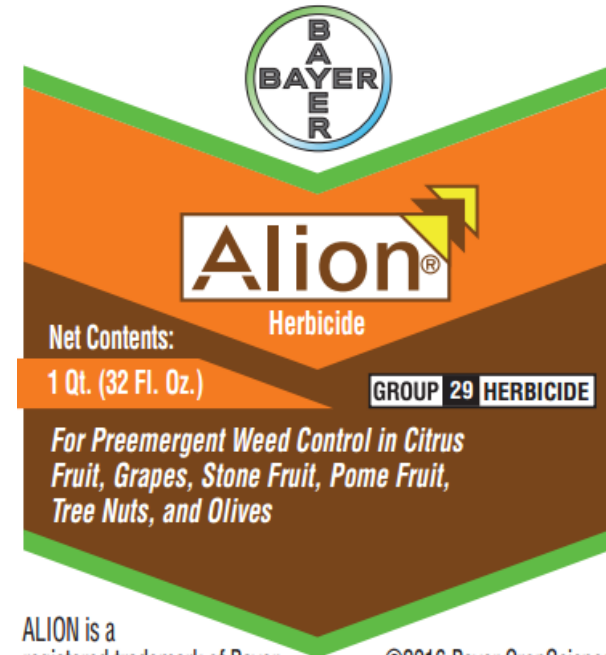


Spect*(i)*cle[®]
FLO

MARENGO[™]

Herbicide

GROUP 29 HERBICIDE



ALION is a registered trademark of Bayer.

©2016 Bayer CropScience

Specticle FLO (Indaziflam)

- ❑ Active ingredient
 - 7.4%
- ❑ Rate/ac
 - 6 – 10 fl oz
- ❑ Max seasonal use rate
 - 18.5 fl oz

GROUP 29 HERBICIDE



Spect*(i)*cle[®]
FLO

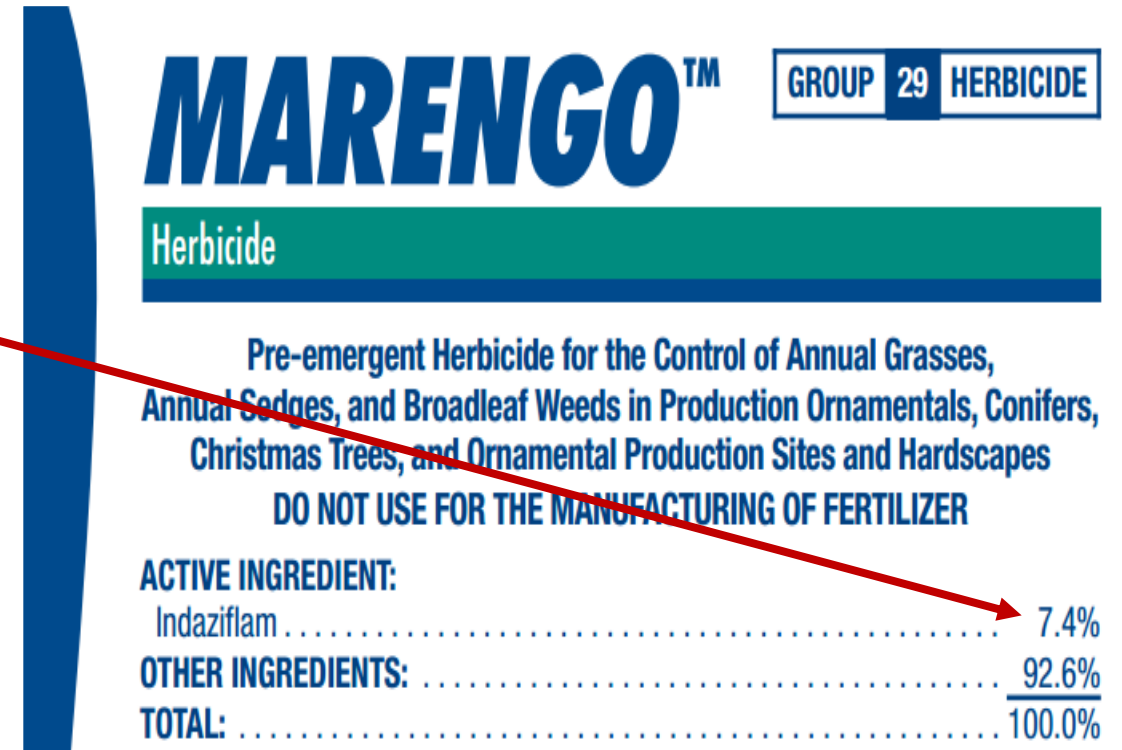
Pre-emergent Herbicide for the Control of Annual Grasses, Annual Sedges, and Annual Broadleaf Weeds in Warm Season Turfgrass, Landscape Ornamentals, and Hardscapes
DO NOT USE FOR THE MANUFACTURING OF FERTILIZER

ACTIVE INGREDIENT: Indaziflam 7.4%
OTHER INGREDIENTS: 92.6%
Total 100.0%
Contains 0.622 lbs. active ingredient per gallon
EPA Reg. No. 432-1518

For **MEDICAL** and **TRANSPORTATION**
Emergencies **ONLY** Call 24 Hours A
Day 1-800-334-7577
For **PRODUCT USE** Information Call
1-800-331-2867

Marengo (Indaziflam)

- ❑ Active ingredient
 - 7.4%
- ❑ Rate/ac
 - 7.5 – 15.5 floz
- ❑ Max seasonal use rate/ac
 - 18.5 floz



MARENGO™ GROUP 29 HERBICIDE

Herbicide

Pre-emergent Herbicide for the Control of Annual Grasses, Annual Sedges, and Broadleaf Weeds in Production Ornamentals, Conifers, Christmas Trees, and Ornamental Production Sites and Hardscapes
DO NOT USE FOR THE MANUFACTURING OF FERTILIZER

ACTIVE INGREDIENT:
Indaziflam 7.4%

OTHER INGREDIENTS: 92.6%

TOTAL: 100.0%

A red arrow points from the 7.4% value in the label to the 7.4% value in the list on the left.

Alion (indaziflam)

- ☐ Active ingredient
 - 19.05%
- ☐ Rate/ac
 - 3.5 – 6.5 floz
- ☐ Max seasonal use
 - 10.5 floz/ac



ACTIVE INGREDIENT: Indaziflam* 19.05%
OTHER INGREDIENTS: 80.95%
Contains 1.67 pounds of indaziflam per gallon. TOTAL: 100.00%
*(CAS No: 730979-19-8)

EPA Reg. No. 264-1106

KEEP OUT OF REACH OF CHILDREN
CAUTION

For **MEDICAL** and **TRANSPORTATION** Emergencies **ONLY**
Call 24 Hours A Day 1-800-334-7577
For **PRODUCT USE** Information Call 1-866-99BAYER
(1-866-992-2937)

See additional precautionary statements and directions for use on label.

Produced for: Bayer CropScience LP
P.O. Box 12014, 2 T.W. Alexander Drive
Research Triangle Park, North Carolina 27709

US84467332D 160909D 09/16

Indaziflam

☐ Strengths

- Broader weed control spectrum
 - Grasses and broadleaf weeds
 - Triazine resistant weeds
 - Lambsquarters, redroot pigweed etc
- Longer weed control duration
 - 6-8 months
- Excellent crop tolerance
 - Labelled rates and species

☐ Weaknesses

- In consistent control of Horseweed, common ragweed, yellow foxtail in CT trials.

Flumioxazin



SureGuard[®] HERBICIDE

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

SureGuard[®] SC HERBICIDE



FOR USE IN CONTAINER AND FIELD GROWN CONIFERS (INCLUDING CHRISTMAS TREES) AND DECIDUOUS TREES, AROUND ESTABLISHED WOODY ORNAMENTALS IN LANDSCAPES, TO MAINTAIN BARE GROUND NON-CROP AREAS, CONIFER AND POPLAR RE-FORESTATION SITES, AND DORMANT TURFGRASS

ACTIVE INGREDIENT:	
Flumioxazin*	44.0%
OTHER INGREDIENTS:	56.0%
TOTAL:	100.0%

Flumioxazin

- Over-the-top
 - Before bud-break or after hardening off
- Rate/ac
 - 8 - 12 oz/floz
- Max seasonal use
 - 24 oz/ac
 - 2 applications of 12 oz
 - 3 applications of 8 oz



SureGuard[®]
H E R B I C I D E

SureGuard[®] SC
HERBICIDE

OR

Flumioxazin



SureGuard[®]
HERBICIDE

- ❑ Tolerant conifers (OTT)
 - Concolor, Douglas, Fraser, Grand, Noble, Turkish, Eastern White Pine, Norway spruce, Colorado blue spruce
 - **BALSAM?**
 - **Directed/Test on small scale**

Flumioxazin



SureGuard[®]
H E R B I C I D E

☐ Strengths

- Excellent broadleaf activity
 - Broader spectrum of weed control than Simazine
- Controls many grasses
- Controls emerged weeds < 2" in height
- Longer weed control duration
 - 6-7 months under ideal conditions

Isoxaben

☐ Tree species:

- BF, Concolor Fir, WS, NS, CS, CBS, WP, SP
- DF, FF ?

☐ Weeds controlled:

- ~60 broadleaf species

Specimen Label

 Dow AgroSciences

Gallery[®]
75 Dry Flowable

Specialty Herbicide

Active Ingredient:

isoxaben: N-[3-(1-ethyl-1-methylpropyl)-
5-isoxazoly]-2,6-dimethoxybenzamide
and isomers

75%

Other Ingredients

25%

Total

100%

Isoxaben

- ❑ Over-the-top
 - Before bud-break or after hardening off
- ❑ Rate/ac
 - 0.66 – 1.33 lb
- ❑ Max seasonal use
 - 4 lb/ac
 - 60 d interval between applications

Specimen Label

 Dow AgroSciences

Gallery[®]
75 Dry Flowable

Specialty Herbicide

Isoxaben + Prodiamine

- ☐ Over-the-top
 - Before bud-break or after hardening off
- ☐ Rate/ac
 - 38 – 87 floz

Gemini™
3.7 SC

A SELECTIVE COMBINATION PREEMERGENCE HERBICIDE FOR CONTROL OF GRASS AND BROADLEAF WEEDS IN ORNAMENTALS.

ACTIVE INGREDIENTS:	% BY WT
Prodiamine* (CAS No. 29091-21-2).....	23.3%
Isoxaben* (CAS No. 82558-50-7).....	15.5%
OTHER INGREDIENTS:	61.2%
TOTAL: 100.0%	

*Contains 2.2 pounds prodiamine per gallon and 1.5 pounds isoxaben per gallon.

Table 2. Amount of Gemini 3.7 SC to Apply to Container and Field Grown Ornamental Plantings, and Christmas Tree Farms

Amount to Apply (Broadcast)*	When to Apply	Comments/Instructions
38 - 87 fl. oz./acre or 0.9 - 2.0 fl. oz./1,000 sq ft	In fall or spring before weeds germinate or after weeds are removed.	<ul style="list-style-type: none"> • Use the higher rate for longer control. • Gemini 3.7 SC can be applied more than once per year as long as the total amount of product applied does not exceed 87 fl. oz./acre (2.5 lbs. active ingredient/acre) per year.

Hexazinone + Sulfometuron

☐ Active Ingredients

- Hexazinone: 68.6%
- Sulfometuron methyl: 6.5%

☐ Rate/ac

- 6-12 oz



Westar[®]

HERBICIDE

Dispersible Granules

See inside leaflet for complete
First Aid Instructions,
Precautionary Statements,
Directions for Use and Storage
and Disposal Instructions.

Hexazinone + Sulfometuron

- ❑ Tree species
 - Fraser Fir, Douglas Fir,
Colorado blue spruce,
Scotch pine, White pine
 - Balsam Fir- No injury
(2016 Trials)
- ❑ Colorado spruce
 - Injured in CT trials.



Westar[®]

HERBICIDE

Dispersible Granules

See inside leaflet for complete
First Aid Instructions,
Precautionary Statements,
Directions for Use and Storage
and Disposal Instructions.

Hexazinone + Sulfometuron

❑ Suppression

- Yellow nutsedge, quackgrass, field horsetail, wild carrot, goldenrod, Canada thistle, pink sorrel

❑ Caution

- Calibration
- Tree age



Westar®

HERBICIDE

Dispersible Granules

See inside leaflet for complete
First Aid Instructions,
Precautionary Statements,
Directions for Use and Storage
and Disposal Instructions.

Oxyflorfen + Prodiamine

BIATHLON[®]

GROUP

14+3

HERBICIDE

ORNAMENTAL HERBICIDE

SPECIMEN LABEL

Preemergence control of weeds in field and container ornamentals, grounds maintenance and other specified non crop areas. Also for evergreens (broadleaf and needle) limited to Christmas tree farms and conifer farms.

ACTIVE INGREDIENTS:

Oxyflorfen 2.00%

Prodiamine 0.75%

OTHER INGREDIENTS: 97.25%

TOTAL: 100.00%

Oxyflorfen + Prodiamine

- ❑ Granular herbicide
- ❑ Rate/ac: 100 lb
- ❑ Controls grassy and broadleaf weeds
 - Crabgrass, green foxtail, yellow foxtail, barnyardgrass, goosegrass, fall panicum, horseweed, pigweed, sowthistle, shepherd's purse

FIELD GROWN ORNAMENTALS, CHRISTMAS TREE AND CONIFER FARMS

Apply **Biathlon** at 100 pounds per acre per application. Apply immediately after planting or in the spring prior to weed seed germination or weed removal. A maximum of two applications may be made per growing season. Do not reapply at less than 3 month intervals for field grown ornamentals and less than 2 month intervals for Christmas trees. For conifer seedlings do not apply more than 100 pounds per acre per season. **Biathlon** is not recommended for use on bare root stock if irrigation is not available.

Current Postemergence Herbicide Options

Postemergence broadleaf herbicides

Clopyralid

- Stinger 3L, Lontrel 3L, Clopyralid 3

Triclopyr

- Garlon 3 A, Triclopyr 3 A

Glyphosate

- Roundup Original, Roundup Pro 4L, others

Clopyralid

☐ Labelled species

- BF, FF, DF, GF, NF, BS, WP

☐ Postemergence control:

- Weeds up to 6" tall or 5 leaf
 - asteraceae
 - leguminaceae
 - polygonaceae



Clopyralid

- ❑ Will not control
 - weeds larger than 6 inch in size
 - grasses and sedges
 - many biennial and perennial weeds
 - woody vines



Clopyralid

- ☐ Rate/ac
 - 8 – 10.7 floz
- ☐ Cost/ac (banded on 3' row)
 - Varies with manufacturer, product rate, packing size, and application method

1 floz = \$1.31



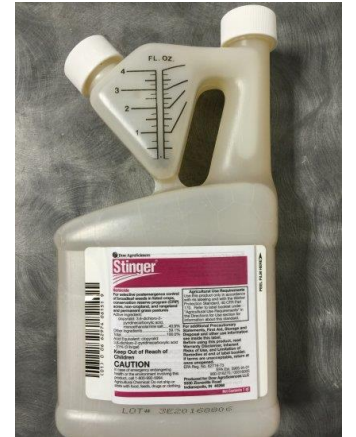
\$10.5-14
Or
\$5.3- 7.0

1 floz = \$2



\$16-21
Or
\$8-10.5

1 floz = \$2.50



\$23-30
Or
\$12-15

Will Clopyralid Control Mile-A-Minute?



Polygonaceae

Triclopyr

- ❑ BF, FF, BS, WS are **more tolerant than DF and WP**
- ❑ Rate/ac
 - 2-5 pints (0.75-1.75 lb ai)/acre.
- ❑ Application timing
 - Late summer or early fall after conifer terminal growth has hardened off.



Poison ivy



Oriental bittersweet

Triclopyr

- ☐ Weeds controlled
 - bindweed, burdock, curly dock, Canada thistle, dandelion, plantains, **white clover**, wild lettuce



Canada thistle



Virginia creeper



Wild grape



mugwort

Glyphosate

SPECIMEN LABEL

Monsanto

Roundup® Original

HERBICIDE

*Glyphosate, N-(phosphonomethyl)glycine, in the form of its isopropylamine salt	41.0%
OTHER INGREDIENTS:	59.0%
	100.0%

* Contains 480 grams per litre or 4 pounds per U.S. gallon of the active ingredient glyphosate, in the form of its isopropylamine salt. Equivalent to 356 grams per litre or 3 pounds per U.S. gallon of the acid, glyphosate.



1.0 INGREDIENTES

INGREDIENTE ACTIVO:	
*Glifosato, N-(fosfonometil)glicina, en forma de su sal de isopropilamina	41.0%
OTROS INGREDIENTES (incluyendo surfactante):	59.0%
	100.0%

*Contiene 480 gramos por litro o 4 libras por galón del ingrediente activo glifosato, en forma de su sal de isopropilamina. Equivalente a 356 gramos por litro o 3 libras por galón del ácido, glifosato.

Credit® 41 Non-Selective Herbicide

For use in certain cropping systems, including Roundup Ready® Alfalfa, Canola, Corn, Cotton, Soybeans, and Sugar Beets; For reduced tillage and fallow systems; and many noncrop areas.

ACTIVE INGREDIENT:	
Glyphosate, N-(phosphonomethyl) glycine, in the form of its isopropylamine salt*	41.0%
OTHER INGREDIENTS:	59.0%
TOTAL:	100.0%

*Contains 480 grams per litre or 4 pounds per U.S. gallon of the active ingredient glyphosate, in the form of its isopropylamine salt.

Glyphosate



1.0 INGREDIENTS

ACTIVE INGREDIENT:

*Glyphosate, N-(phosphonomethyl)glycine, in the form of its potassium salt.....	48.8%
OTHER INGREDIENTS:.....	51.2%
	100.0%

*Contains 660 grams of the active ingredient glyphosate, in the form of its potassium salt, per liter or 5.5 pounds per U.S. gallon, which is equivalent to 540 grams of the acid, glyphosate, per liter or 4.5 pounds per U.S. gallon (39.8% by weight).



1.0 INGREDIENTS

ACTIVE INGREDIENT:

*Glyphosate, N-(phosphonomethyl)glycine, in the form of its potassium salt.....	48.7%
OTHER INGREDIENTS:.....	51.3%

Glyphosate

ACTIVE INGREDIENT:

*Glyphosate, N-(phosphonomethyl)glycine,
in the form of its isopropylamine salt 41.0%

OTHER INGREDIENTS: 59.0%

100.0%

* Contains 480 grams per litre or 4 pounds per U.S. gallon of the active ingredient glyphosate, in the form of its isopropylamine salt. Equivalent to 356 grams per litre or 3 pounds per U.S. gallon of the acid, glyphosate.

ACTIVE INGREDIENT:

*Glyphosate, N-(phosphonomethyl)glycine,
in the form of its potassium salt 48.7%

OTHER INGREDIENTS: 51.3%

100.0%

*Contains 660 grams of the active ingredient glyphosate, in the form of its potassium salt, per liter or 5.5 pounds per U.S. gallon, which is equivalent to 540 grams of the acid, glyphosate, per liter or 4.5 pounds per U.S. gallon (39.8% by weight).

32 fl oz of Roundup
original= 21 fl oz of
Roundup powermax.

**Calculate required
amount based on the
acid component not the
active ingredient
component.**

Glyphosate

- ❑ Max seasonal use rate (roundup original)
 - 2 qts/ac true firs
 - 1.0 - 1.5 qts/ac (DF, WP)
- ❑ Semi-directed applications
 - Minimize contact to basal 12-14 inch
 - 30 GPA solution
 - Fall application

Glyphosate

☐ Weed species shift

- Species naturally tolerant to glyphosate

☐ Resistant Weeds

- Horseweed, common ragweed, pigweeds



Asiatic dayflower



Horsenettle



Hairy vetch



Common primrose

Postemergence Control of Grassy Weeds

Fluazifop

- Fusilade DX
- Ornamec

Clethodim

- Select, Envoy, Envoy plus



Fusilade[®]DX
Herbicide



syngenta.



Envoy Plus[™]
HERBICIDE

Postemergence Control of Grassy Weeds

☐ Fusilade

- 24 fl oz/app
- Two apps/yr
 - 48 fl oz/yr

☐ Envoy Plus

- 16-32 fl oz/app
- Two apps/yr
 - 64 fl oz/yr



Postemergence Herbicide for Control of Perennial and Annual Grass Weeds in Agricultural Areas

Active Ingredient:

Fluazifop-P-butyl
Butyl (R)-2-[4-[[5-(trifluoromethyl)-2-pyridinyloxy]phenoxy]propanoate* 24.5%

Other Ingredients: 75.5%



Envoy Plus[™]
H E R B I C I D E



Active Ingredient	By Wt.
*Clethodim	12.6%
Other Ingredients	87.4%
Total.....	100.0%

Future Research Chemicals

Preemergence Herbicides

Cleantraxx (penoxsulam + oxyfluorfen)

Specimen Label



HERBICIDE

TMTrademark of The Dow Chemical Company ("Dow") or an affiliated company of Dow

Group	2	14	HERBICIDES
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Active Ingredient:

penoxsulam: 2-(2,2-difluoroethoxy)-N-(5,8-dimethoxy[1,2,4] triazolo[1,5c]pyrimidin-2-yl)-6-(trifluoromethyl)benzenesulfonamide.....	0.85%
oxyfluorfen: 2-chloro-1-(3-ethoxy-4-nitrophenoxy)-4-(trifluoromethyl) benzene	40.31%
Other Ingredients.....	58.84%
Total	100.00%

Specimen Label



Herbicide

TMTrademark of Dow AgroSciences LLC

Active Ingredient:

penoxsulam: 2-(2,2-difluoroethoxy)-N-(5,8-dimethoxy[1,2,4] triazolo[1,5c]pyrimidin-2-yl)-6-(trifluoromethyl) benzenesulfonamide	0.85%
oxyfluorfen: 2-chloro-1-(3-ethoxy-4-nitrophenoxy)-4-(trifluoromethyl) benzene.....	40.31%
Other Ingredients.....	58.84%
Total	100.00%

Cleantraxx (penoxsulam + oxyfluorfen) ?

Pre and postemergence control

- ~ 70 weed species
 - Grasses, broadleaf weeds, and woody tree seedlings
 - 4 leaf or 4" tall
 - Field bindweed suppression

Pre rate/ac

- 1.5-3.0 pt

Post rate/ac

- 3.0- 4.5 pt

Lumax (atrazine + s-metolachlor + mesotrione) ?

Atrazine @ 1-2
lb ai /ac

S-Metolachlor @
4.8 lb ai/ac

Mesotrione @
0.75 lb ai/ac



Selective Herbicide

A Preemergence Herbicide for Control of Annual Grass and Broadleaf Weeds in Field Corn, Field Production Seed Corn, Field Silage Corn, Sweet Corn, Yellow Popcorn, and Grain Sorghum

Active Ingredients*:

S-metolachlor: (CAS No. 87392-12-9)	29.40%
Atrazine**: (CAS No. 1912-24-9)	11.00%
Mesotrione: (CAS No. 104206-82-8)	2.94%

Other Ingredients:	56.66%
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Total:	100.00%
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*Active ingredients per gallon: S-metolachlor 2.68 pounds, Mesotrione 0.268 pounds, and Atrazine 1.0 pound.

Preemergence Herbicide Costs

□ Cost

- Simazine

~ \$60/2.5 gal

- Surflan AS

~ \$167/2.5 gal

- Pennant Magnum

~ \$224/gal

- Goal 2XL

~ \$179/2.5 gal

□ Cost/ac (3' band application)

- Simazine @ 3-4 qt

\$6 - 9

- Surflan AS @ 3-4 qt

\$17 - 22

- Pennant Magnum @ 2-2.5 pt

\$19 - 24

- Goal 2XL @ 4.5-6.0 pt

\$14 - 18

Herbicide costs were adapted from Kellysolutions.com

Preemergence Herbicide Costs

❑ Cost

- Westar
~ \$692/15 lb
- Sureguard
~ \$745/5 lb
- Gallery 75 DF
~ \$100/lb
- Lumax
~ \$190/2.5 gal

❑ Cost/ac (banded application)

- Westar @ 6-12 oz
\$5.75 - 11.5
- Sureguard @ 10-12 oz
\$31 - 37
- Gallery 75 DF @ 0.66-1.0 lb
\$22 - 33
- Lumax @ 3-4 qt
\$19 - 25

Herbicide costs were adapted from Kellysolutions.com

Preemergence Herbicide Costs

❑ Cost

- Specticle flo
~ \$1550/gal
- Marengo SC
~ \$1115/0.5 gal
- Alion
~ \$420/1qt

❑ Cost/ac (3' banded application)

- Specticle flo @ 6-10 floz
\$24 - 40
- Marengo @ 6-10 floz
\$35 - 58
- Alion @ 3.5-6 floz
\$15 - 26

Potential Postemergence Herbicides

Potential Postemergence Herbicides



For Control of Annual Broadleaf Weeds in Field Corn, Seed Corn, Yellow Popcorn, Sweet Corn, and Other Listed Crops

<i>Active Ingredient:</i>	
Mesotrione: (CAS No. 104206-82-8)	40.0%
<i>Other Ingredients:</i>	60.0%
<i>Total:</i>	100.0%

Contains 4 lb of active ingredient mesotrione per gallon.



SePRO

SPECIMEN

A NONSELECTIVE CONTACT HERBICIDE FOR BROADLEAF WEED CONTROL FOR USE IN NURSERIES AND ORNAMENTAL PLANTINGS; SODFARMS; CHRISTMAS TREES; AND ESTABLISHED ORNAMENTAL TURF

Active Ingredient
 Pyraflufen ethyl [ethyl 2-chloro-5-(4-chloro-5-difluoromethoxy-1-methyl-1H-pyrazol-3-yl)-4-fluorophenoxyacetate] 2.0%

Other Ingredients 98.0%

TOTAL 100.0%

Contains 0.177 lb. pyraflufen ethyl per gallon (20 grams per liter)

Specimen Label



Herbicide

™Trademark of Dow AgroSciences LLC

<i>Active Ingredient:</i>	
penoxsulam: 2-(2,2-difluoroethoxy)-N-(5,8-dimethoxy[1,2,4] triazolo [1,5-c]pyrimidin-2-yl)-6-(trifluoromethyl) benzenesulfonamide	0.85%
oxyfluorfen: 2-chloro-1-(3-ethoxy-4-nitrophenoxy)-4-(trifluoromethyl) benzene	40.31%
<i>Other Ingredients</i>	58.84%
<i>Total</i>	100.00%



Weed Identification

Quiz

Weed Identification Quiz



What plant is this?

- A. Honeysuckle
- B. Oriental bittersweet
- C. Wild grape
- D. Virginia creeper

Answer: Wild grape

Weed Identification Quiz



What plant is this?

- A. Honeysuckle
- B. Oriental bittersweet
- C. Trumpet creeper
- D. Virginia creeper

Answer: Virginia creeper

Weed Identification Quiz



What plant is this?

- A. Mile-a-minute
- B. Oriental bittersweet
- C. Trumpet creeper
- D. Virginia creeper

Answer: Oriental bittersweet

Weed Identification Quiz



What plant is this?

- A. Common burdock
- B. Curly dock
- C. Common ragweed
- D. Horseweed

Answer: Horseweed

Weed Identification Quiz



What plant is this?

- A. Evening primrose
- B. Asiatic dayflower
- C. Pink sorrel
- D. Cocklebur

Answer: Asiatic dayflower

Weed Identification Quiz



What plant is this?

- A. Common burdock
- B. Horsenettle
- C. lambsquarters
- D. Cocklebur

Answer: Horsenettle

Weed Identification Quiz



What plant is this?

- A. Milkweed
- B. Canada thistle
- C. Common ragweed
- D. Horseweed

Answer: Common ragweed

Weed Identification Quiz



What plant is this?

- A. Yellow toadflax
- B. Common ragweed
- C. Butter and eggs
- D. Kochia

Answer: Yellow toadflax

Weed Identification Quiz



What plant is this?

- A. Canada thistle
- B. Common ragweed
- C. Horseweed
- D. Wild radish

Answer: Canada thistle

Weed Identification Quiz



What plant is this?

- A. Canada thistle
- B. Common ragweed
- C. Horseweed
- D. Wild radish

Answer: Wild radish

Weed Identification

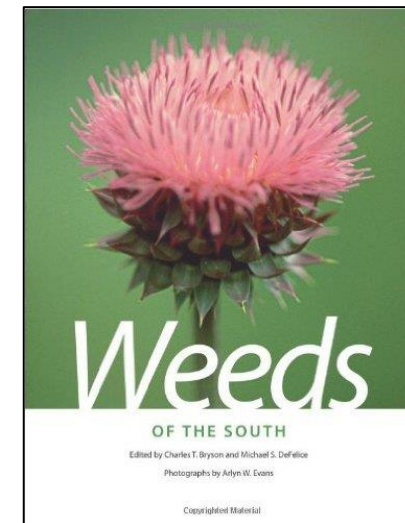
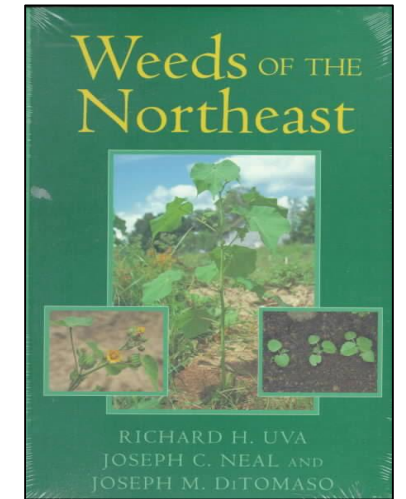
☐ Online

- Identifying Weeds in Christmas Trees

http://www.ipm.msu.edu/agriculture/christmas_trees/identifying_weeds_in_christmas_trees

☐ Books

- Weeds of the Northeast – Cornell Press
- Weeds of the South - University of Georgia Press



Questions?