

Aminopyralid Family of Herbicides

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Topics Covered

- Invasive weeds
- Aminopyralid products
 - Milestone*
 - ForeFront*
 - Milestone VM Plus (Radar)
 - Chaparral* / Opensight*
- Product Stewardship

Why do we control weeds?

Spotted knapweed



Russian knapweed



Yellow starthistle



Timber and Range Problems

Canada thistle



Hawkweed



Scotch
broom



More Pasture and Range problems

Dalmation toadflax



Leafy spurge



Queen Anne's
lace



Why we control weeds

Russian thistle stops train – Hardin, MT



3 - 4400 HP engine train

Stuck 5 hrs & 35 min

Hook up 5 more engines
to get over Rowley Hill



What Cattle Producers Want: More Grass



Weed Interference Impacts on Forages

- **Competition**

- space
- light
- nutrients
- water

- **Allelopathy**

- chemical inhibition of forage establishment

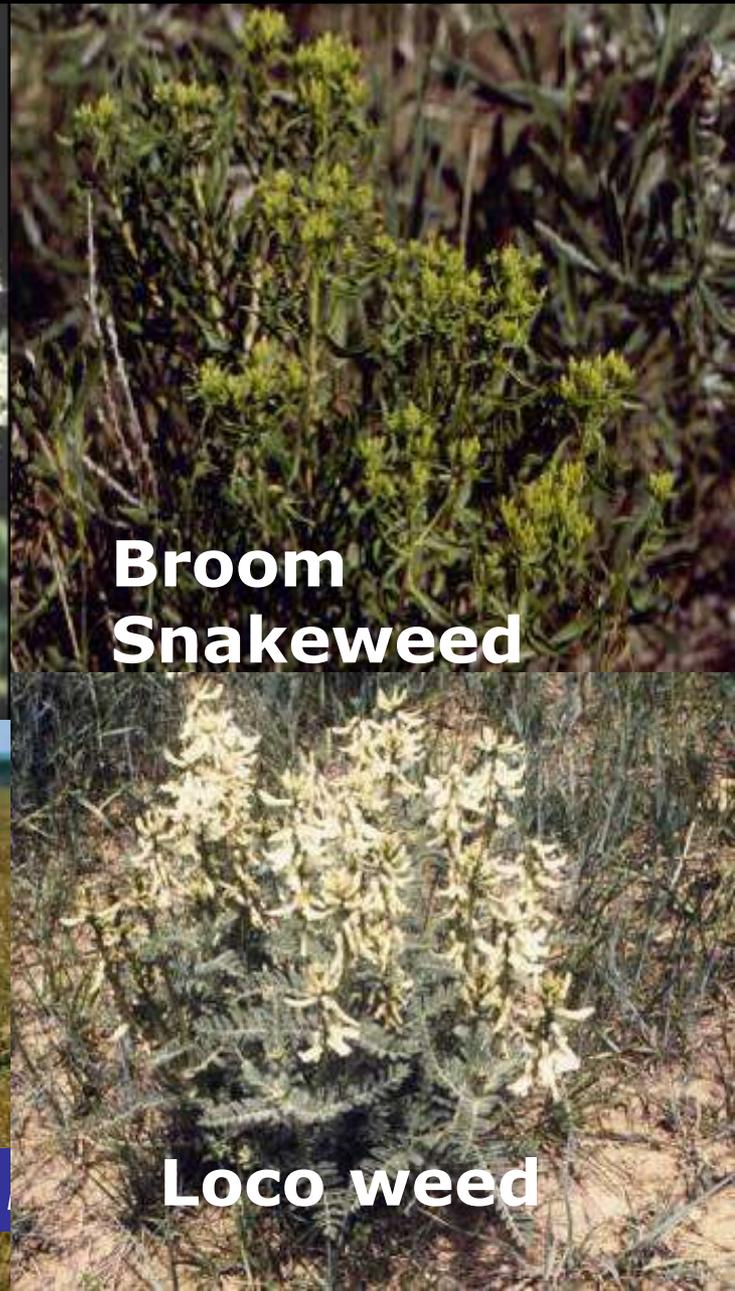
Poisonous Plants



**Tall
Larkspur**



**Poison
Hemlock**



**Broom
Snakeweed**

Loco weed

Invasive and Noxious Weeds

- Very aggressive rates of spread
- Reduce plant diversity
- Degrade wildlife habitat
- Reduce recreation opportunities
- Increase wildfires
- Decrease livestock forage
- Lower crop yields
- Economic costs – millions annually
- Reduce land values and aesthetics
- Driven to control by state and federal laws
- Require integrated control methods

Aminopyralid (Milestone[®] Herbicide)

- ❑ **Reviewed and registered under the Reduced Risk Pesticide Initiative of the U.S. EPA**
- ❑ **Provides excellent control of spotted knapweed, Canada thistle and many other invasive species**
- ❑ **Low use rate of 3 to 7 fluid oz/acre (0.06 to 0.1 lb ae/acre)**
- ❑ **Products have pre-emergent and post-emergent activity for season long control of target broadleaf weeds**

AMINOPYRALID

- ❑ **Very low toxicity (“practically non-toxic”) to birds, fish, mammals and aquatic invertebrates**
- ❑ **Products are NOT “restricted use pesticides”**
- ❑ **No grazing restrictions to all classes of wildlife and livestock including lactating dairy animals**
- ❑ **Surface water breakdown in 15 hours**
- ❑ **Can be applied to “seasonally dry wetlands”**
 - **Spray up to the waters edge**
 - **Apply to irrigated lands and sub-irrigated meadows when water is below soil surface**



Environmental Fate Summary

- **NO** significant metabolites (only CO₂ and NH₃)
- Moderate degradation rates in soil
 - Soil half life = 34.5 days
- Mobility
 - Low leaching potential
- Aquatic degradation
 - Degraded by sunlight within 15 hours in surface water
- Low groundwater contamination potential
 - Low application rate and moderate field degradation
- Low vapor pressure reduces volatility

Photodegradation in Water

Active Ingredient	Aqueous Photolysis $t_{1/2}$ (days)
Triclopyr	0.5
Aminopyralid	0.6
2,4-D	13
Dicamba	52
MSMA	Stable
Picloram	2.6
Clopyralid	Stable
Metsulfuron-methyl	Stable

Herbicide Attributes	Aminopyralid	Clopyralid	Picloram
Reduced Risk pesticide	yes	no	no
Restricted Use pesticide	no	no	yes
Groundwater advisory	no	yes	yes
Applied to seasonally dry wetlands	yes	no	no
Applied up to the water's edge	yes	no	no
Riparian areas	yes	no	no
Soil half life	34	11 days	90 days
Photolysis in water half-life	0.6 days	stable	2.6 days
Maximum use rate	0.1 lb ae/acre	0.5 lb ae/acre	0.5 lb ae/acre

Aminopyralid: Grass Tolerance

- Most established grasses are tolerant
- Apply Milestone after **newly seeded** grasses have an established secondary (adventitious) root system.
 - A secondary root system is usually sufficiently developed by 45 to 60 days after planting.
- Recommend planting grasses the season after treatment
 - Fall planting after spring treatment or spring planting after fall application

Grass hay treated with Milestone



Milestone versus non treated control

Photo taken April 2007

Nontreated



**Milestone at 7 fl oz/A
applied fall 2005 at seeding**



Dow Aminopyralid Family of Herbicides

 Dow AgroSciences

MilestoneTM

Specialty Herbicide

TMTrademark of Dow AgroSciences LLC

 Dow AgroSciences

MilestoneTM VM

Specialty Herbicide

TMTrademark of Dow AgroSciences LLC

 Dow AgroSciences

RadarTM

Specialty Herbicide

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ForeFrontTM R&P

Specialty Herbicide

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ChaparralTM

Specialty Herbicide

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OpensightTM

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Dow AgroSciences

Aminopyralid family of herbicides

□ **Milestone/Milestone VM**

- Aminopyralid 2 lb/gal
 - 7 oz/acre maximum broadcast rate (2x spot treatments)

□ **Radar (Milestone VM Plus)**

- Triclopyr TEA 1.0 lb/gal + Aminopyralid 0.1 lb/gal
 - 9 pt/acre maximum broadcast rate (2x spot treatments)
 - 7 oz Milestone + 1.5 qt Garlon 3A

□ **ForeFront R&P**

- Aminopyralid 0.33 lb/gal + 2,4-D amine 2.67 lb/gal
 - 2.6 pt/acre maximum broadcast rate (2x spot treatments)
 - 7 oz Milestone + 28 oz 2,4-D

□ **Chaparral/Opensight**

- Aminopyralid (85%) + Metsulfuron methyl (15%) WG formulation
 - 3.3 oz/acre max use rate (2x spot treatments)
 - 7 oz Milestone + 0.52 oz MSM 60%

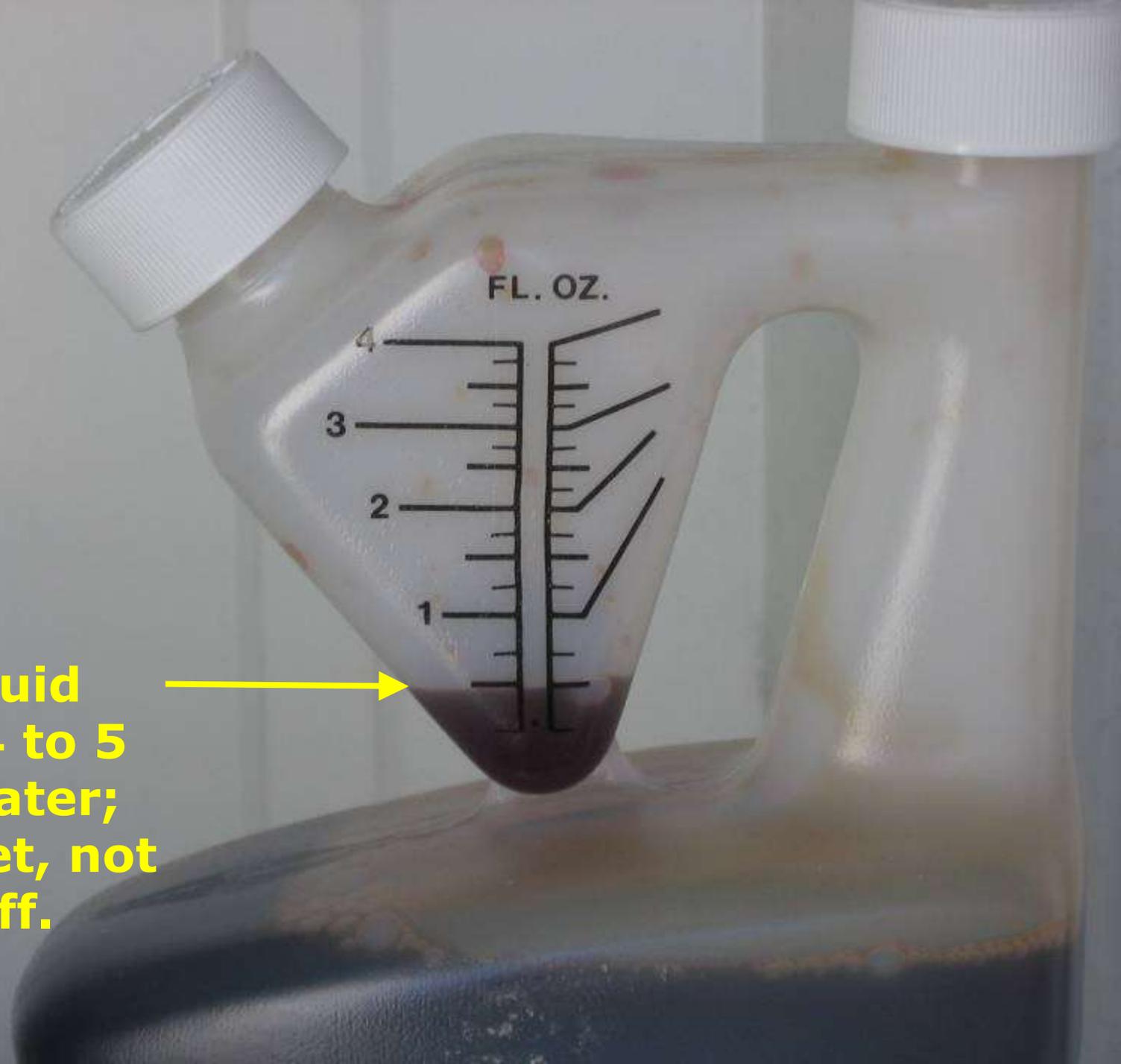
Registered Use Sites

Milestone & ForeFront R&P

MilestoneTM VM

- **Rangeland & pastures (including grasses grown for hay)**
- Conservation Reserve Program acres
- Non-cropland areas (such as roadsides)
- Non-irrigation ditch banks
- Natural areas (such as wildlife management areas, wildlife openings, wildlife habitats, recreation areas, campgrounds, trailheads and trails)
- Grazed areas in and around labeled sites.

- Non-cropland areas including industrials sites, rights-of-way (such as roadsides, electric utility and communication transmission lines, pipelines, and railroads)
- Non-irrigation ditch banks
- Natural areas (such as wildlife management areas, wildlife openings, wildlife habitats, recreation areas, campgrounds, trailheads and trails)
- Grazed areas in and around labeled sites.



FL. OZ.

4

3

2

1

**Use 1/2 fluid
ounce in 4 to 5
gallons water;
spray to wet, not
to runoff.**





Milestone[®] VM
Plus

Specialty Herbicide

®Trademark of Dow AgroSciences LLC



Radar[™]

Specialty Herbicide

™Trademark of Dow AgroSciences LLC

Radar (Milestone VM Plus)

 Dow AgroSciences

Radar[™]

Specialty Herbicide

™Trademark of Dow AgroSciences LLC

 Dow AgroSciences

Milestone[®] VM Plus

Specialty Herbicide

®Trademark of Dow AgroSciences LLC

- Aminopyralid 0.1 lb/gal + triclopyr 1.0 lb/gal formulation
- **“Caution”** label
- Essentially **non-volatile** amine formulation
- Most labeled use sites and treatment methods of all aminopyralid products
- **Broad spectrum control** of broadleaf weeds and woody plants
- **Pre-emergent and post-emergent activity**

Radar (Milestone VM Plus)

 Dow AgroSciences

Radar[™]

Specialty Herbicide

™Trademark of Dow AgroSciences LLC

 Dow AgroSciences

Milestone[®] VM Plus

Specialty Herbicide

®Trademark of Dow AgroSciences LLC

- ❑ Excellent **grass safety**
- ❑ Broadcast use rates up to 9 pt/a, 9 qt/a max for spot treatments (50% acre limit)
- ❑ Not a Restricted Use Pesticide
- ❑ **No grazing or haying restrictions**
 - Including lactating dairy animals
- ❑ Packaging: 2.5's, 30's, bulk

Radar (Milestone VM Plus)

Labeled Use Sites

- ❑ Rangeland & permanent grass pastures
- ❑ Conservation Reserve Program (CRP)
- ❑ **Forest Sites**
- ❑ Non-cropland areas
 - including industrial sites, **rights-of-way** (such as roadsides, electric utility and communication transmission and distribution lines, pipelines, and railroads), fencerows, **non-irrigation ditch banks, natural areas** (such as wildlife management areas, wildlife openings, wildlife habitats, **recreation areas**, campgrounds, trailheads and trails), and **grazed areas** in and around these sites"
- ❑ Seasonally dry wetlands
 - (including flood plains, marshes, swamps or bogs) and around standing water on sites such as deltas and riparian areas"

Radar (Milestone VM Plus)

Application Methods

□ Foliar

- Air
- Ground

□ Cut-surface treatments

- Cut stump
- Tree injection
- Hack & squirt
- Frill or girdle

□ Use rates:

- Broadcast treatments: 9 pt/a maximum
 - Equivalent to Milestone @ 7 oz/a + Garlon 3A @ 1.5 qt/a
- Spot treatments: 9 qt/a maximum (50% of a acre)
 - Equivalent to Milestone @ 14 oz/a + Garlon 3A @ 3.0 qt/a

Radar (Milestone VM Plus) - Weed Control

Broadleaf weed and woody plant control includes aminopyralid and triclopyr sensitive species such as:

□ Broadleaf weed control including:

- Bedstraw
- **Buttercup**
- Chickweed
- Dandelion
- Dock
- Fireweed
- Groundsel
- **Horseweed (maretail)**
- **Knapweeds**
- Mayweed
- **Morningglory**
- Mullein
- Oxeye daisy
- **Poison hemlock**
- **Rush skeletonweed**
- **Spotted catsear**
- Sorrel (red, sheep)
- **St Johnswort**
- **Tansy ragwort**
- Teasel
- **Thistles** (bull, Canada, Italian, milk, musk, Scotch, sow)
- **Wild carrot**
- Wild parsnip

□ Woody plant control including:

- Aspen
- **Blackberry**
- Cherry
- Conifers
- **Elderberry**
- Gorse
- Hawthorn
- **Knotweed** (Japanese, giant)
- Locust
- Maple
- Oak
- Poison ivy
- **Poison oak**
- **Poplar (cottonwood)**
- **Rose**
- **Scotch broom**
- Sumac

Radar (Milestone VM Plus)

Positioning

- Use Milestone VM Plus like Crossbow
 - Spot treatment of berries, broom and broadleaf weeds
 - Mix @ 1% solution 100 – 200 GPA
 - Mix @ 2% solution 50 – 100 GPA
 - Mix @ 4% solution 25 – 50 GPA
 - Broadcast treatments
 - 6-9 pt/acre
- Essentially non-volatile
 - Greater safety to non-target plants
- Cost effective
 - Improved control of invasive weeds
 - Soil activity for longer term results
 - Greater grass safety

Will Lackey
VM State Coordinator – Salem, OR

Mowed Only

ODOT – Jefferson, OR
Milestone VM Plus @ 9pt/acre
Scotch Broom Control 10 MAT
Applied: 9/2006
Evaluated: 7/2007



Radar (Milestone VM Plus)

H. blackberry 4 MAT

**Milestone VM Plus @ 4%
25 gpa**



**Milestone VM Plus @ 1.5%
25 gpa**



Radars (Milestone VM Plus) @ 6 qt/acre J. Knotweed Control – Linn County, OR (8 MAT)



Radars (Milestone VM Plus)

Individual Plant Treatments – Cut Stump



New Dow Aminopyralid Products



Opensight™

Specialty Herbicide

™Trademark of Dow AgroSciences LLC



Chaparral™

Specialty Herbicide

™Trademark of Dow AgroSciences LLC

Characteristics

- WG formulation
 - 52.5% aminopyralid
 - 9.45% metsulfuron methyl
- Product developed due to complementary spectrum of the **two modes of action** for improved weed control while also **reducing the potential for weed resistance development.**
 - ALS inhibitor (MSM)
 - Auxin / growth regulator (aminopyralid)
- Essentially nonvolatile
- Low use rates 2 oz – 3.3 oz/acre
- Low foaming and easy to mix in water

Equivalent amount of

Opensight Rate oz product/a	Milestone VM (aminopyralid) fl oz/a	60% metsulfuron methyl oz product/a
1	2.1	0.17
1.5	3.1	0.24
2.0	4.2	0.31
2.5	5.3	0.41
3	6.3	0.48
3.3	7	0.52

Labeled Use Sites

Specialty Herbicide

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- ❑ Non-cropland areas including industrial sites, rights-of-way (such as roadsides, electric utility and communication transmission lines, pipelines and railroads)
- ❑ Non-irrigation ditch banks
- ❑ Natural areas (such as wildlife management areas, wildlife openings, wildlife habitats, recreation areas, campgrounds, trailheads and trails)
- ❑ Grazed areas in and around these sites
- ❑ **Idaho 24(c) SLN - Forest Sites**
 - Directed spray, site-prep, spot treatment
- ❑ Chaparral use sites: range and pasture, CRP

Species Controlled

Specialty Herbicide

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- **Over 160 weeds listed on label**
- **General weeds**
 - **Horsenettle, bedstraw, ragweed's, horseweed (marestail), goldenrods, spiny amaranth, dandelion, wild carrot, ironweed, annual broomweed, biennial thistles**
- **Noxious weeds**
 - **Bull thistle, Canada thistle, Italian thistle, Scotch thistle, buttercup, sulfur cinquefoil, hawkweeds, knapweeds, common tansy, tansy ragwort, poison hemlock, pigweed, hoary cress (whitetop), houndstongue, common mullein, *Sericea lespedeza***
- **Brush**
 - **Buckbrush, locust (black and honey), blackberry, gorse, hawthorn, poplar, salmonberry, Scotch broom, thimbleberry, dewberry, rose spp., wisteria, tree of heaven and mimosa.**

Opensight™ Packaging

1.25 lb. and 10 lb. containers



2 x 10 lb containers/case
20 oz measuring device



6 x 1.25 lb containers/case

Opensight use in injection tanks



- Mix 3.3 oz in 1-4 qt of water
- Compatible with most VM herbicides
- Agitation required
- Best if used daily due to potential degradation of MSM, SFM and other products degraded thru hydrolysis

Chemical Pruning - Linn County, OR

Opensight 3.3 oz/acre + Garlon 4 Ultra 2 qt/acre

Applied June 2010, Evaluation Sept 2010 - 3 MAT



Opensight @ 3.3 oz/acre - Jefferson, OR

Applied November 2009

Evaluation May 2010



Fescue seed head suppression

Opensight 3.3 oz/acre + MSO 1/4 % vol:vol

Applied April 2010, Evaluation Aug 2010 4 MAT



Forest Roadside Trials

Efficacy, Conifer Tolerance – Green Diamond Resources



**Garlon 4 Ultra 48 oz +
Opensight 3.3 oz (1YAT)**

A gravel road winds through a forest. The road is composed of light-colored gravel and is flanked by dense, dry brush and tall evergreen trees. In the distance, a white van is driving away on the road. The sky is overcast with grey clouds.



Opensight 3.3 oz/A + Payload + glyphosate (zone 1 treatment)

Opensight 3.3 oz/A (Zone 2 treatment)

ODOT – Albany, OR (9 MAT)

No Opensight



Linn County Road Dept - Fall 2008
wild carrot trial site prior to treatment in 2



Wild carrot control with Opensight @ 3.3 oz/acre

Linn County Road Dept

Applied 4/2/2009 evaluation 10/22/2009 (6+ MAT)



Aminopyralid Products



Selected Field Results

Milestone is Effective on Many Invasive Weeds - Including



Canada thistle



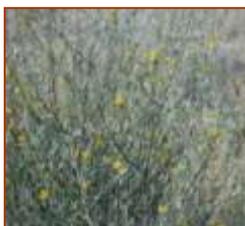
Spotted knapweed

Diffuse knapweed



Yellow starthistle

Russian knapweed



Rush Skeletonweed



Musk thistle



Canada Thistle



What to look for

Small, bristly cluster of lavender to purple flowers. Up to 6 feet tall, with deep-cut, oblong or lance-shaped leaves.

Rate recommendation

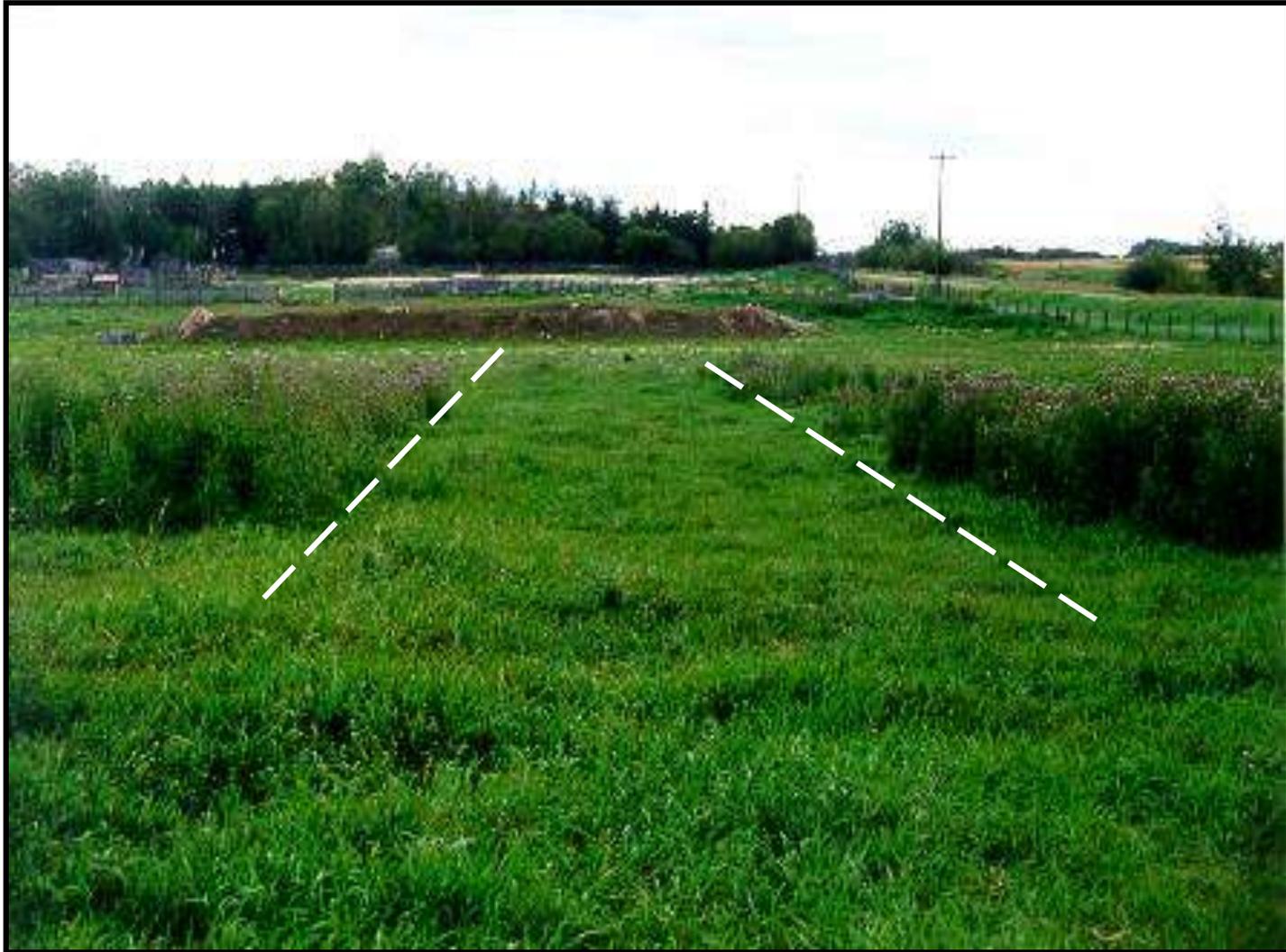
Apply a labeled rate of **5 to 7 fluid ounces** of Milestone per acre in the spring to bolting plants up to early bud stage. **All plants must be emerged for control. Fall applications are very effective before a killing frost.**

thistles



Canada thistle control

Milestone 7 fluid oz/acre (1 YAT)



Milestone VM @ 5 fl oz (1 YAT)

Spring prebud application – Longview, WA



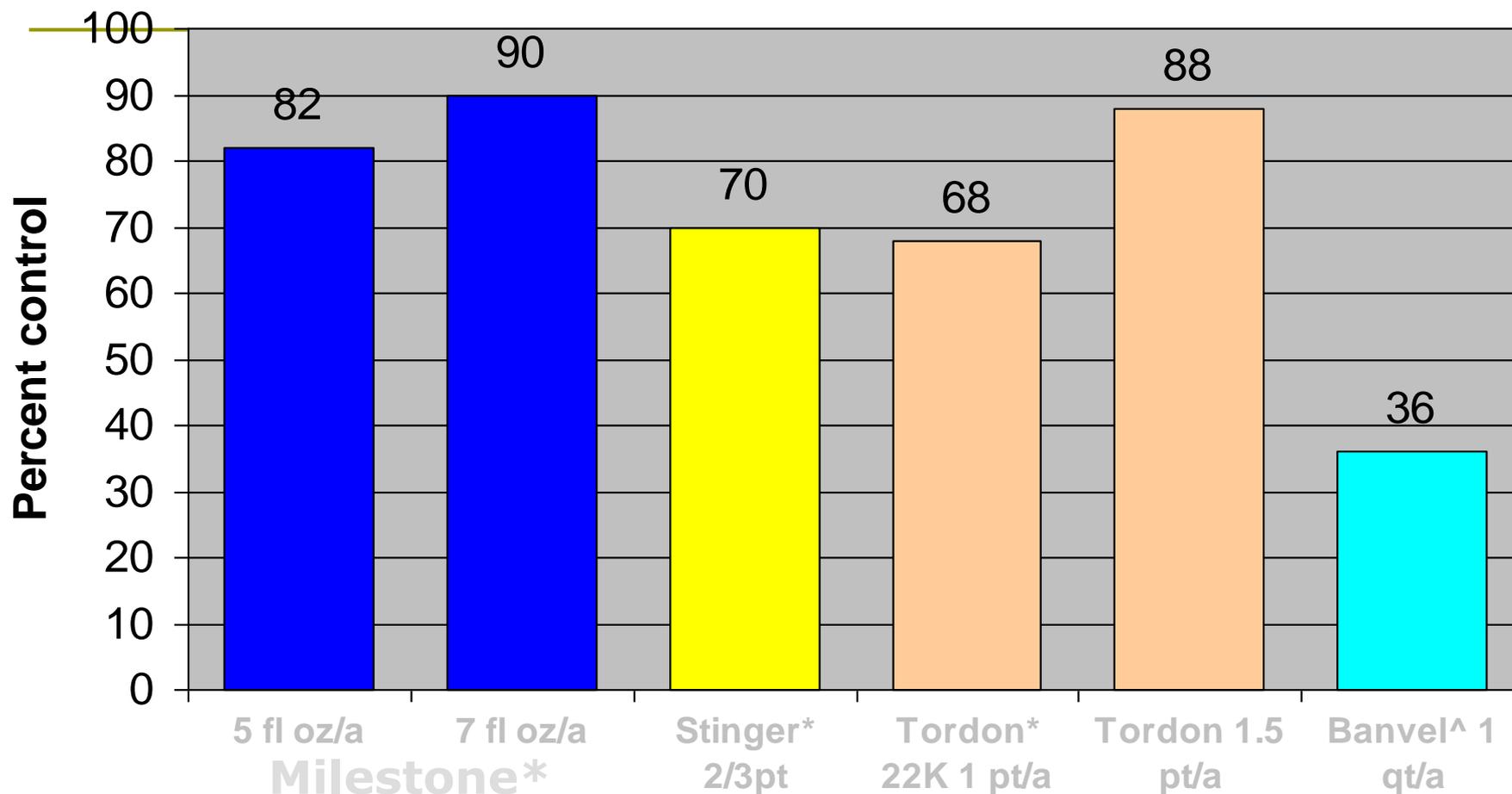


Photo courtesy of Dr. Phil Westra



Canada Thistle Control

Pre-bud Application 1YAT

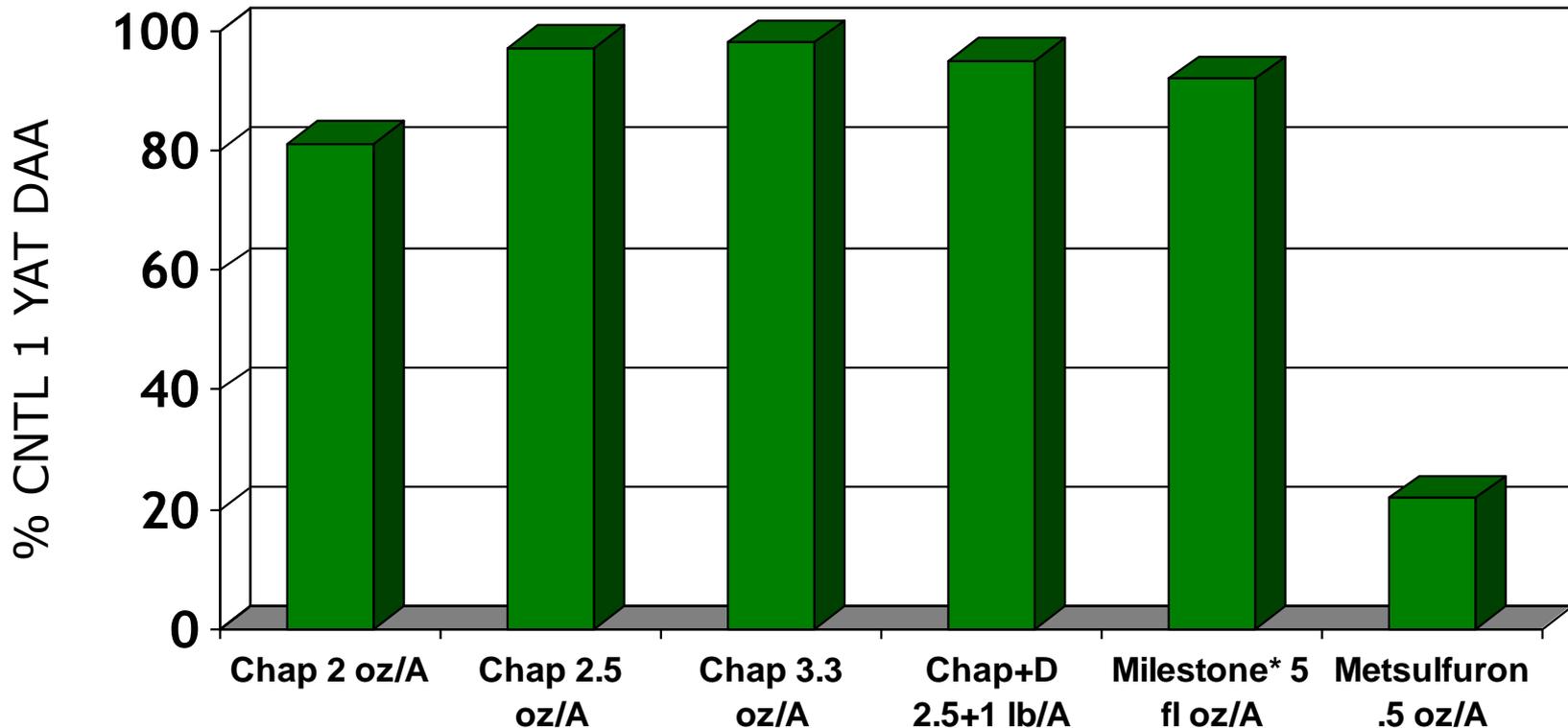


Evaluations at 1 year after treatment. Locations in CO, MN, MT, ND, NE, OR, VA, SD, WA, and WY

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^ Trademark of Micro Flo Company LLC

Control of Canada Thistle with Chaparral™ Herbicide

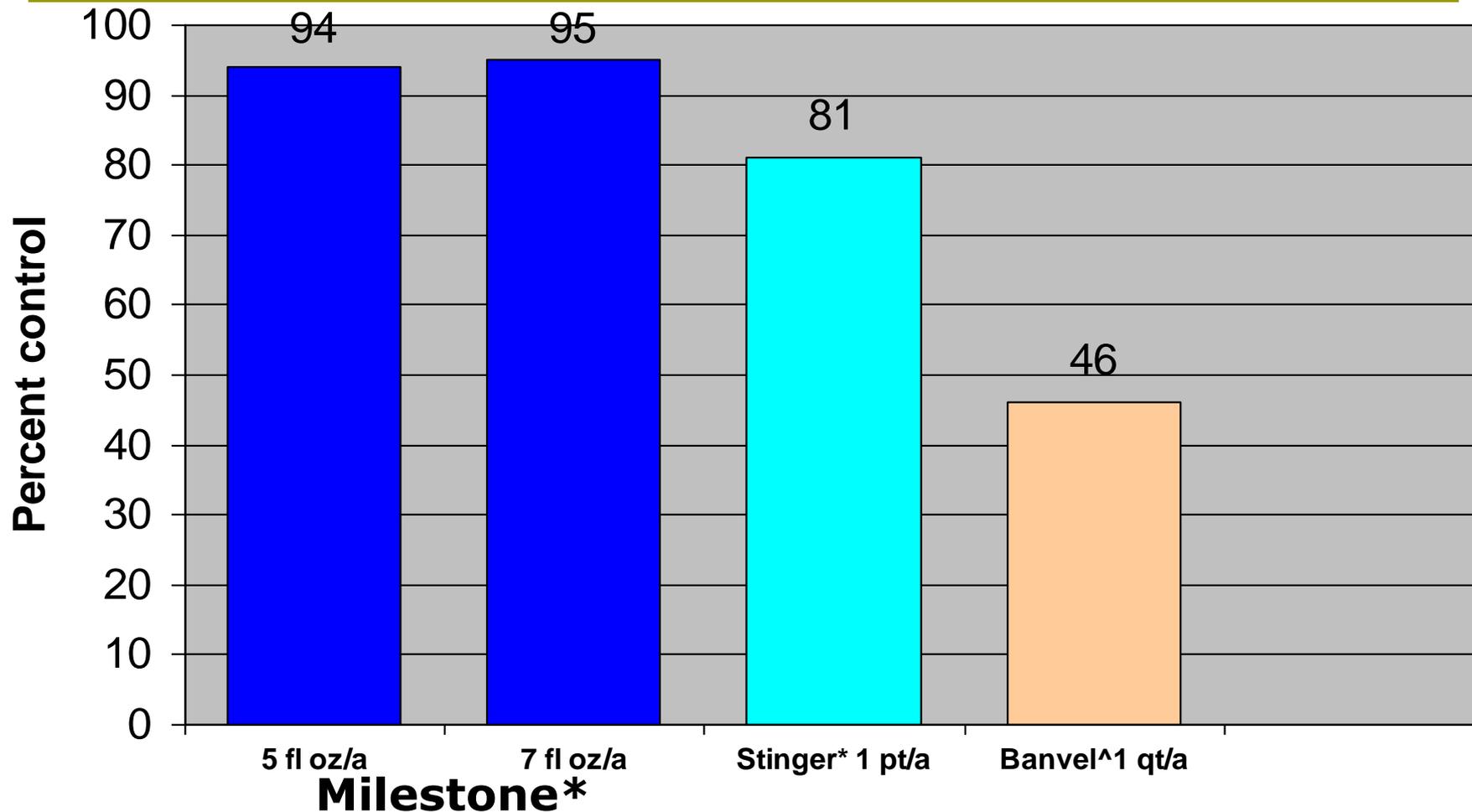


Chap=Chaparral™
Herbicide

■ Mean

Mean of multiple locations applied in early summer before bud stage

Control of Canada Thistle with Fall Applications of Aminopyralid Compared to Standards



Evaluations at 1 year after treatment. Average of 22 sites VA, ND (2), SD, NE, WY, CO, and WA

Spotted and Diffuse Knapweed



What to look for

Slender stems with pink to purple flowers at the top. Up to 4 feet tall with short and narrow stem leaves covered with hair (spotted). Overall bushy shape with upright stem and spreading branches. Leaves are grayish-green with white, rose or pink flowers (diffuse).



Rate recommendation

Apply a labeled rate of 5 to 7 fluid ounces of Milestone per acre. Application should be made to plants while actively growing with the optimum time of application occurring from rosette to the bolting stages of development or in the fall.

**spotted knapweed
at application
06/02/2004**

6/2/2004





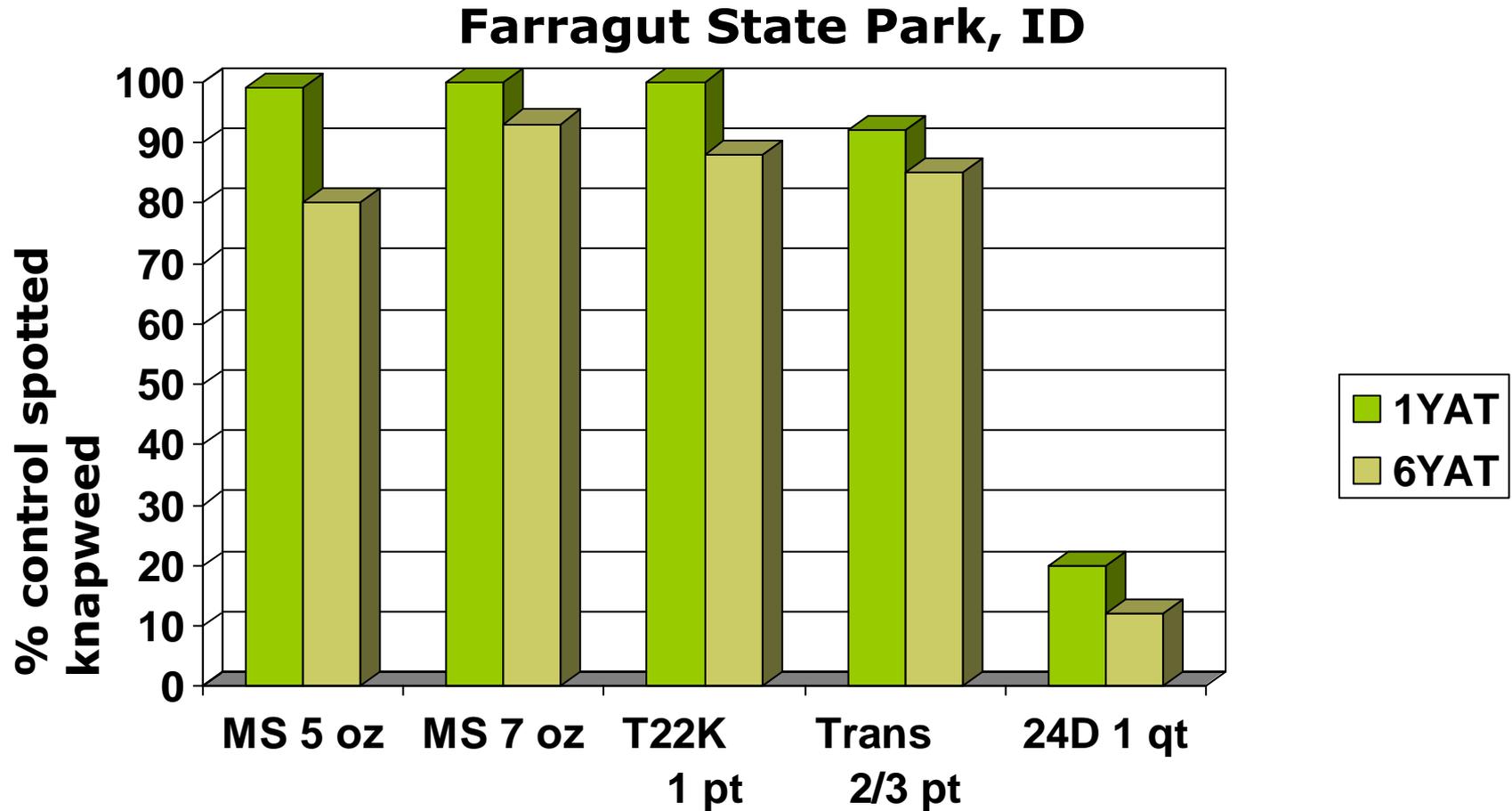
Spotted Knapweed Control 1 year after treatment

**Milestone 5 fl
oz/a**

**Non-
treated**



Spotted Knapweed control with Milestone at 6 years after treatment



Note: These are averages of paired plot comparisons. There were 4 plots of each Milestone rate and only 2 plots each of Tordon 22K, Transline, and 3 plots of 2,4-D. June (bolt) application



Common Tansy Research Site

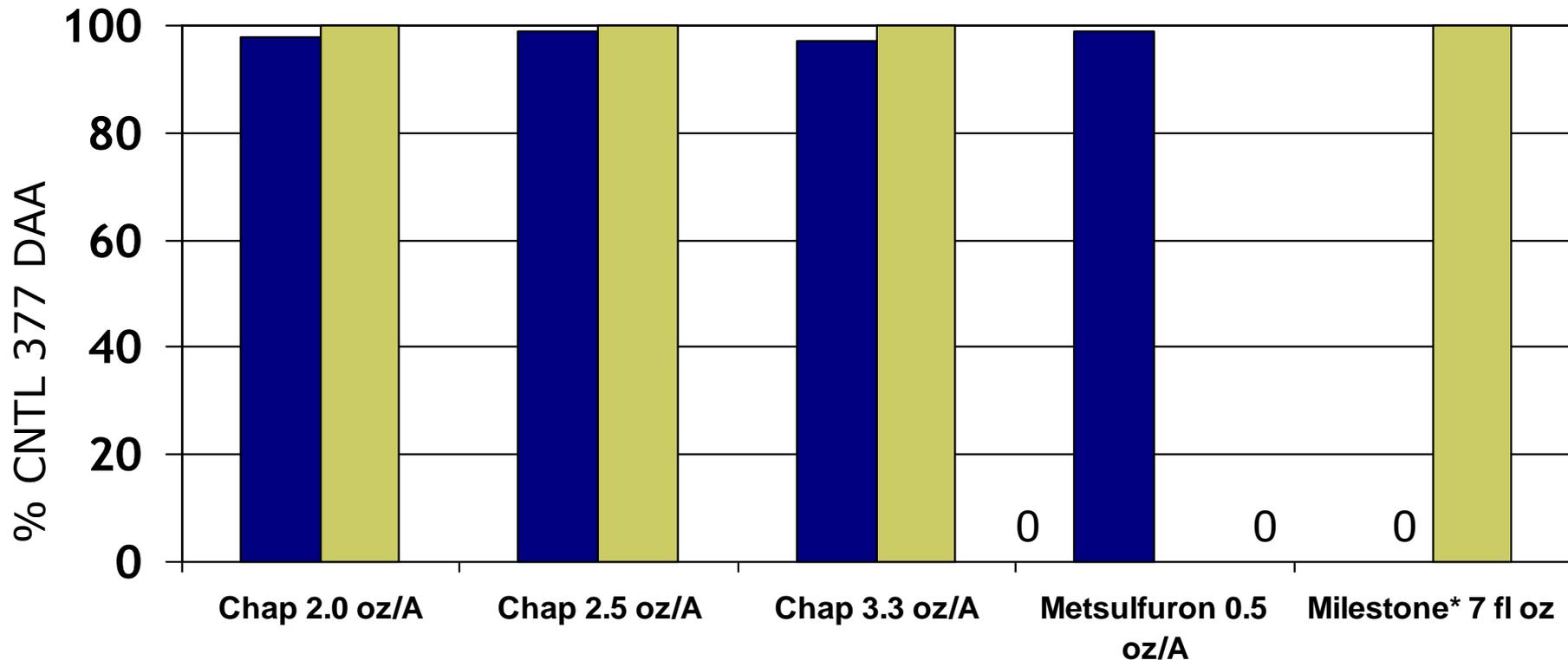




Chaparral™ 2.5 oz/A 1 YAT

Untreated
common tansy

Control of Common Tansy/Spotted Knapweed Complex – 1 YAT



■ common tansy ■ spotted knapweed

Chap = Chaparral™
Herbicide

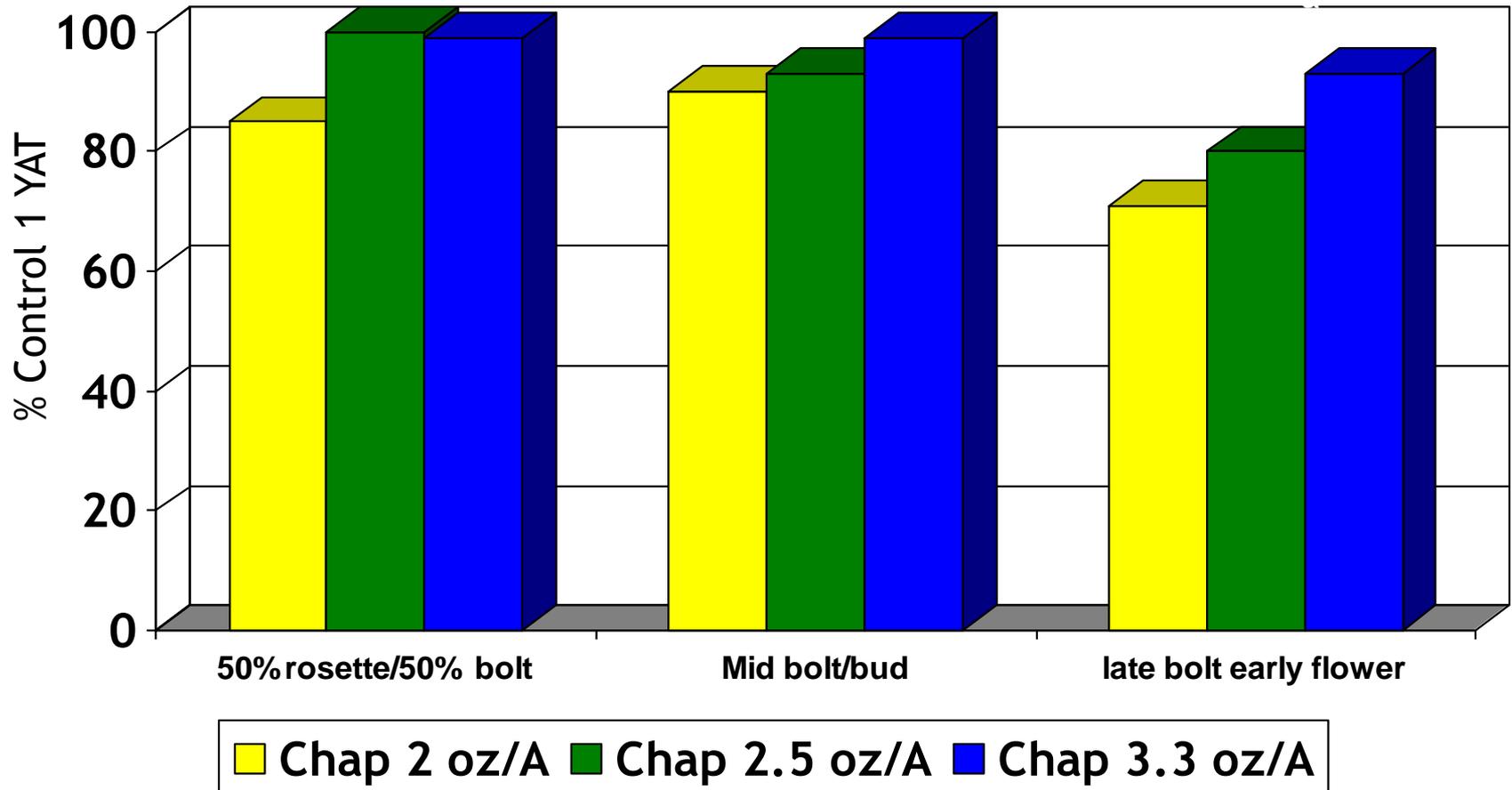
Houndstongue Control With Chaparral™ Herbicide

- Apply 2.5 ounce/acre to rosettes.
- As plant bolts, increase the rate to 3.0 to 3.3 ounce/acre up to early bud stage



Photo Courtesy of Jim Sebastian, Colorado State University

Control of Houndstongue with Chaparral™ (CO, WY)





Untreated Plot – Mix of houndstongue and Canada thistle



Chaparral 2.5 oz/A applied at mid-bolt early bud

Hawkweed (*yellow and orange*)



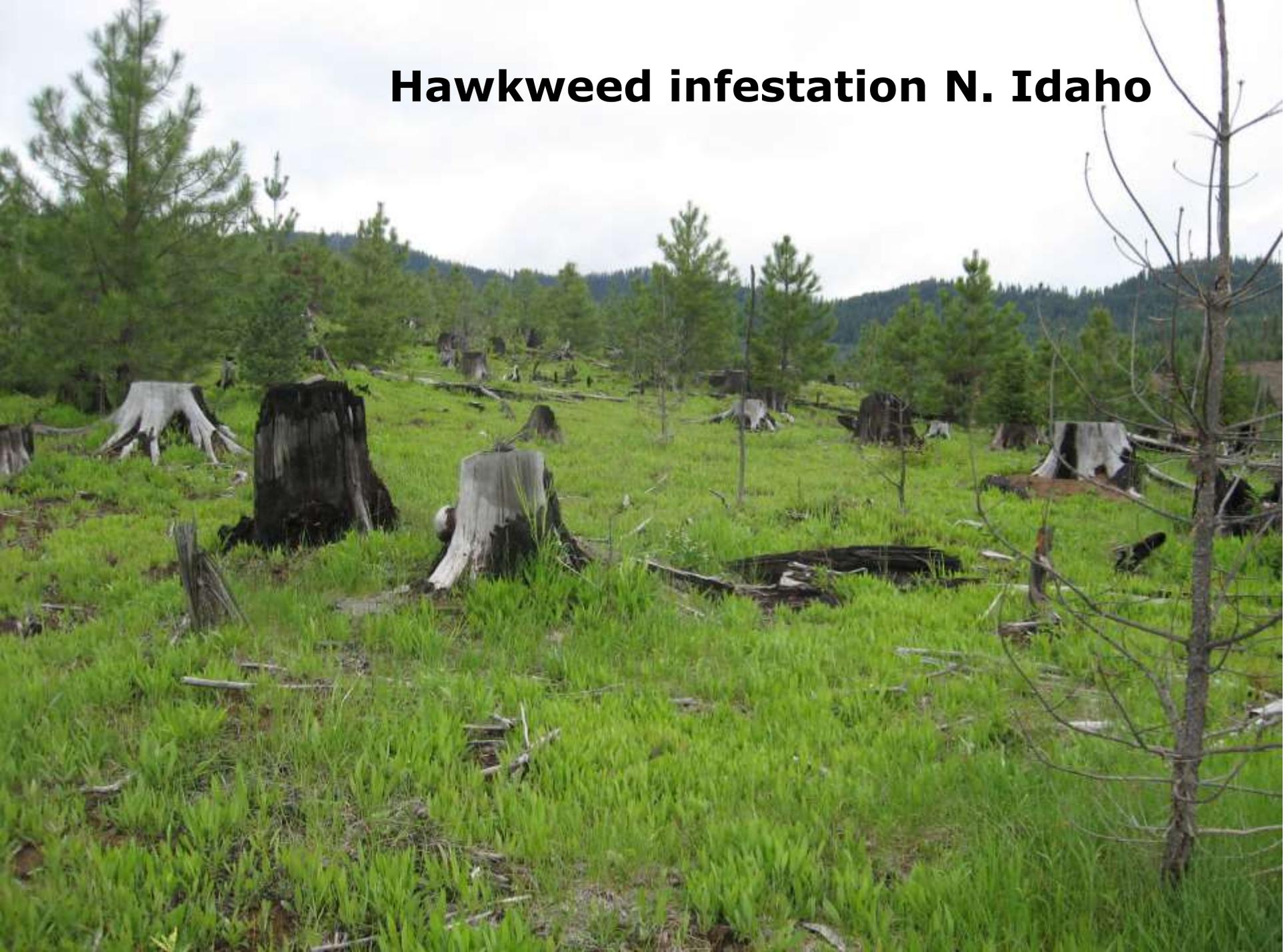
What to look for

Up to 12 inches tall with basal leaves. Five to 30 flower heads (yellow or orange) with notched tips.

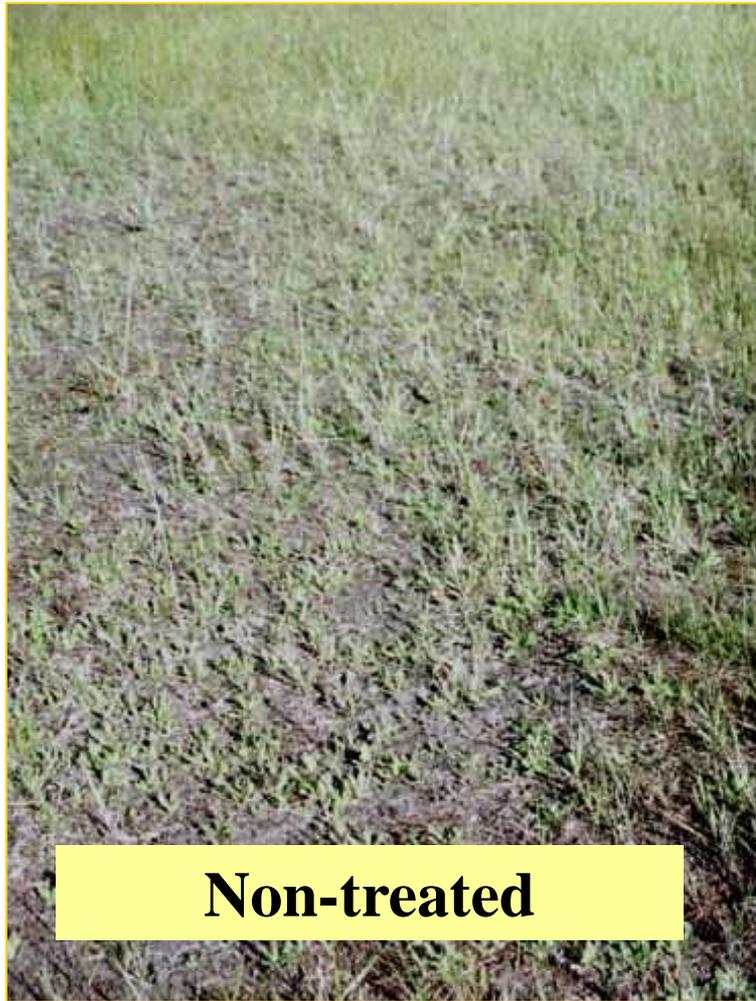
Rate recommendation

Apply a labeled rate of 4 to 7 fluid ounces of Milestone™ herbicide per acre. Apply from full emergence to late bolting stage. Do not treat in the fall.

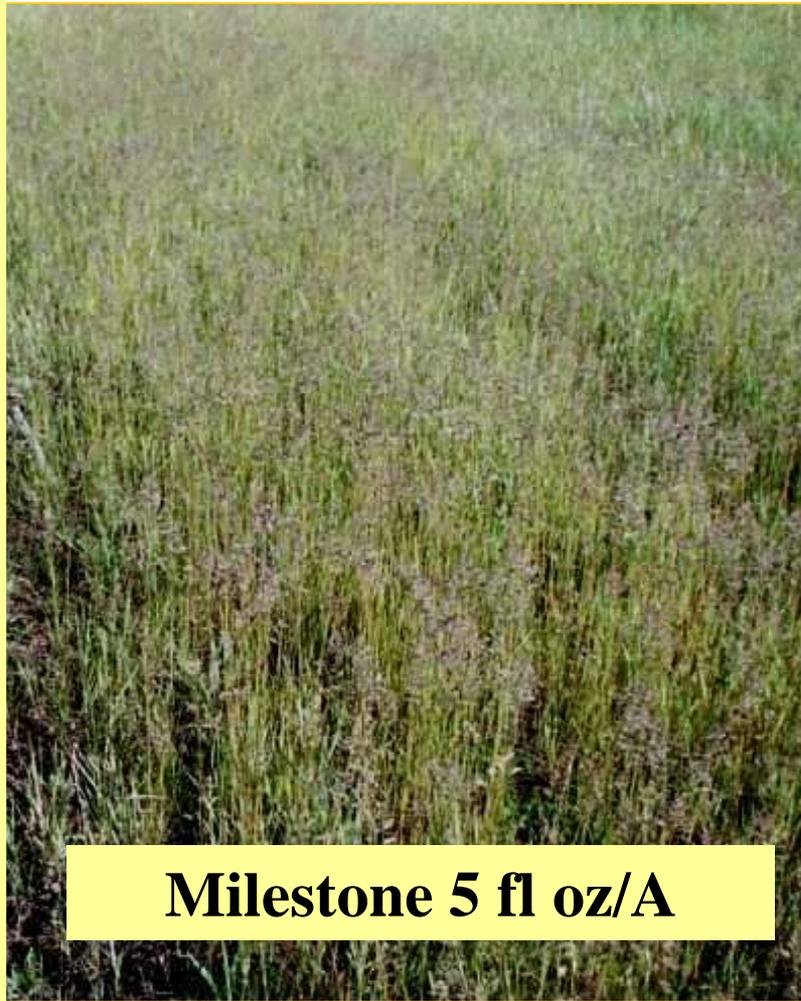
Hawkweed infestation N. Idaho



Hawkweed Control (1YAT - Montana)

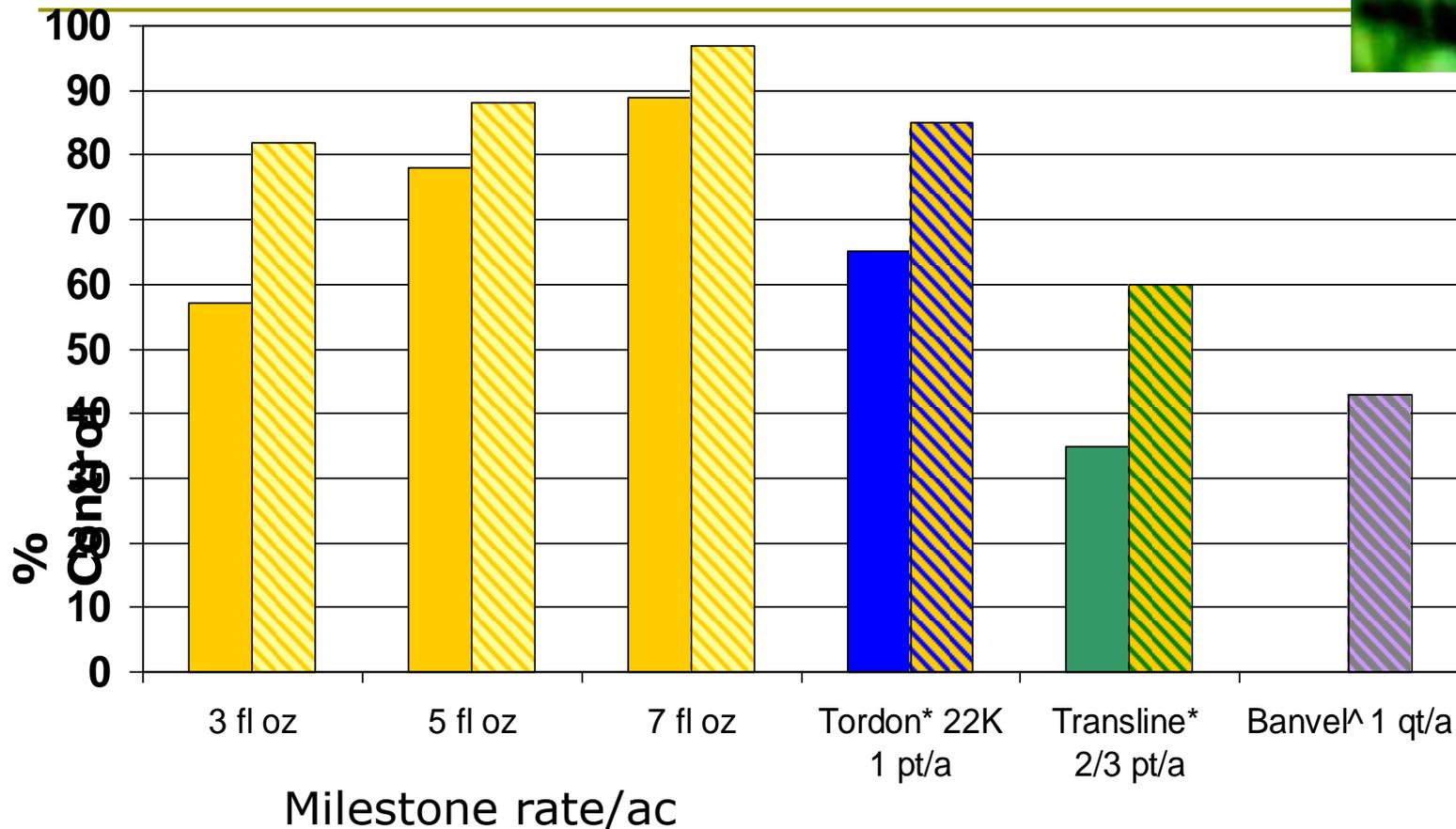


Non-treated



Milestone 5 fl oz/A

Hawkweed Control with Milestone - 2YAT



 Herbicides alone

 Herbicides + Fertilizer 80 lb/ac: Fertilizer alone did not control hawkweed

LSD (P=0.05)

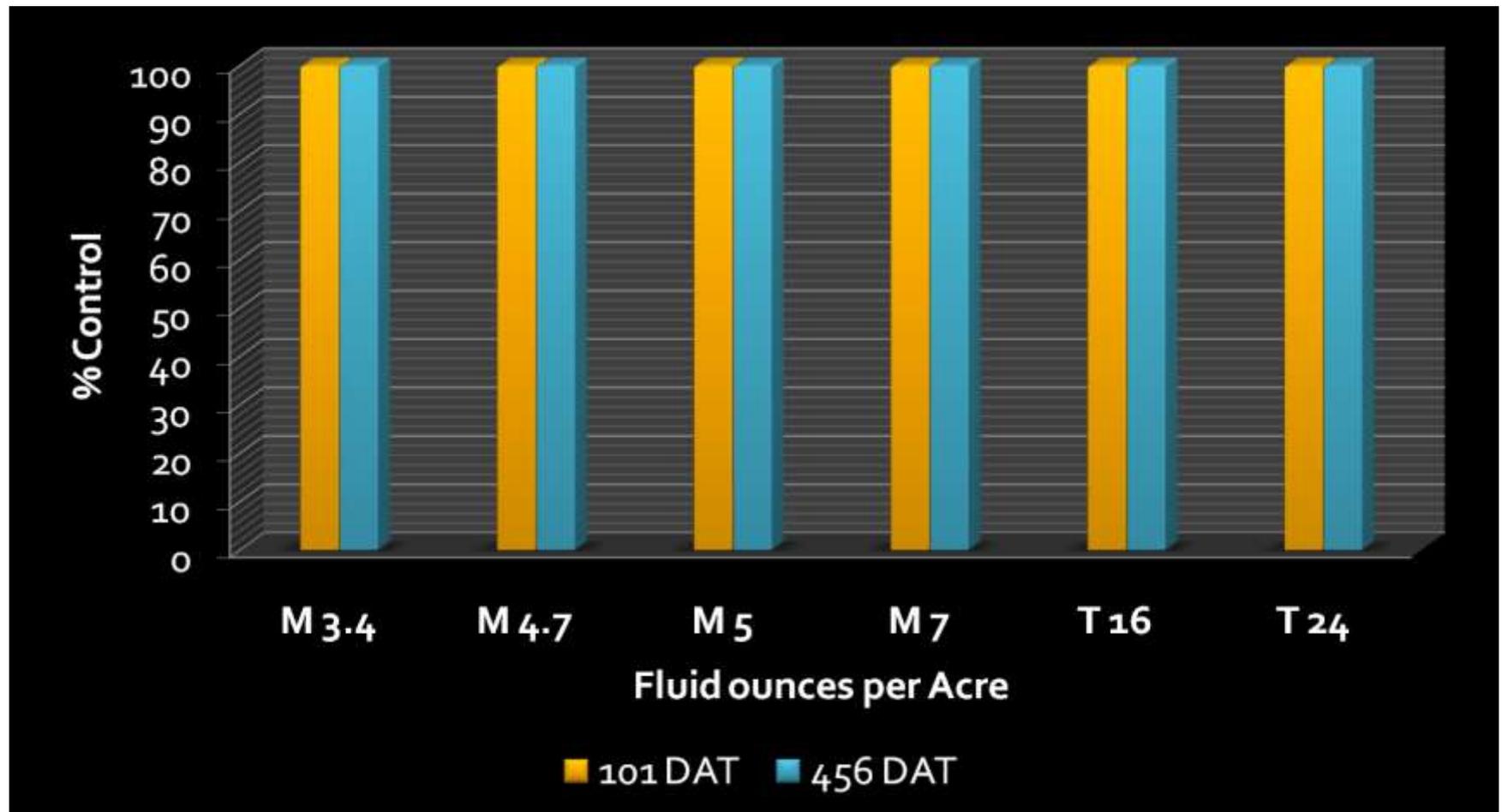
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yellow starthistle Control



Milestone 7 oz/A, 456 DAT



Scotch thistle



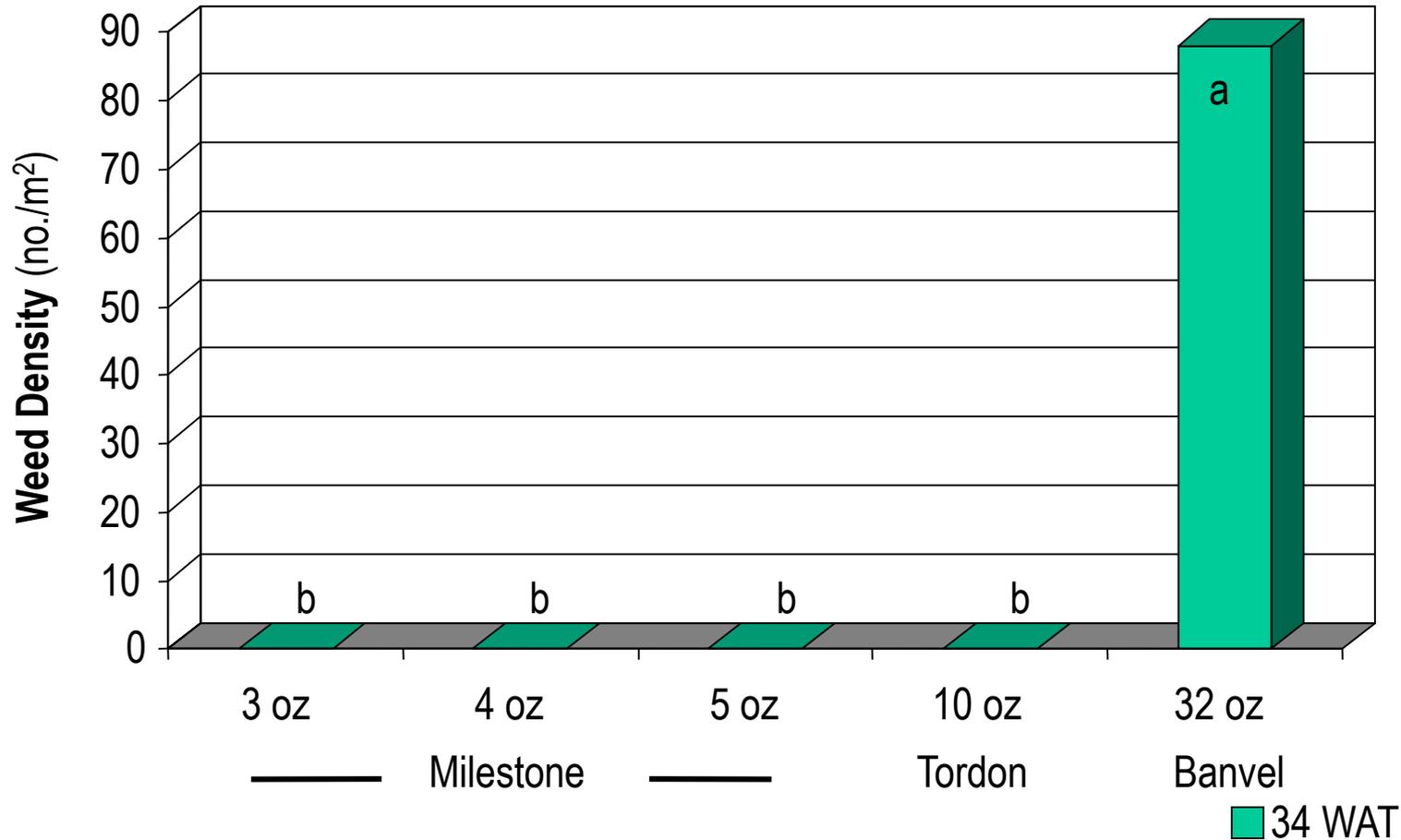






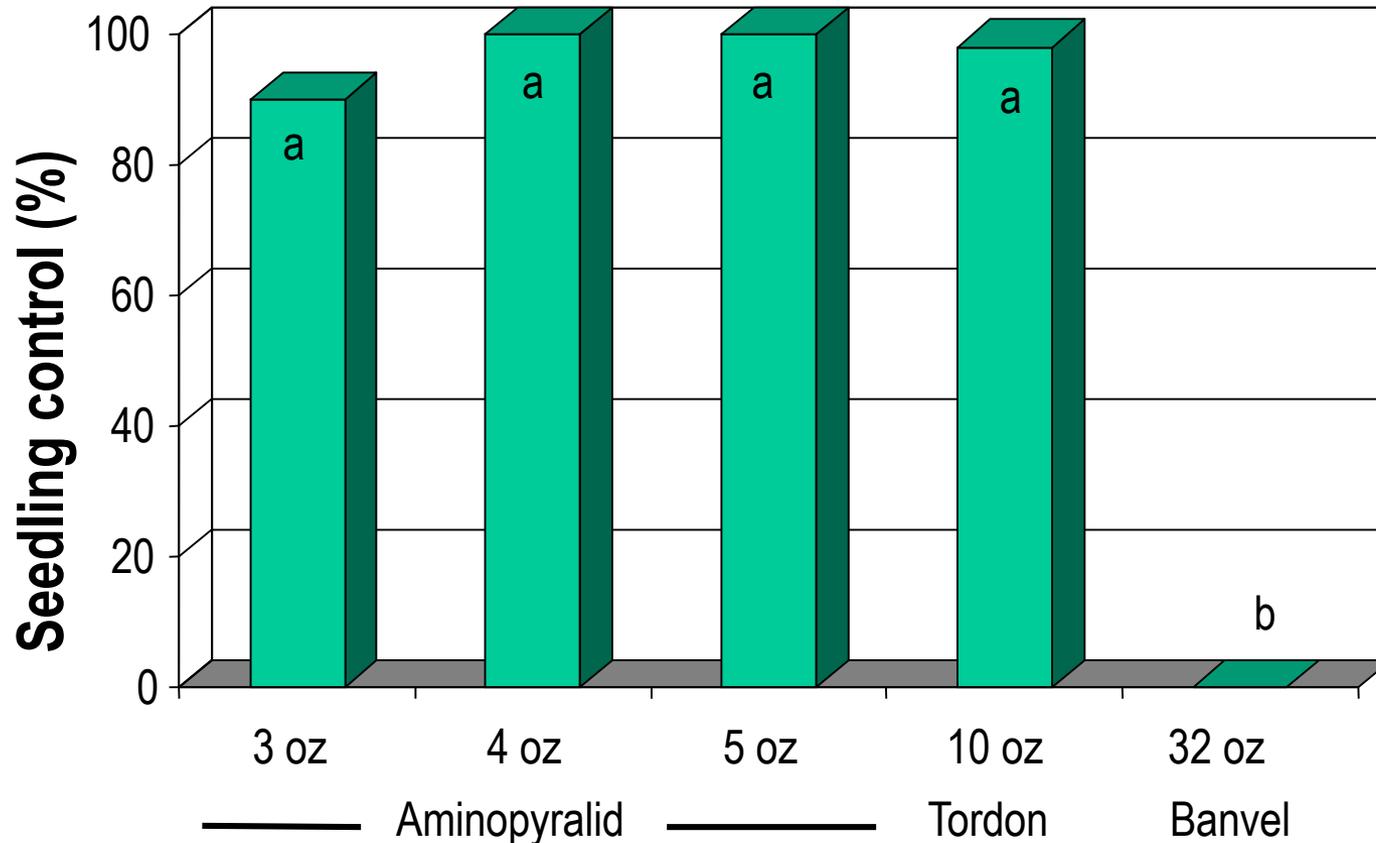
Scotch Thistle Fall Application

October 26, 2002



Musk Thistle Fall Application

October 26, 2002



St. Johnswort



What to look for

Approximately 1 to 3 feet tall with two rust colored ridges. Oval leaves with transparent dots and yellow, five-petal flowers $\frac{3}{4}$ inch in diameter.

Rate recommendation

Apply a labeled rate of 5 to 7 fluid ounces of Milestone per acre. Application should be made when actively growing in early growth stage up to bloom and in the fall.

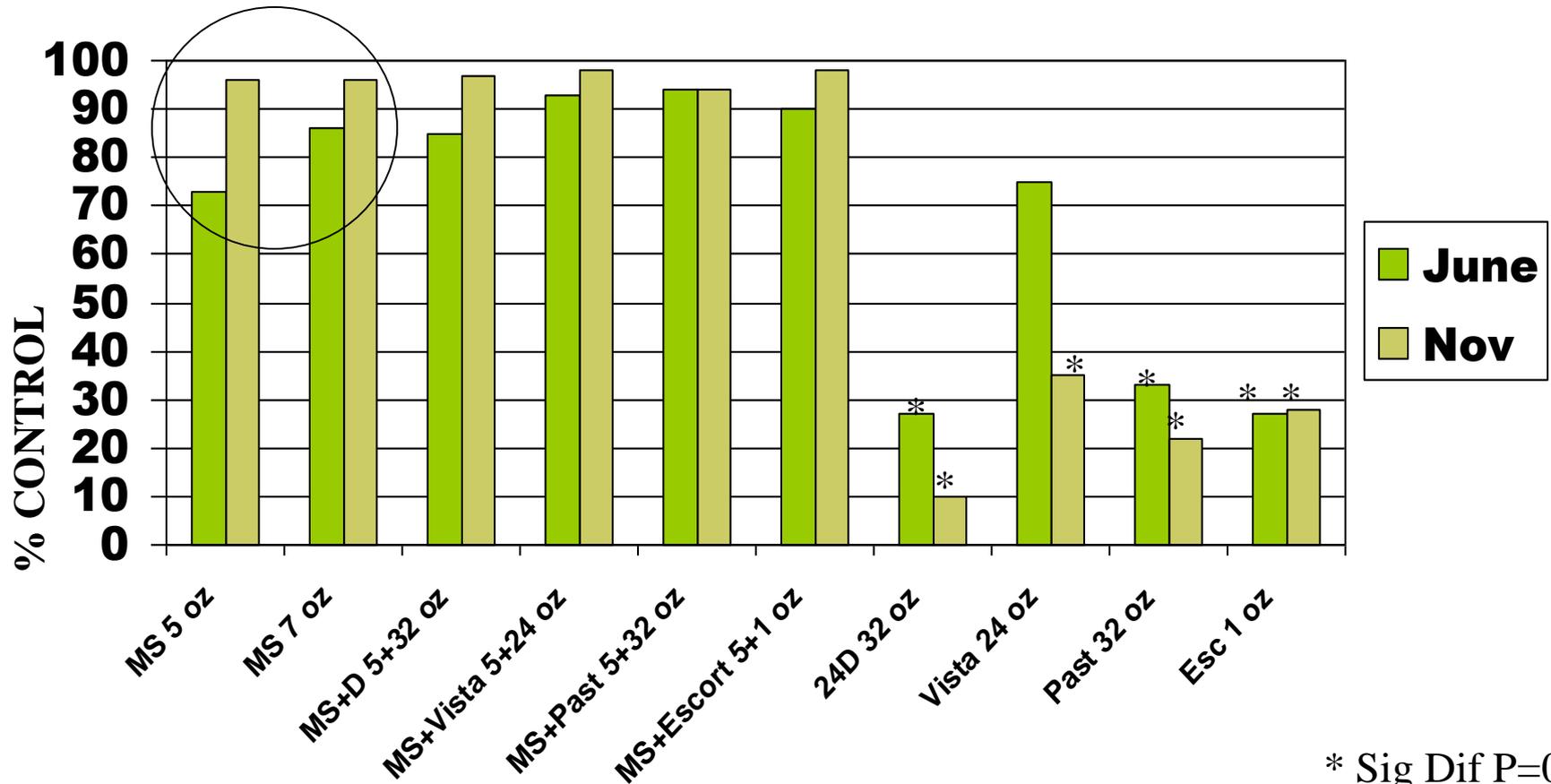
Milestone Fall Application - suppression of downy brome and control of St. Johnswort

Fall application of Milestone at 7 fl oz

Note: perennial grasses little downy brome present, and what is present is stunted (see height indicated in right photo)



Milestone Control of St. Johnswort at 819 Days After Application



* Sig Dif P=0.05

Rush Skeletonweed



What to look for

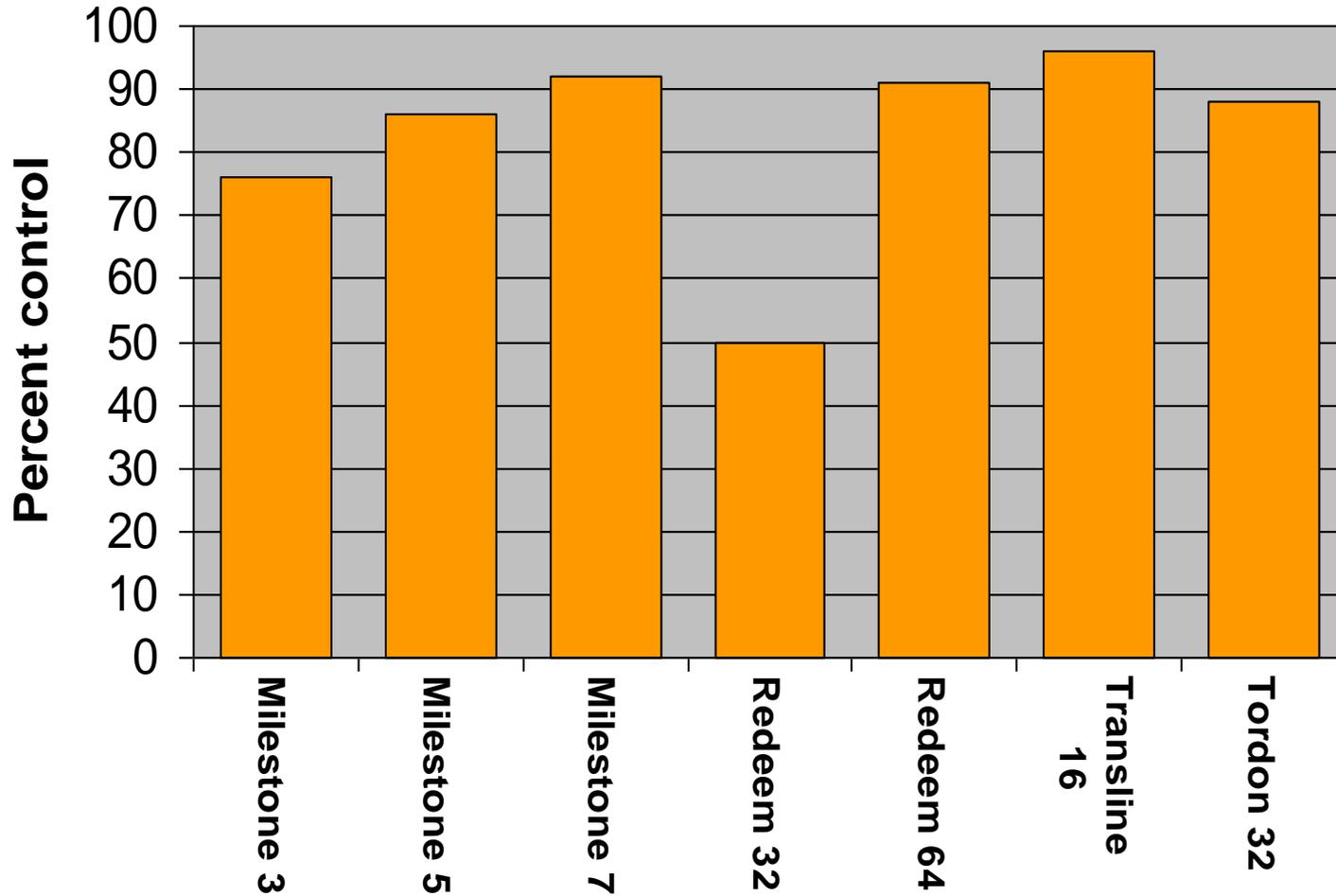
Downward bent with hairs on the lower 4 to 6 inches of the stem. Flowers are bright yellow and approximately $\frac{3}{4}$ inch in diameter.

Rate recommendation

Apply a labeled rate of 5 to 7 **fluid ounces** of Milestone™ herbicide per acre **during active growth stages and in the fall.**

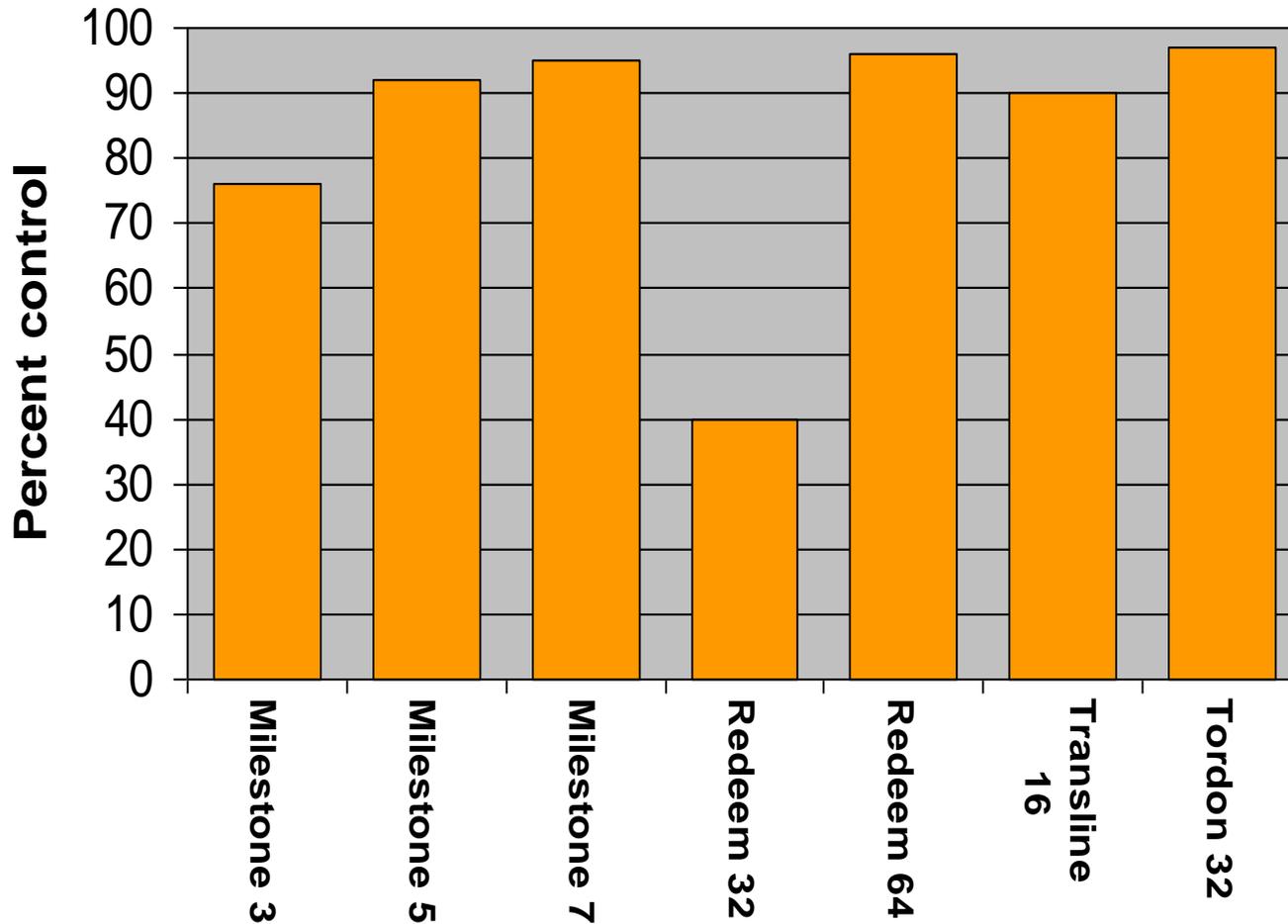
Rush Skeletonweed Control - Spring Application

Dr. Joe Yenish WSU



Rush Skeletonweed Control - Fall Application

Dr. Joe Yenish WSU



Medusahead trials in CA

Joe DiTomaso and Guy Kyser, UC Davis



Note: release of
annual ryegrass



**Milestone at 7 fl oz vs Nontreated
Treated Oct 2009 - Photo May 2010**

Red Bluff

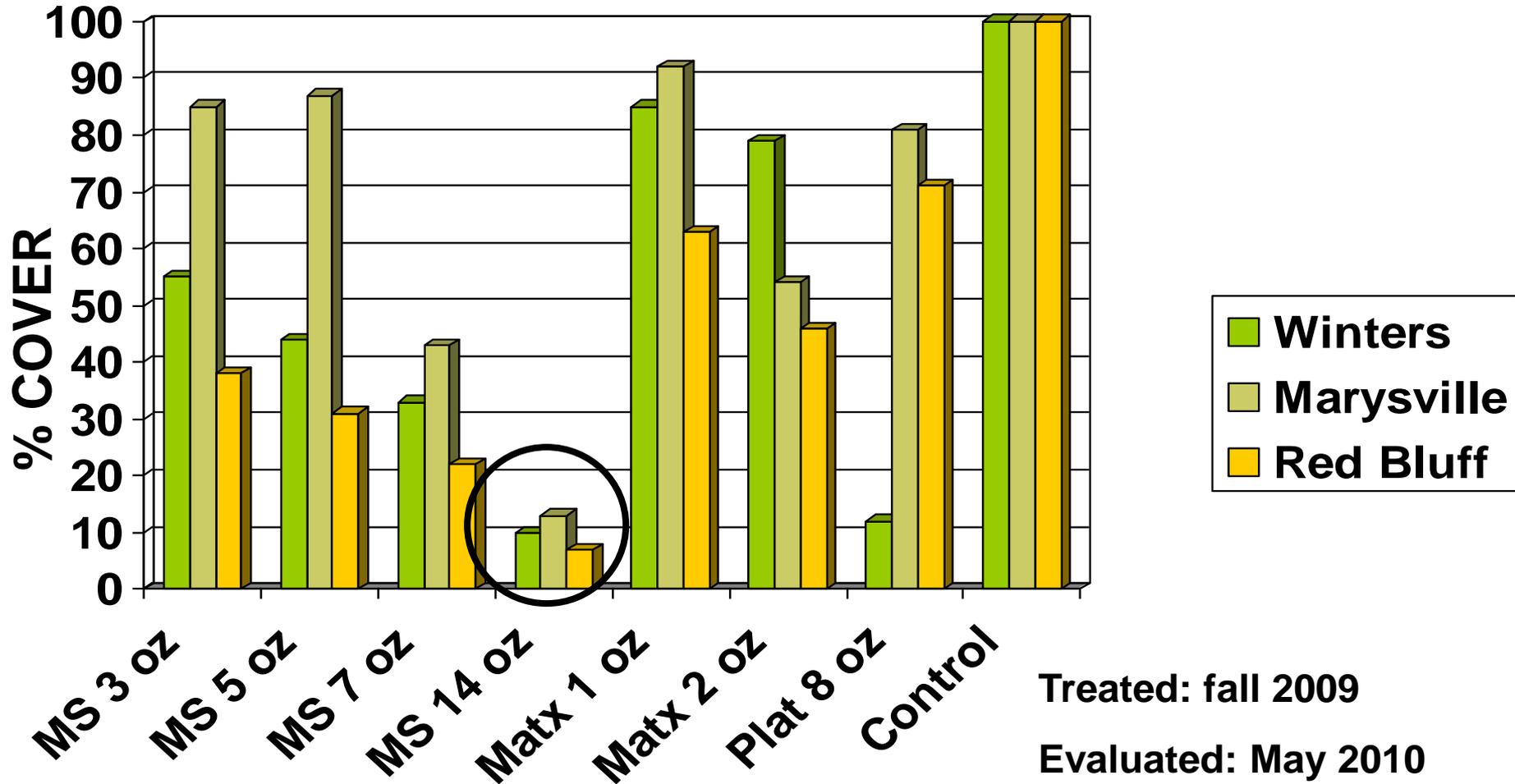


Plateau at 8 fl oz

Treated Oct 2009 - Photo May 2010

Medusahead Cover Compared with Non-treated Control

May 2010



Aminopyralid, clopyralid, picloram)

Product Stewardship

- Protection of non target plants
 - Irrigation & Domestic Water
 - Spray Drift
 - Equipment Management
 - Crop Rotation
 - Treatments under sensitive trees
 - Manure Management
 - Hay Management

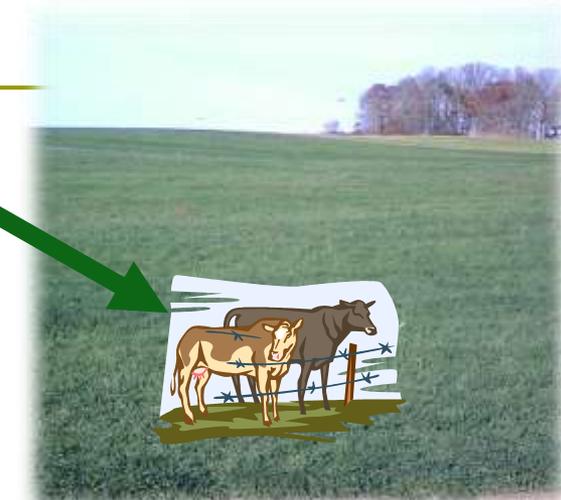
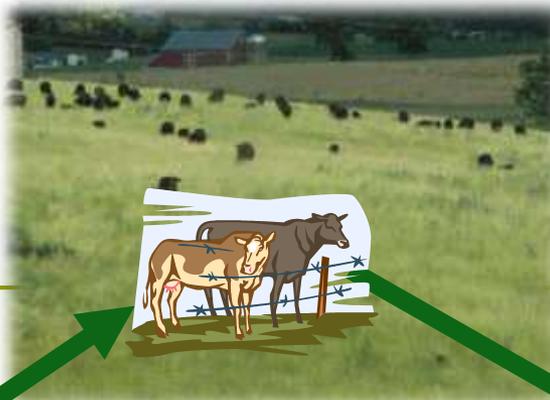
Aminopyralid, Clopyralid and Picloram

Environmental fate

- Primary degradation by soil microbes
 - Soil moisture and temperature most significant factors
- Actives do not degrade in plants or in compost
 - Treated plant residue, or manure from animals grazing treated hay or pasture forages, could impact current or future sensitive broadleaf crops
 - Deep tillage can help with plant residue breakdown
 - Do not allow treated plant material (straw, hay) or manure to get into composting operations
- Spread treated plant material and manure
 - pastures, wheat, corn or grass areas (hay, grass seed)
- **Do not export hay treated with picloram or aminopyralid products**

Forage Grass

(Milestone is stable in plant until broken down by soil microbes)



Non-treated Pasture

- Residue clears through animals system and from cattle's manure and urine within **3 days**.

Treated Pasture

- Cattle ingest grass with aminopyralid residue and excrete in manure and urine

Land to be planted to crops

- Cattle transferred after **3 days** of "clearing" will not excrete residue on fallow site.



“Do not transfer grazing animals from areas treated with aminopyralid to areas where sensitive broadleaf crops occur without first allowing 3 days of grazing on an untreated pasture or hay. Otherwise, urine and manure may contain enough aminopyralid to cause injury to sensitive broadleaf plants. “

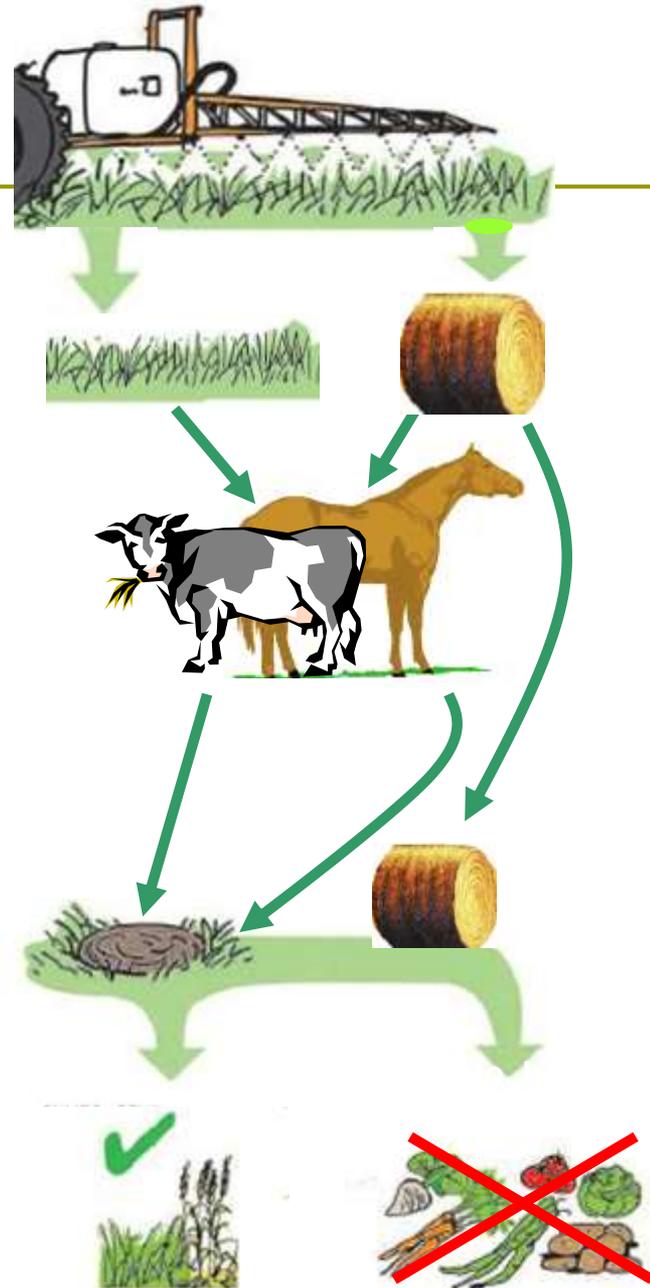




Approved by US EPA

IMPORTANT ADVISORY TO PREVENT INJURY TO DESIRABLE PLANTS

- It is mandatory to follow the “**Use Precautions and Restrictions**” section of this product label.
- Carefully read the section “**Plant Residues or Manure.**”
- Manure and urine from animals consuming treated grass or hay may contain enough aminopyralid to cause injury to sensitive broadleaf plants.
- Inform the recipient of hay or manure from animals grazing pastures or feeding on hay from areas treated with aminopyralid of the label use precautions and restrictions.
- Consult with a Dow AgroSciences representative if you do not understand the “Use Precautions and Restrictions”.
Call [1-(800) 263-1196] Customer Information Group.



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Call 1-800-285-1190
Customer Information Group.

Hay and Manure Management



800-285-1190 | 2824774

Aminopyralid - Pasture and Rangeland Restrictions

Do not use on grasses grown for hay intended for sale off the farm.

Do not use hay or straw from areas treated with aminopyralid or manure from animals feeding on hay treated with aminopyralid in compost.

Do not use on grasses grown for seed production.

Aminopyralid is not allowed for use on hay that will be distributed or made available for sale off the farm or ranch where harvested.

Aminopyralid is not recommended for use on green chop, silage, haylage and bayslage unless all label precautions and restrictions are followed.

Transline or Stinger herbicide

Use Recommendation for Export Grass Hay

2(ee) Recommendations (WA, OR)

- Transline applications **after fall** cutting
 - Ok to export following year hay crops
- Transline applications **before** spring cutting:
 - Do not export 1st hay cutting
 - OK to export 2nd hay cutting (fall crop)
- Transline applications **after spring** cutting:
 - OK to export subsequent year hay crops

Use restrictions for export hay treated with 2,4-D, fluroxypyr and triclopyr

□ **NONE**

Whitetop (hoary cress)





Whitetop Study 1 – Treated on
June 1st

Study 2: Application later in the window
6/19/08 at full to late flower



Chaparral @ 2.5 oz/acre

Application 6-19-2008

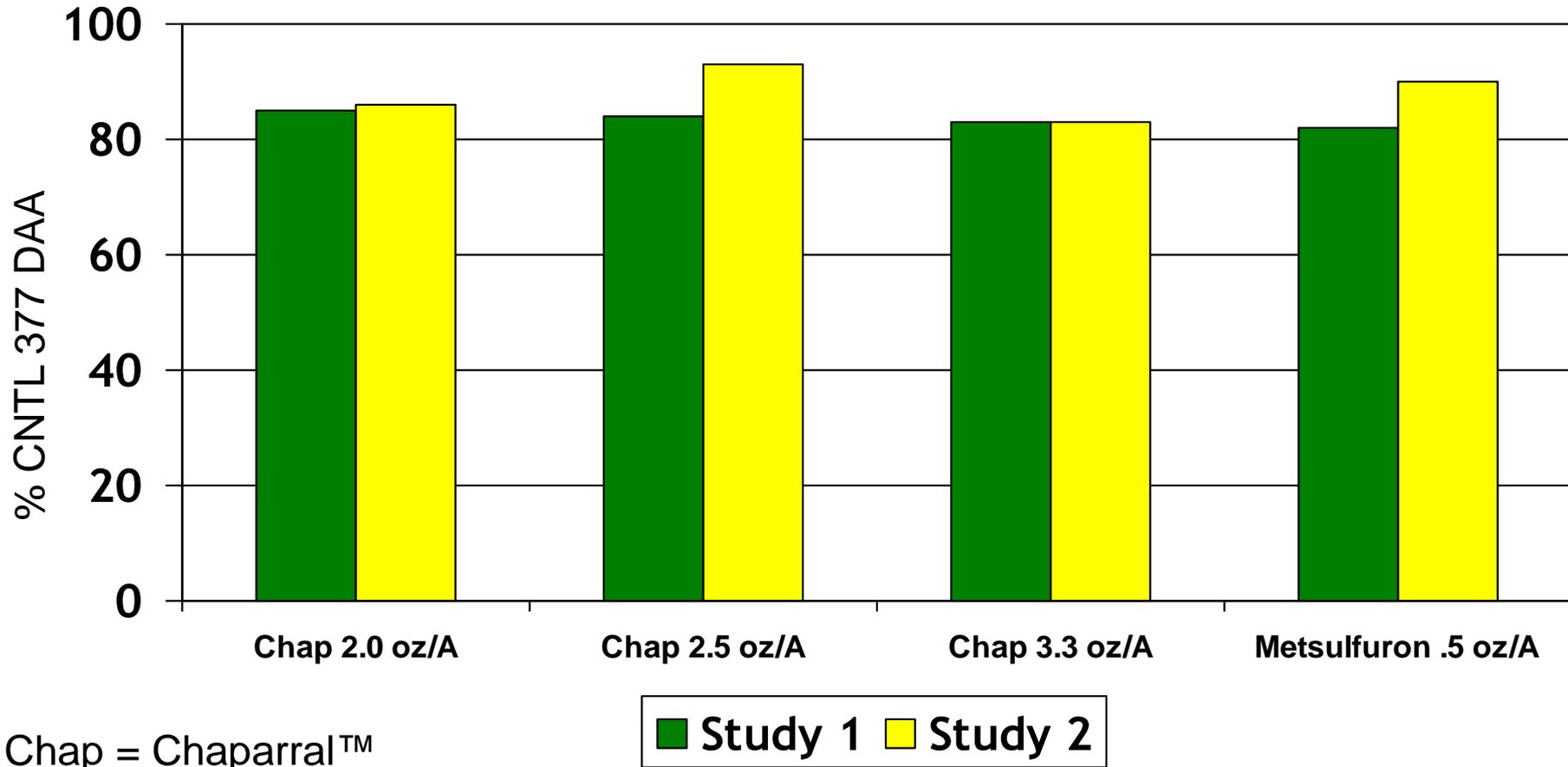
Evaluation 6-5-09



Untreated

Chaparral

Control of Whitetop with Chaparral™



Chap = Chaparral™
Herbicide

Aminopyralid

Tree Tolerance Study

Milestone 14 fl. oz./acre

Tailings site

Under tree

1 year after treatment

05/25/2006



Transline herbicide



**Conifer Release
Range & Pasture**

Transline – Forestry

- Use rates: 6-20 fl oz/acre
- Tank mix with other approved forestry products to broaden spectrum of activity
- *Excellent conifer tolerance* even during active growth stages
 - Safe to use over diverse conifer species and certain hardwoods
 - Omit surfactants when applying over actively growing conifers
- New more cost effective pricing

Transline - Target Weeds

- Elderberry
- Thistles
- Knapweeds
- Hawkweeds
- Dandelion
- Groundsels
- Fireweed
- Maretail (horseweed)
- Scotch broom (Garlon + Transline)
- Others

maresetail & thistles



Canada thistle

Use Transline @ 12-16 oz/acre





Thank You

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