

Turfgrass Weed Management

Barry J. Brecke

University of Florida/IFAS

West Florida Research and Education Center

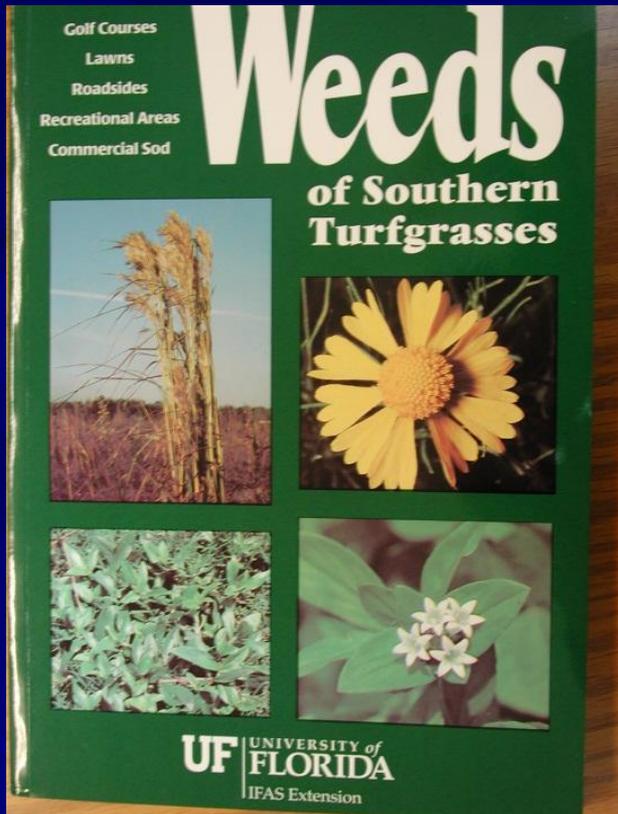
Jay

Points for Discussion

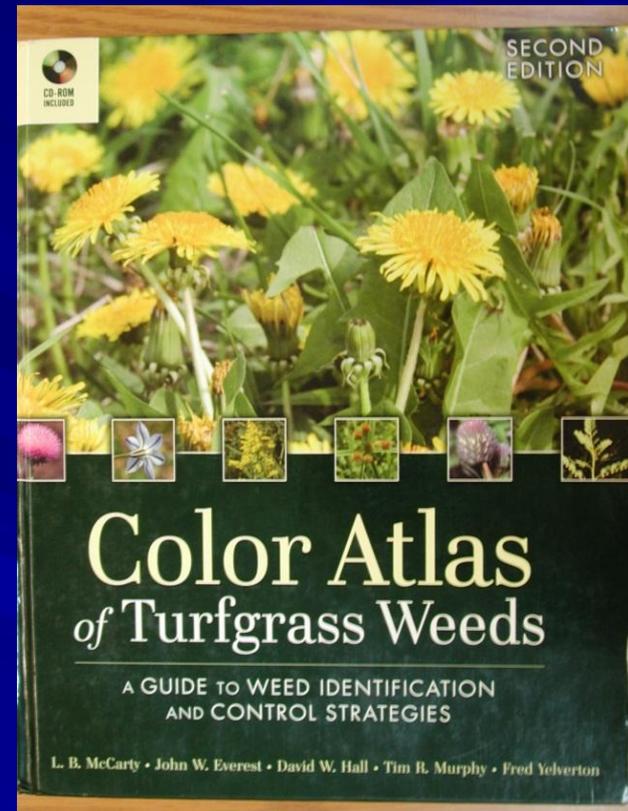
- Overall weed management
 - Back to Basics approach
- Problem weeds and their control
 - Turfgrass
 - Ornamentals

Weed I.D.

Weed I.D. Publications

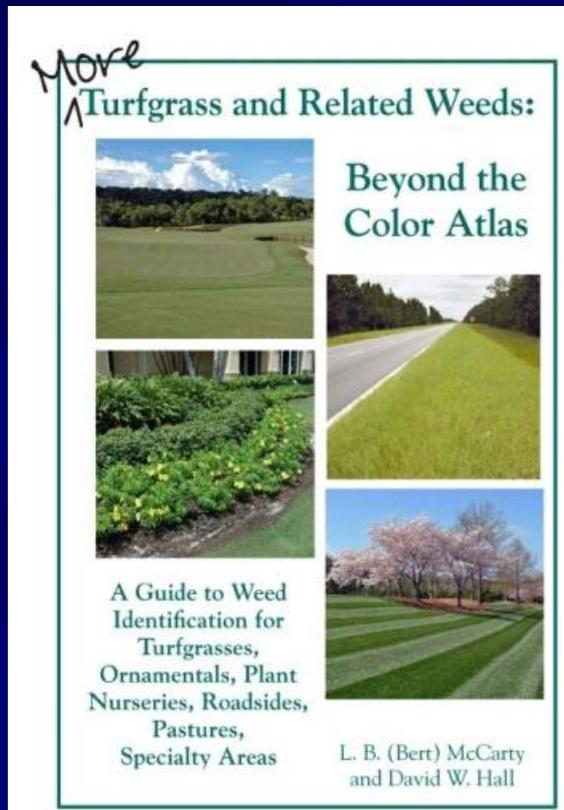


**\$14.00 from UF-IFAS
Extension Bookstore**



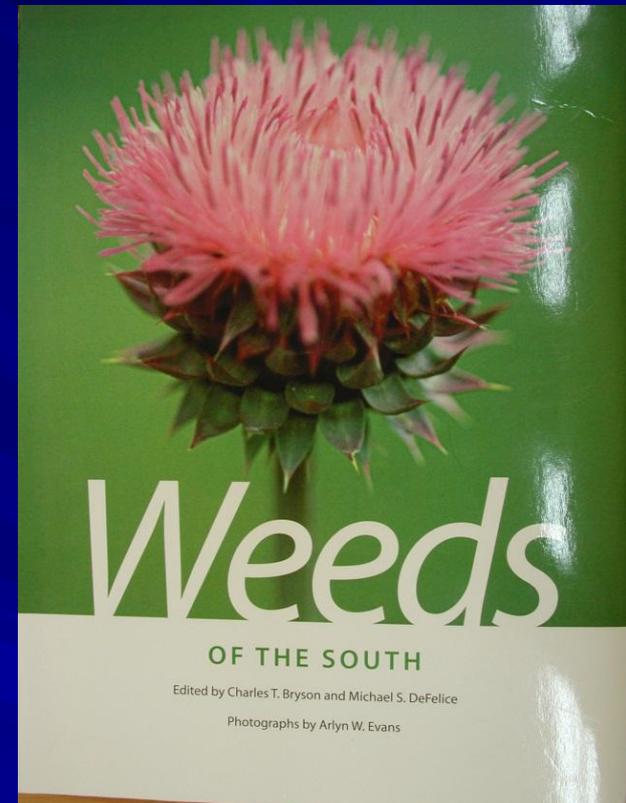
**\$112.00 from
Amazon.com**

Weed I.D. Publications



\$25.00

**Clemson University Public Service
Publishing
www.clemson.edu/psapublishing**



**\$26.00 from
Amazon.com**

Overall Weed Management

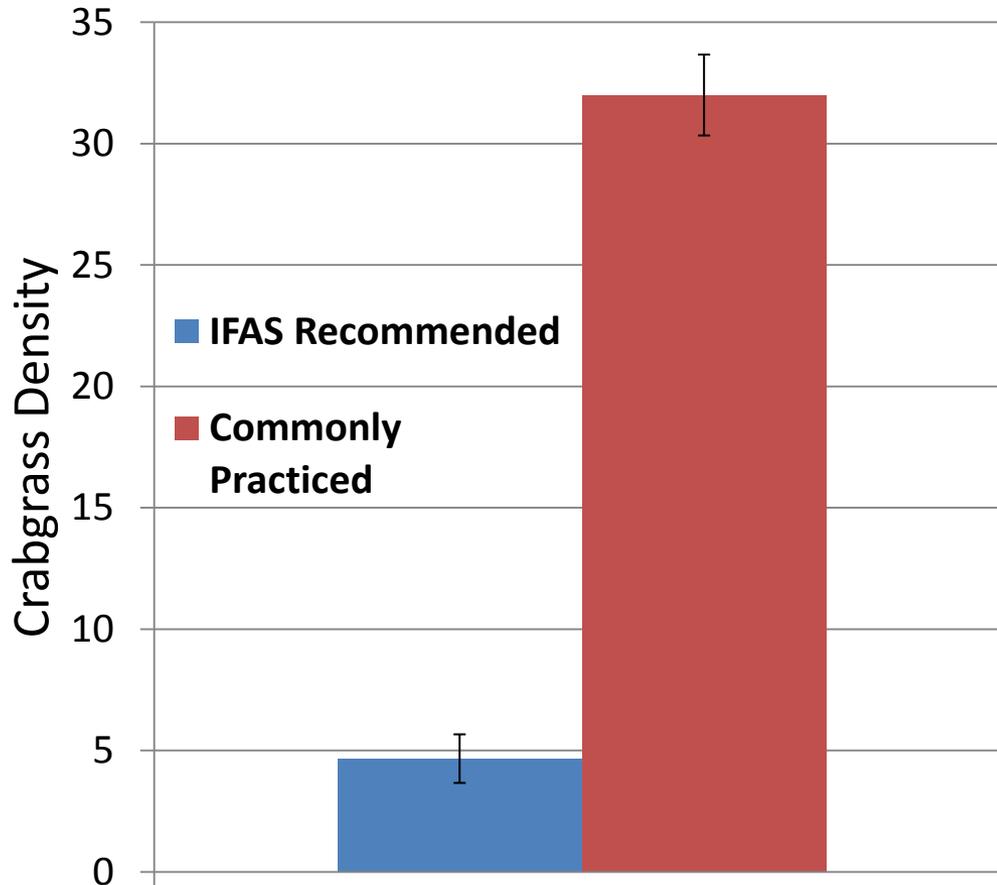
Developing a Weed Management Program

- Prevent weed introduction
- Properly maintain turfgrass & ornamentals
- Identify weeds and learn life cycle
- Initiate control practices
 - Cultural
 - Mechanical
 - Herbicides

Back to the Basics Approach

- **Cultural Practices**
 - **Fertility**
 - **Water management**
 - **Irrigation**
 - **Drainage**
 - **Cultivar Selection**
 - **Mowing**
 - **Height**
 - **Frequency**
 - **Control other pests**

Crabgrass Management in St. Augustinegrass

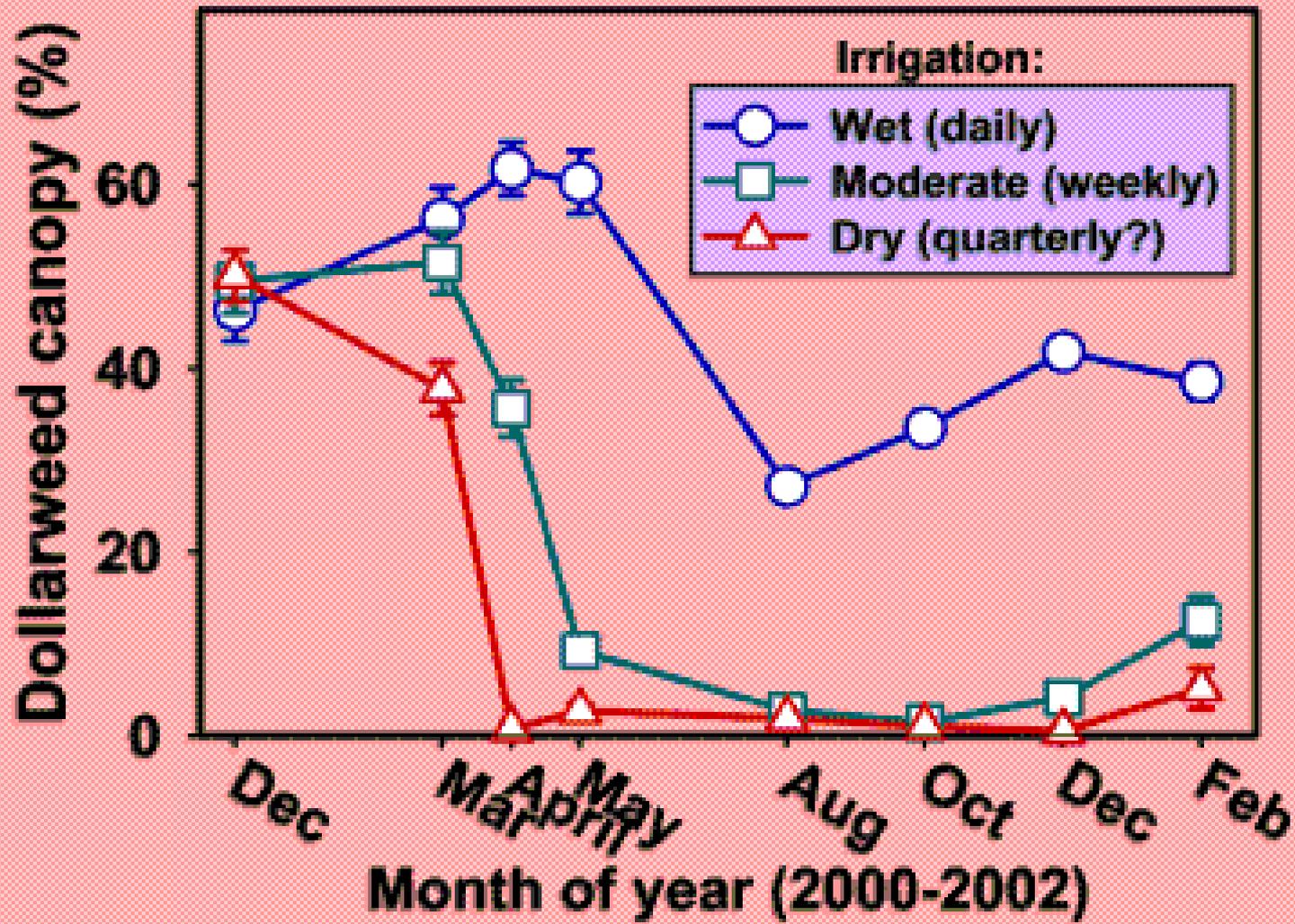


- **IFAS recommended**
 - ET Irrigation
 - 3.5 in. Mowing Ht.
 - 3 lb. N/1000 ft./yr.
- **Commonly practiced**
 - Daily Irrigation
 - 2 in. Mowing Ht.
 - 4 lb. N/1000 ft./yr.

700 % increase

Water Management

- **Some of the most difficult to control weeds first become established in wet areas**
 - Poor drainage
 - Over-irrigation
- **Weeds such as**
 - Dollarweed (pennywort)
 - Nutsedge
 - Virginia buttonweed
 - Torpedograss



Weed Control – Herbicides only one piece of puzzle.



Back to the Basics Approach

■ Herbicide Basics

– Appropriate Choice:

- I.D. Weeds trying to control

- Turfgrass species

– Timing of Application:

- Single vs Multiple Applications

– Herbicide Resistance Management

Herbicides

■ Application

- Calibrate equipment
- Train applicator
 - Uniform application
 - Correct rate of application

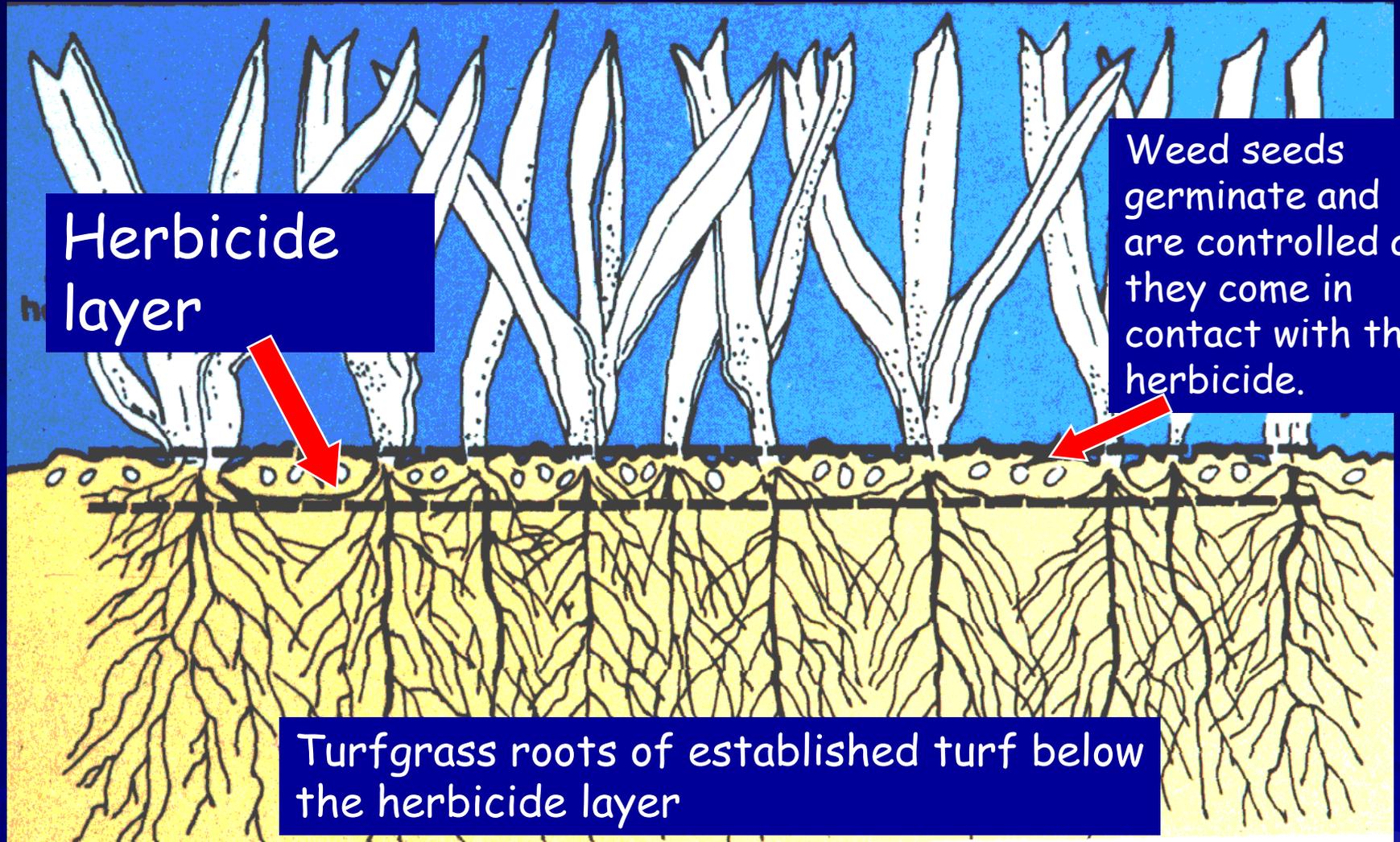
Preemergence Herbicides

- Key to successful weed control program
- Only herbicides that can be used for annual grass control in St. Augustinegrass
 - No effective control of annual grasses postemergence
- Provide control of annual grasses
 - Crabgrass, goosegrass, tropical signalgrass, annual bluegrass
- Will also control some broadleaf weeds

How Long Do Pre's Provide Control?

- Most pre's start to break **about 60 days after application**
- Repeat applications are generally needed in the humid south for full season control
- Apply second treatment about 60 days after the first application

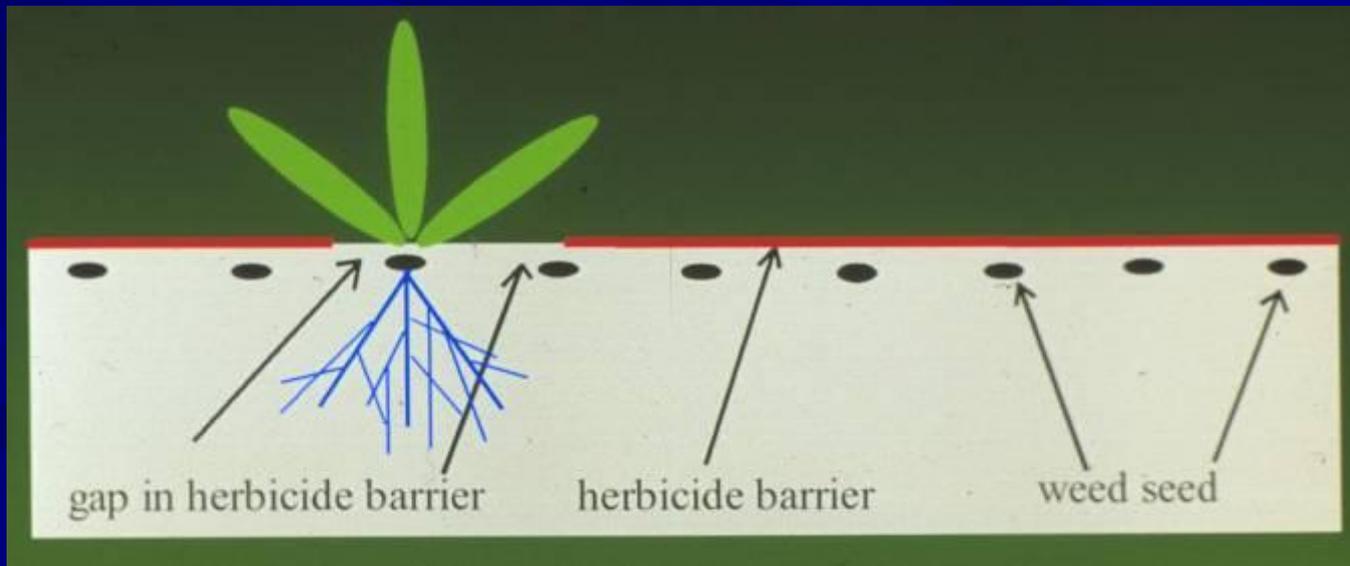
How Do Preemergence Herbicide Work?



Preemergence herbicides do not prevent weed seeds from germinating.

Reasons for Preemergence Herbicide Failure

- Applying after weeds have germinated.
- Failure to water in with at least 0.25 to 0.5 inches of rainfall or irrigation.
- Gaps in the herbicide barrier.

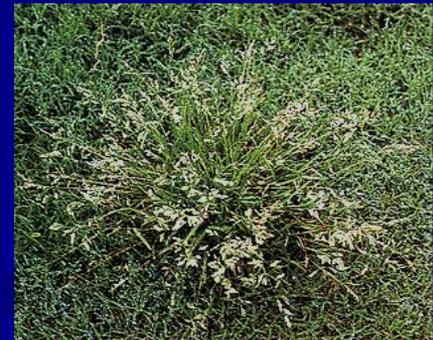


Grass Weed Management

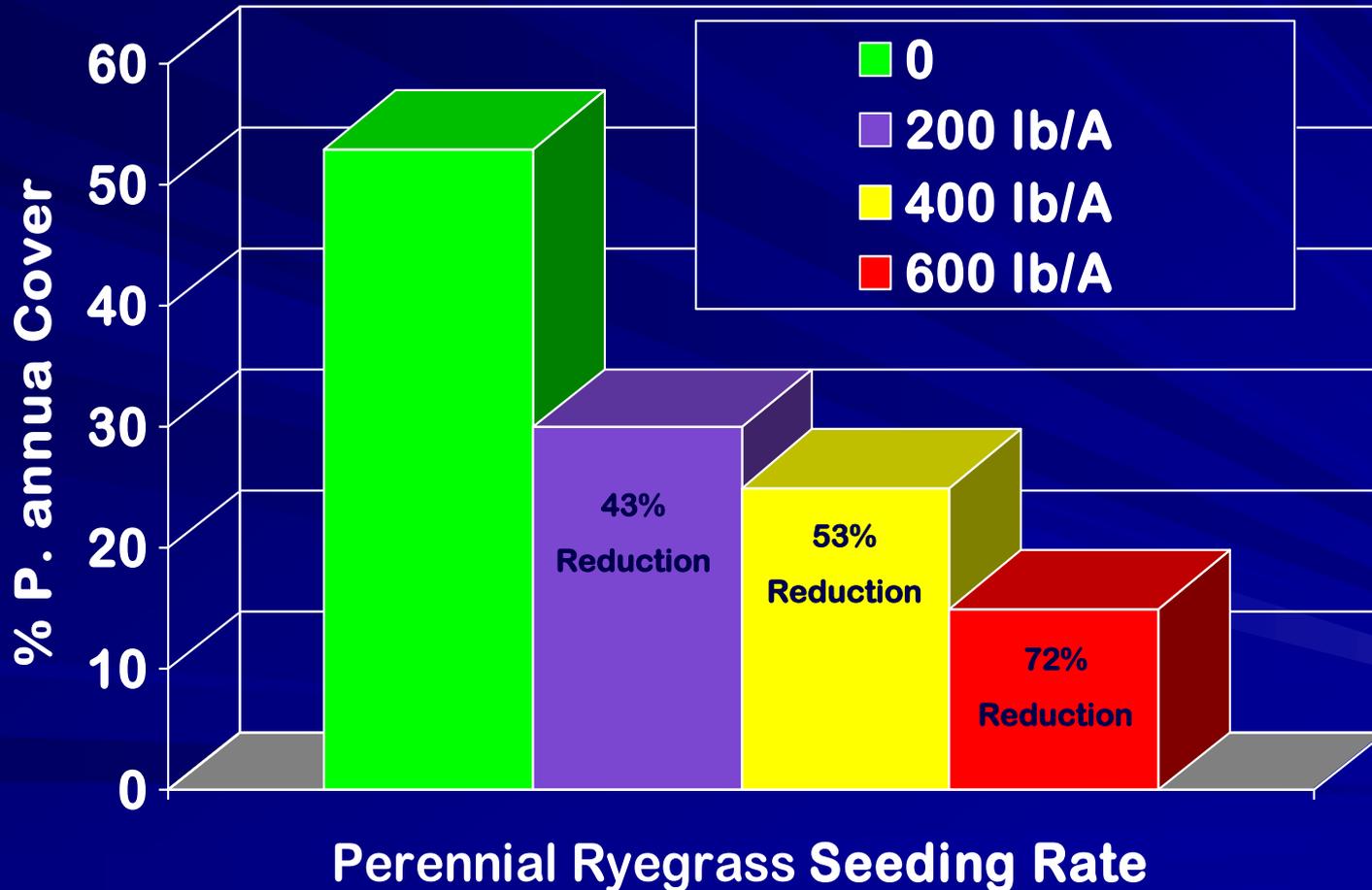
Annual Bluegrass

(*Poa annua*)

- Tufted to clump growth habit
- Leaves smooth with two uniquely clear lines along midrib
- Boat-shaped leaf tip
- Seedhead with cottony appearance



Impact of Overseeding on Poa annua Cover

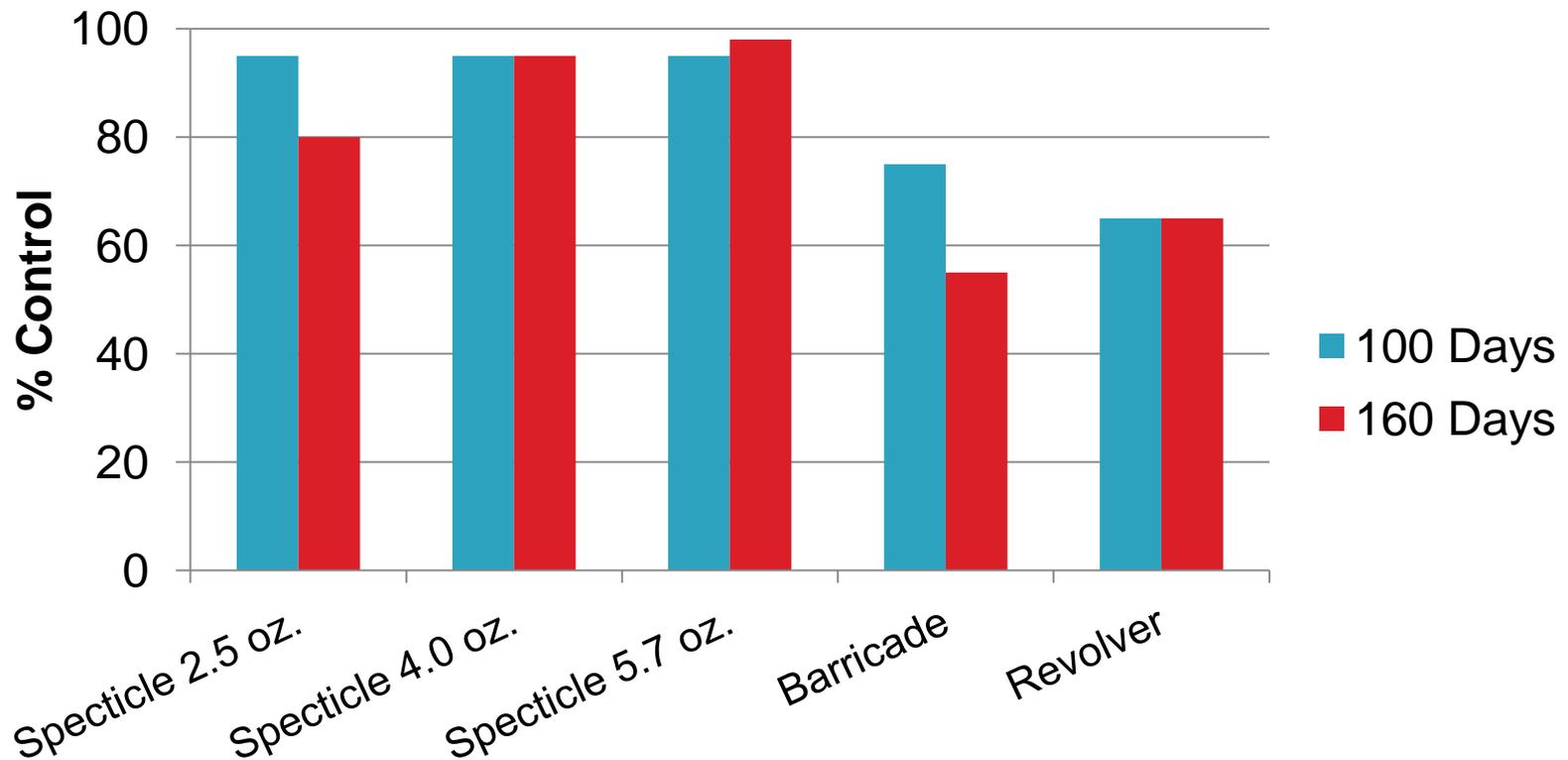


Annual Bluegrass Control

- Annual Bluegrass Preemergence
 - Dithiopyr (Dimension), oryzalin (Surflan), pendimethalin (Pendulum), prodiamine (Barricade).
 - **Require long intervals prior to overseeding**
 - Not an issue in not overseeding
 - Must be applied before annual bluegrass germinates

Annual Bluegrass Control with Specticle PRE

2010



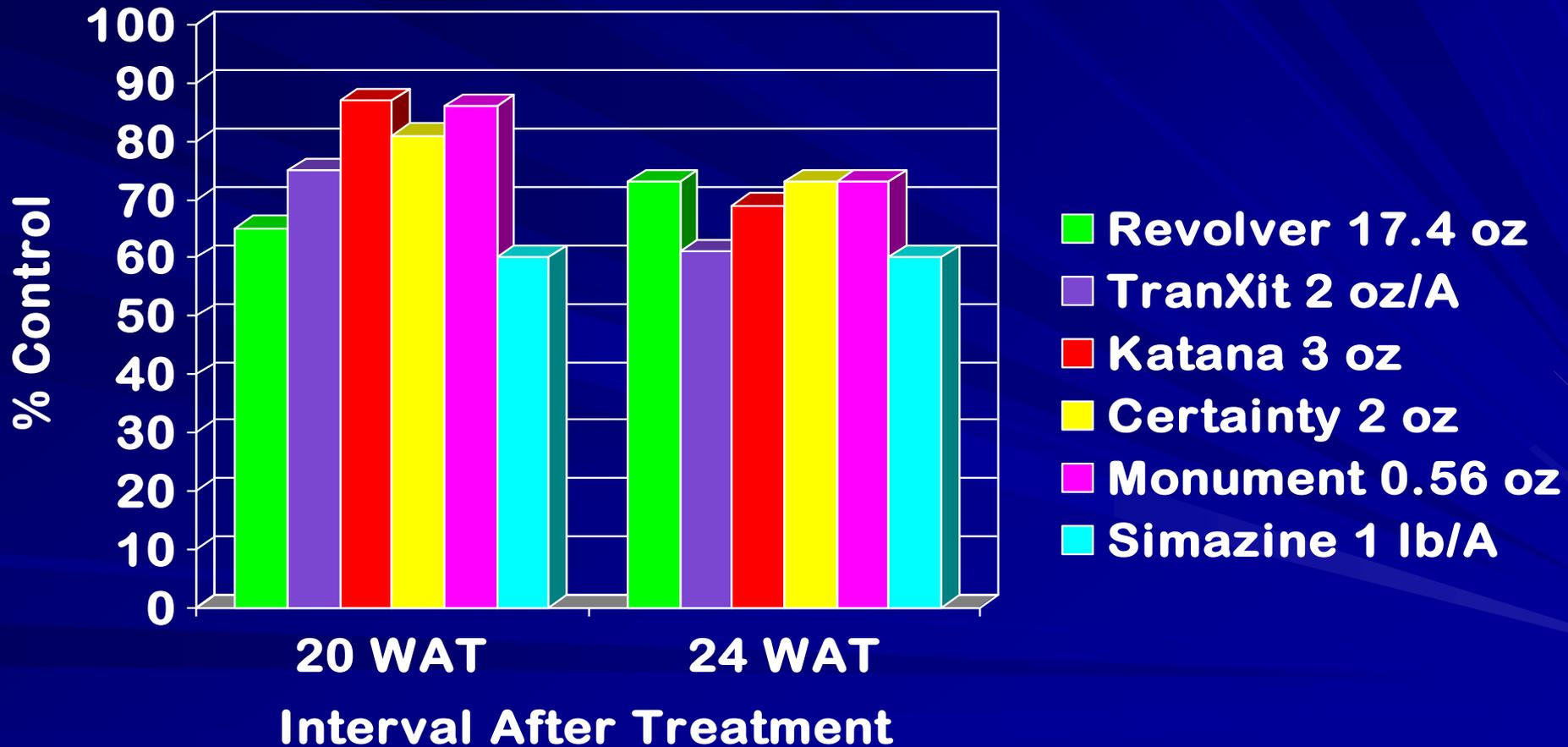
Annual Bluegrass Control

- ALS-Inhibitor herbicides:
 - Revolver
 - TranXit
 - Certainty
 - Monument
 - Katana
- Can be applied at various intervals (7 to 21 days) prior to overseeding
- Anytime to non-overseeded bermudagrass

Annual Bluegrass Control

- ALS-Inhibitor herbicides:
 - Most have limited preemergence activity
 - Providing mostly postemergence activity
 - Delay overseeding as late as possible so as much annual bluegrass as possible has emerged when application is made

Annual Bluegrass Control



All treatments applied 14 DPOS.

Xonerate

- New postemergence product from Arysta Lifesciences
- 70 DF formulation
- Active ingredient is amicarbazone
- Photosynthetic inhibitor

Xonerate

- Labeled for use on:
 - Bahiagrass
 - Bermudagrass
 - Centipedegrass
 - Seashore paspalum
 - St. Augustinegrass
 - Zoysiagrass

Xonerate

- Use Rate:
 - 3 to 10 oz. product/A
 - Second application 14 to 21 day interval
 - Cannot exceed a total of 10 oz./A per season

Xonerate

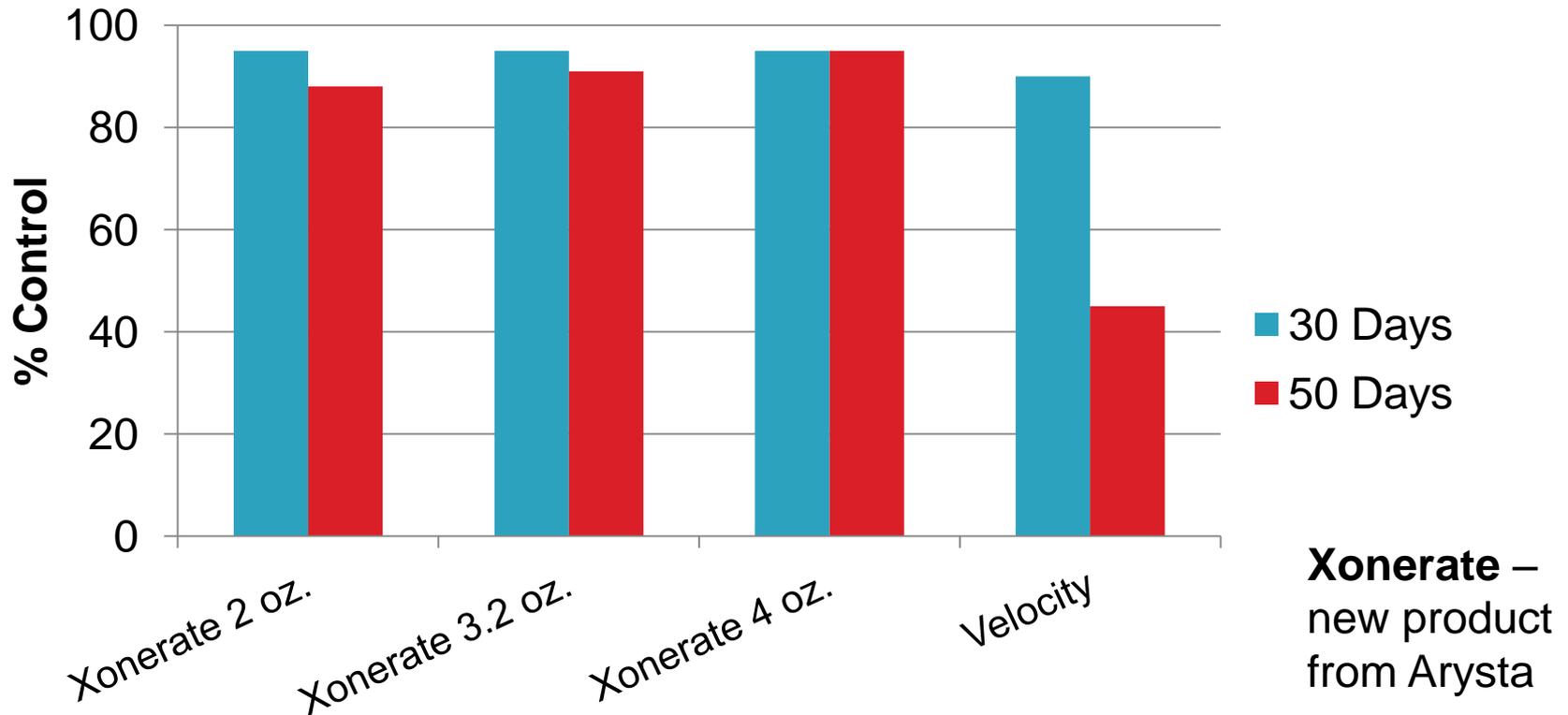
- Labeled for use on:
 - Perennial Ryegrass
 - 2 to 4 oz. product/A
 - Second application 14 to 21 day interval

Xonerate

- Can be used:
 - Golf courses
 - Sod farms
 - Residential sites
 - Commercial sites
 - Athletic fields

Postemergence Annual Bluegrass Control with Xonerate

2012



Xonerate

- Other weeds controlled
 - Lawn burweed
 - Capretweed
 - Chickweed
 - Cudweed
 - Henbit
 - Spotted spurge

Crabgrass spp. (*Digitaria spp.*)

summer annual,
aggressive growth habit,
with hairy leaves



prolific seeder
4" 50-55° F soil temperature
encourages germination



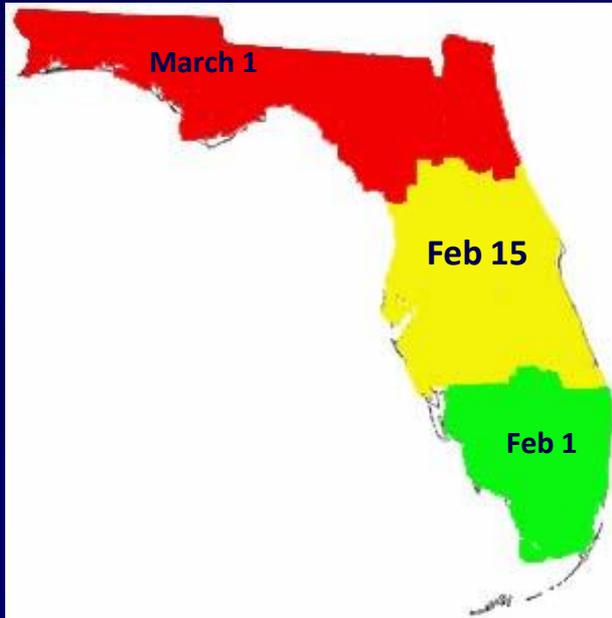
prominent
membranous ligule



Crabgrass

- preemergence timing is critical
- applicator error can result in failure
- limited selective postemergence control

Preemergence Herbicide Application for Crabgrass Control



Where there has been a history of crabgrass infestation, apply a preemergence herbicide in late winter or early spring before soil temperatures remain above 50°F for 24 consecutive hours. A general rule of thumb for preemergence herbicide application for crabgrass control is February 1 in south Florida, February 15 in central Florida, and March 1 in north Florida.

Preemergence Crabgrass Control

Herbicide	% Control
Surflan	80
Pendulum	80
Barricade	90
Team Pro	90
Ronstar	85
Dimension	85

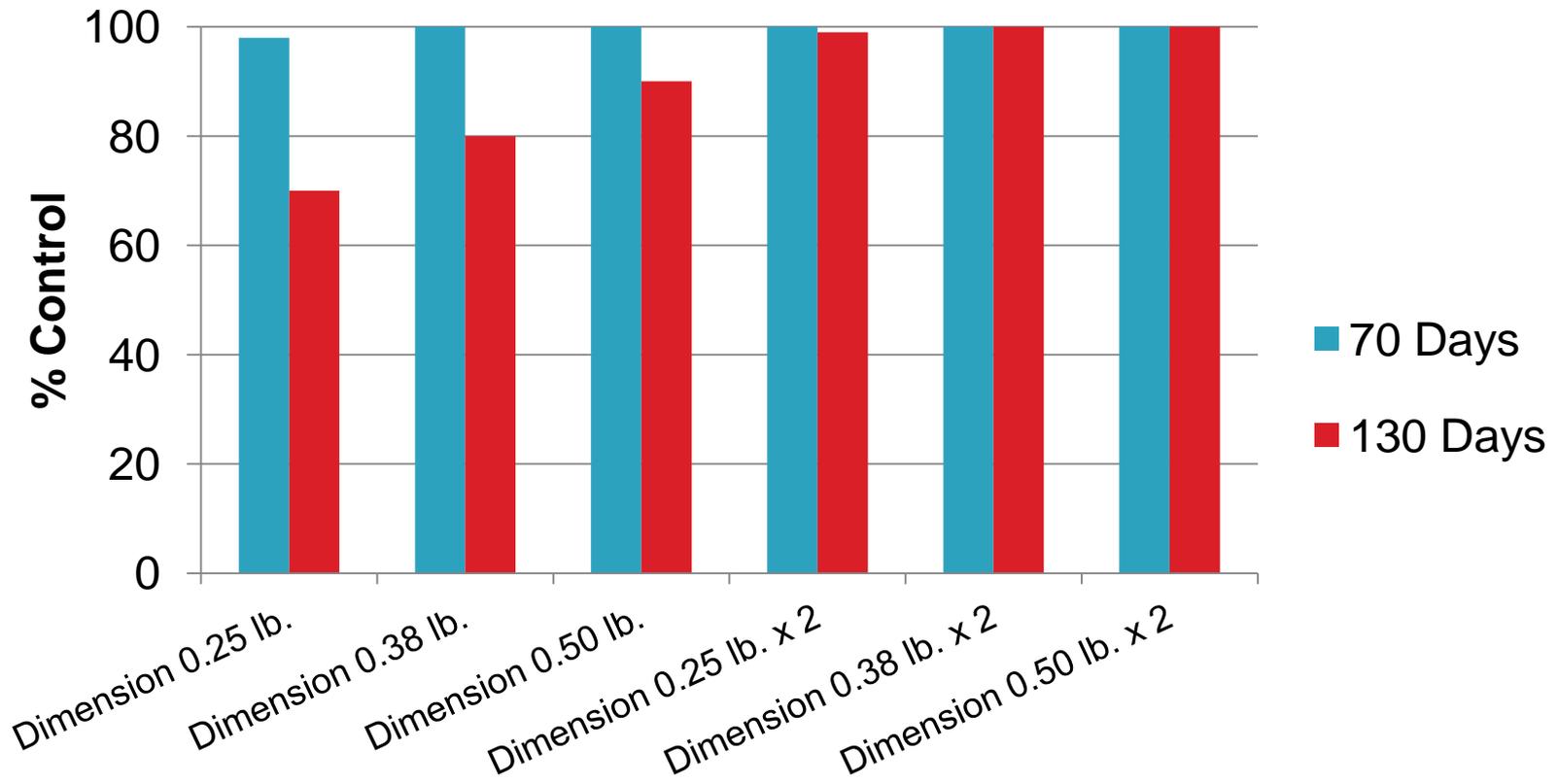
4-year average, WFREC, Jay, FL

2 apps

Rated late summer

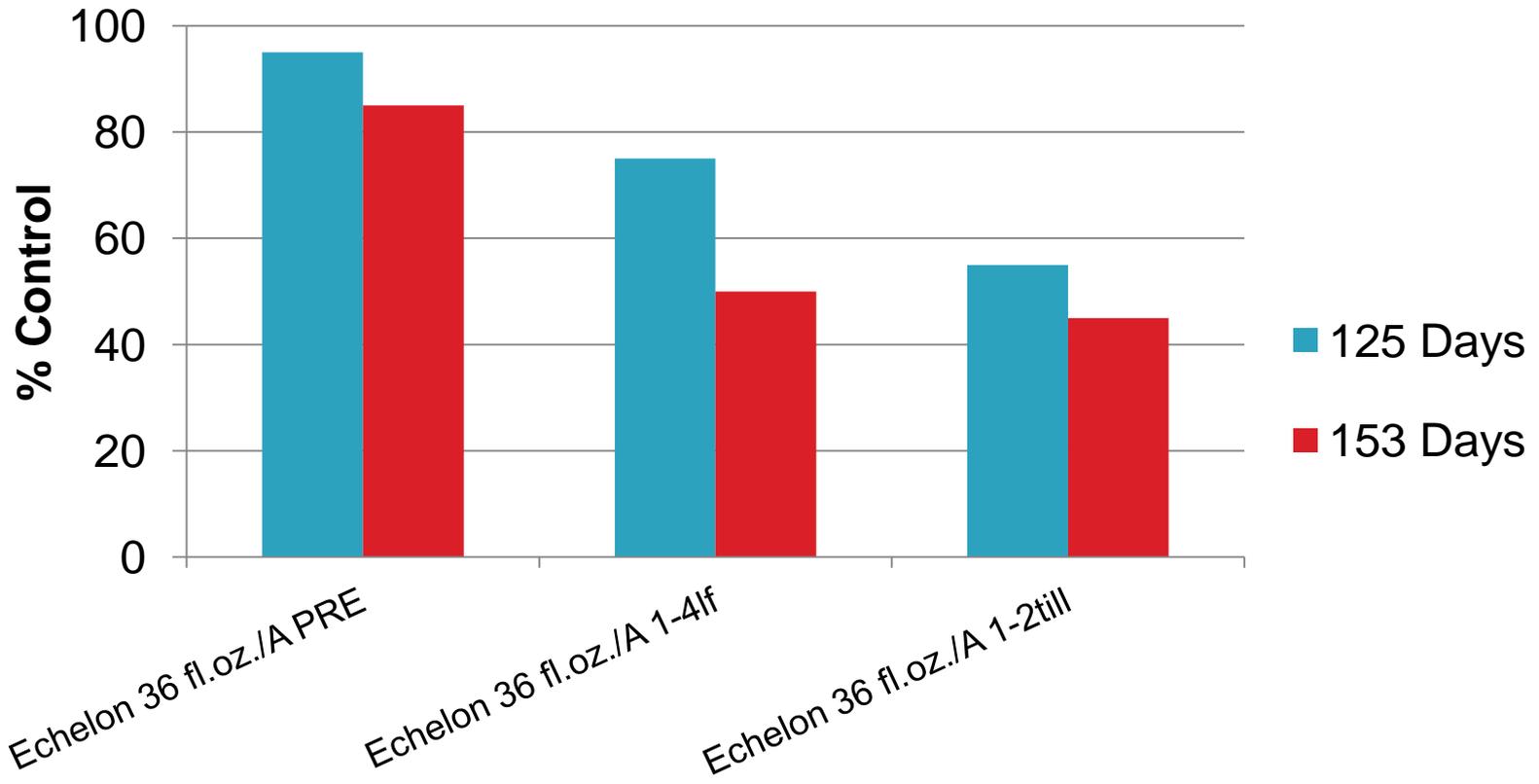
Southern Crabgrass Control with Dimension PRE

2012



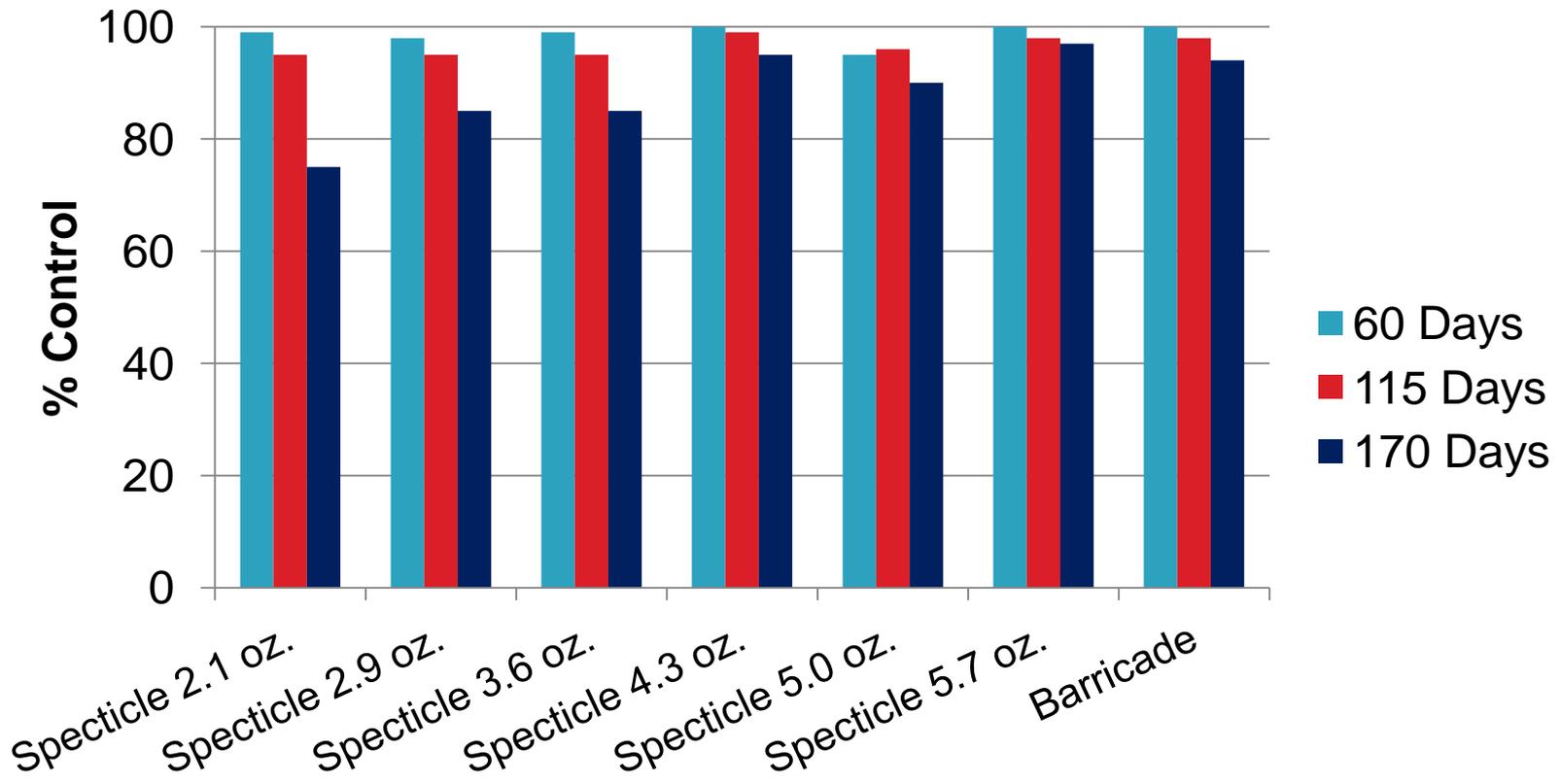
Southern Crabgrass Control with Echelon Preemergence vs. Postemergence

2009



Southern Crabgrass Control with Specticle PRE

2008



Specticle Formulation Change

- Original Formulation – 20 WSP
 - Rates from 2.5 to 5 oz. product/A
- New Formulation – Specticle FLO (0.622 flowable)
 - Rates from 6 to 10 fl. oz./A

Specticle FLO

- 10 fl. oz./A (3.9 oz. WSP)
 - Bahiagrass
 - Bermudagrass
 - Zoysiagrass
- 6 fl. oz./A (2.3 oz. WSP)
 - St. Augustinegrass
 - Centipedegrass
 - Seashore paspalum

Specticle Formulation Change

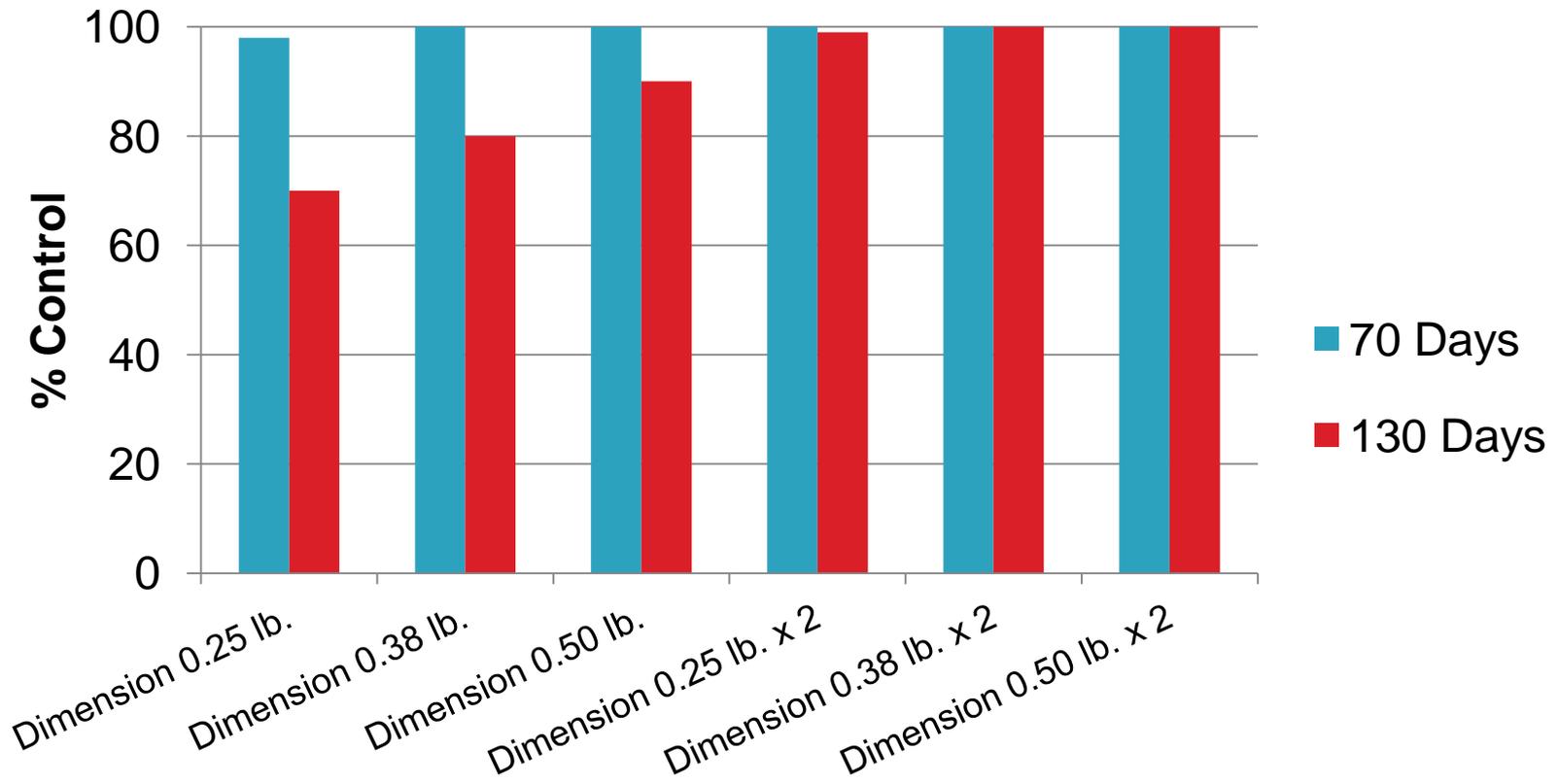
- Specticle G (0.0224%)
 - 100 to 200 lb product/A

Crabgrass - Postemergence

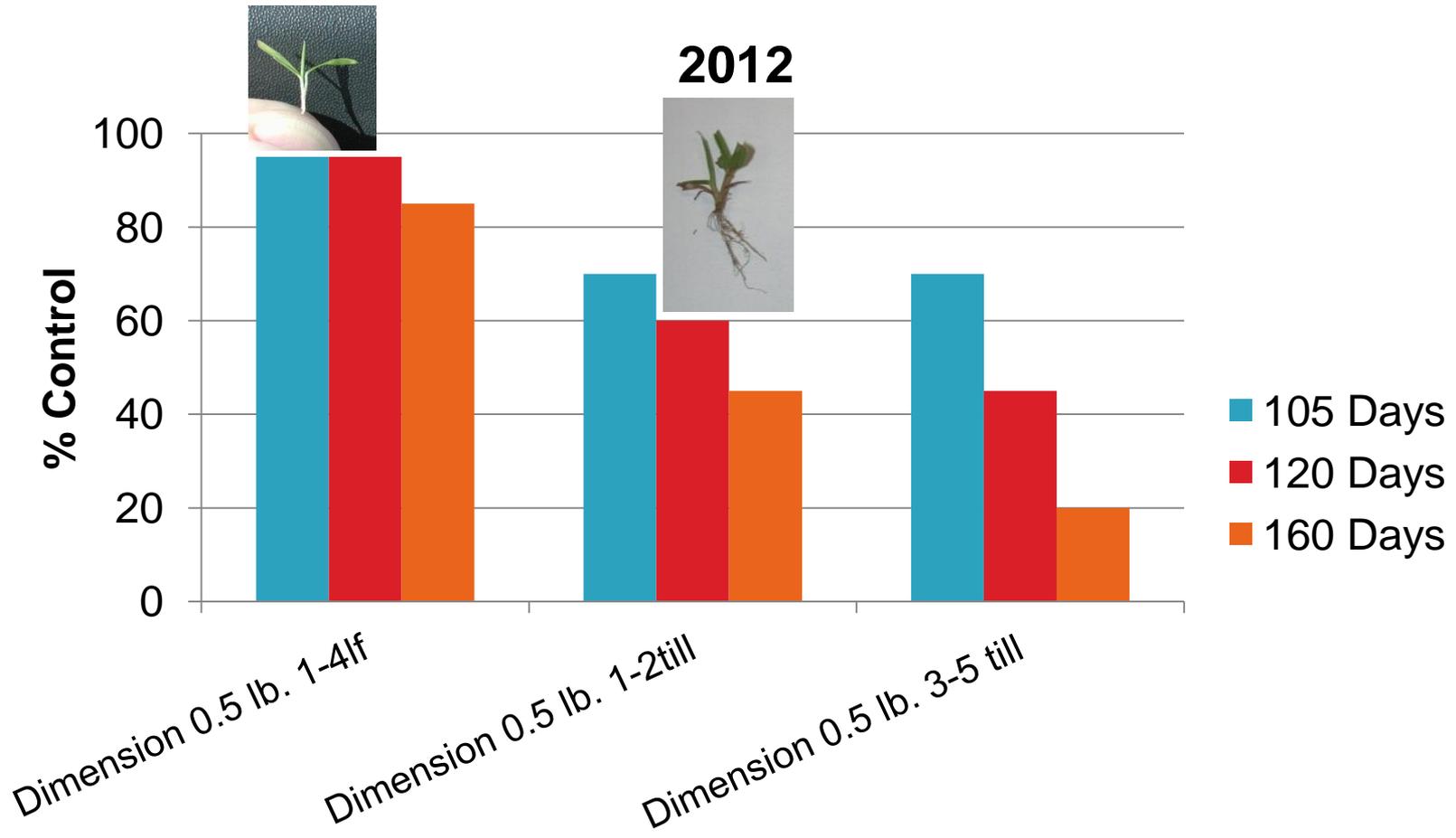
- St. Augustinegrass
 - No selective treatments available
 - Roundup and Re-Sod

Southern Crabgrass Control with Dimension PRE

2012



Southern Crabgrass Control with Dimension POST



Crabgrass - Postemergence

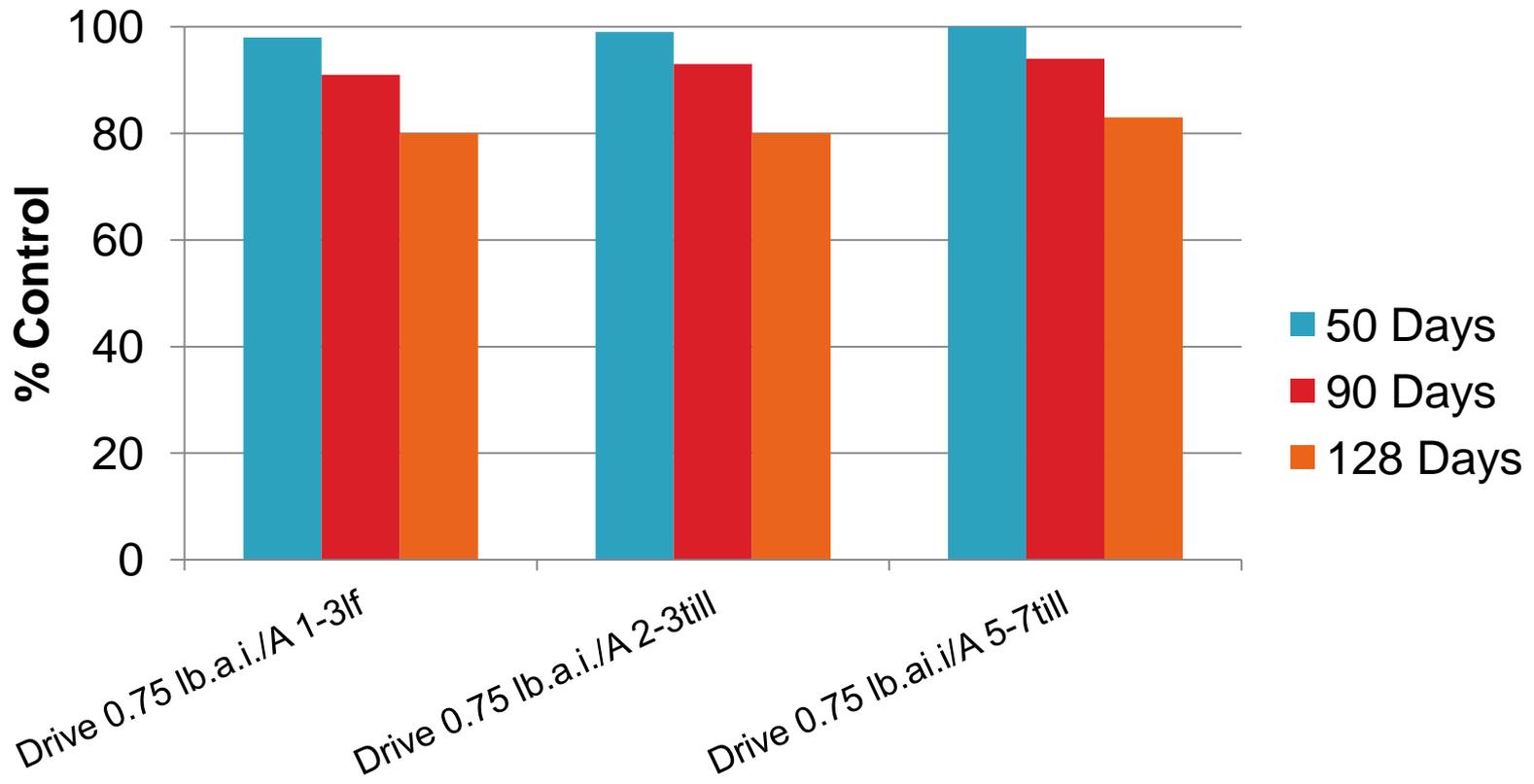
Bermudagrass and Zoysiagrass

Drive (quinclorac)

NO St. Augustinegrass tolerance

Southern Crabgrass Control with Drive XLR8 POST

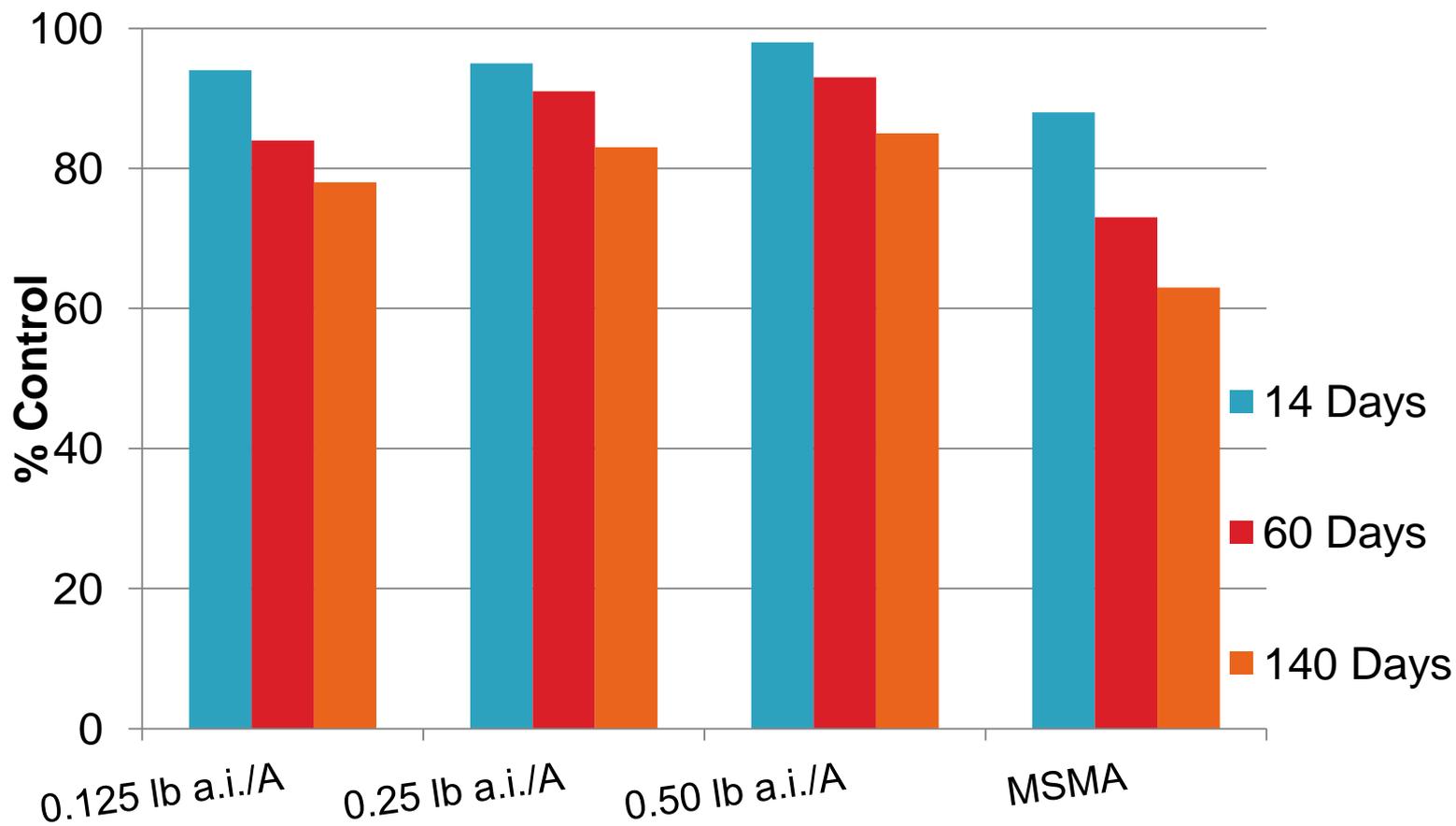
2009



Postemergence Crabgrass Control in Centipedegrass

- Sethoxydim
 - Segment
 - Vantage
 - Sethoxydim G-Pro
- Tenacity

Southern Crabgrass Control with Tenacity Post



Goosegrass (*Eleusine indica*)

summer annual with a tough clump growth habit,
smooth dark green leaves, silverish-white center,
folded vernation

visible short toothed
membranous ligule



seedhead with spur,
4" soil temperature
60-65° F encourages
germination



Goosegrass Control

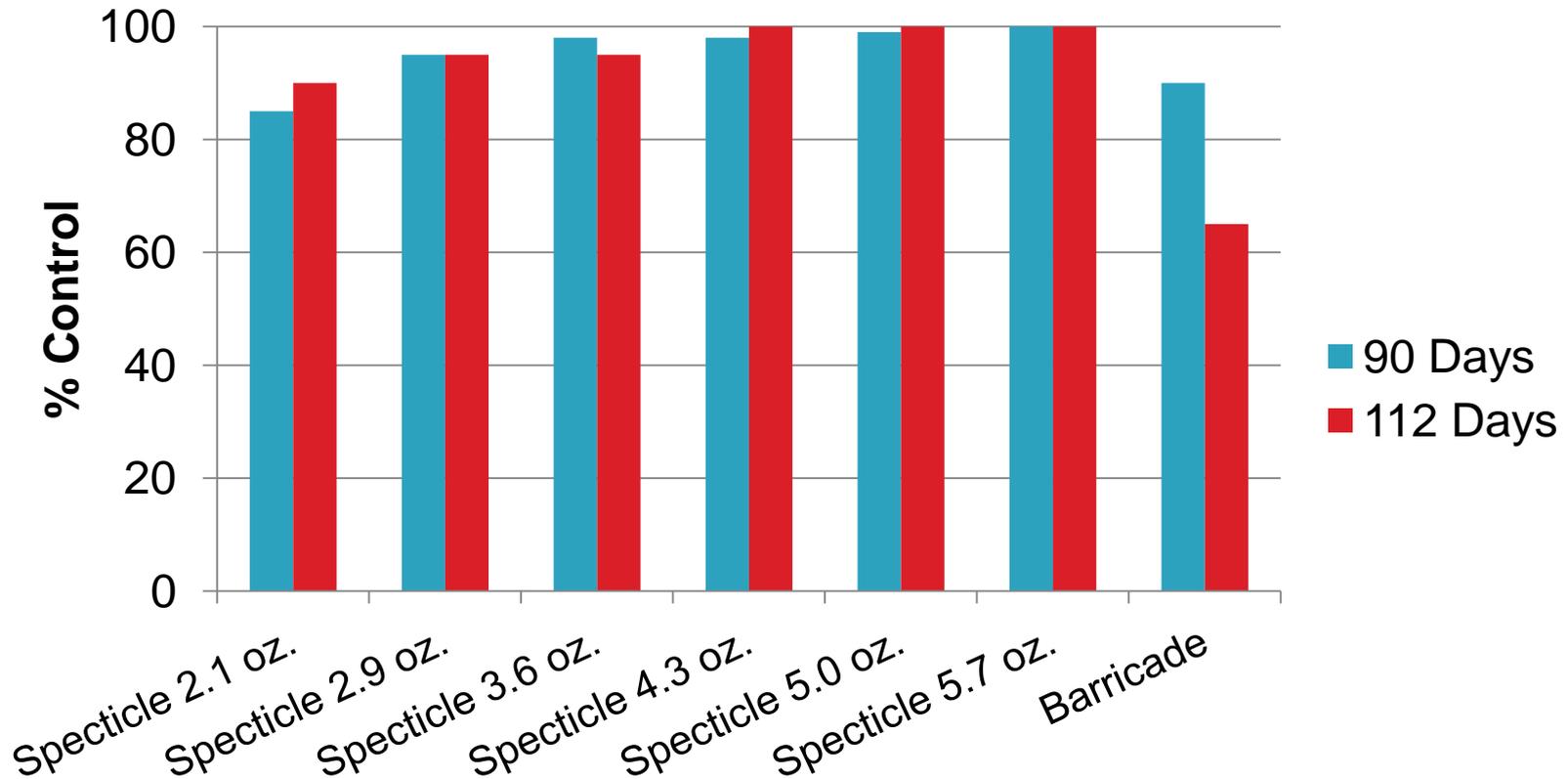
- Relieve compacted soil conditions
- Be sure to time preemergence herbicide application to later germinating weed

Goosegrass Control

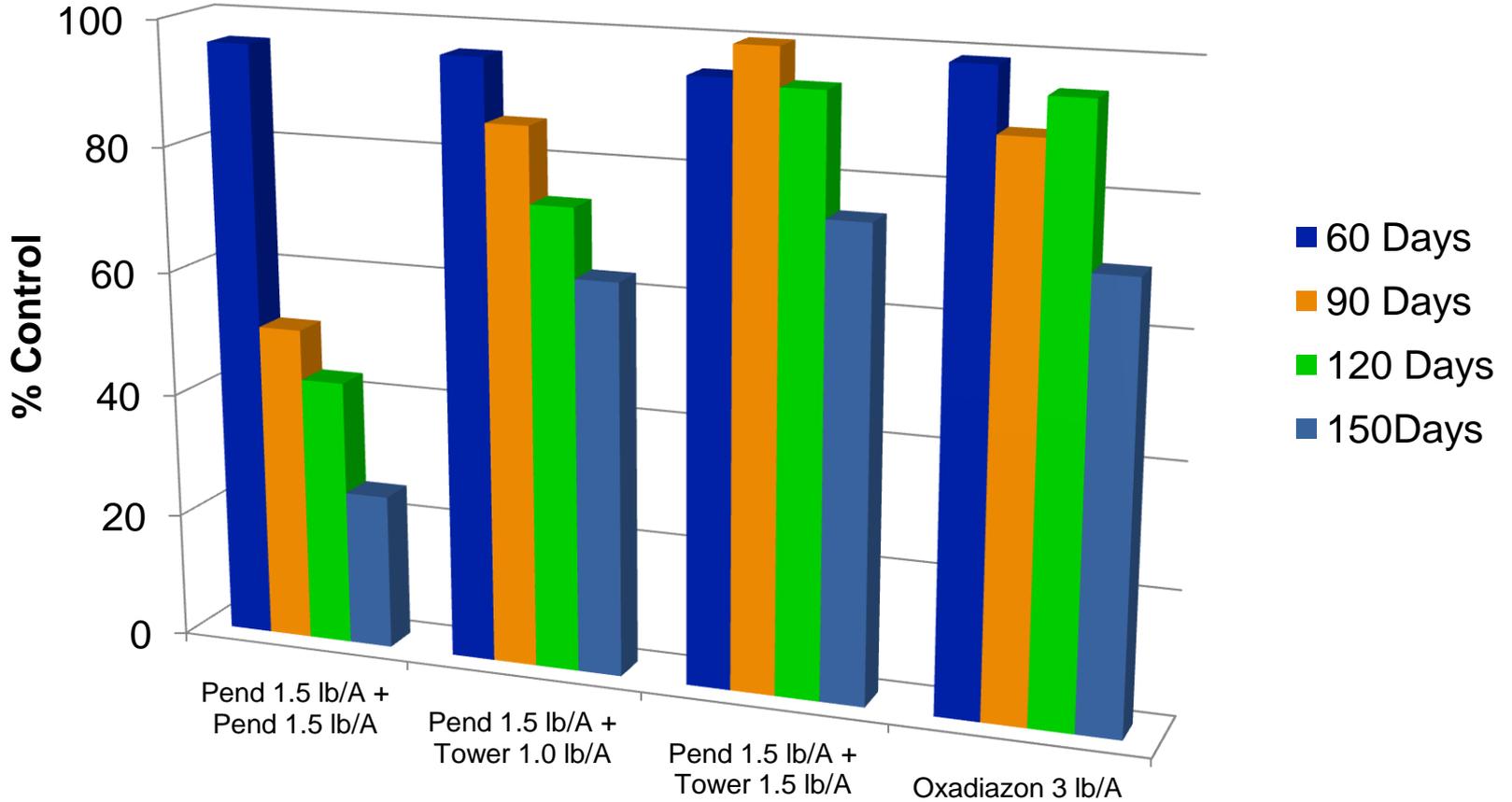
- Preemergence
 - Similar to crabgrass
 - Goosegrass germinates later than crabgrass
- Postemergence
 - *Dismiss* control small goosegrass in most warm-season turf species.

Goosegrass Control with Specticle PRE

2008



Goosegrass Control with Tower



Rates = lb. a.i./A

Tropical signalgrass (*Urochloa*

a.k.a “smallflowered Alexandergrass”

subquadrifera)

summer perennial from seed and stolons

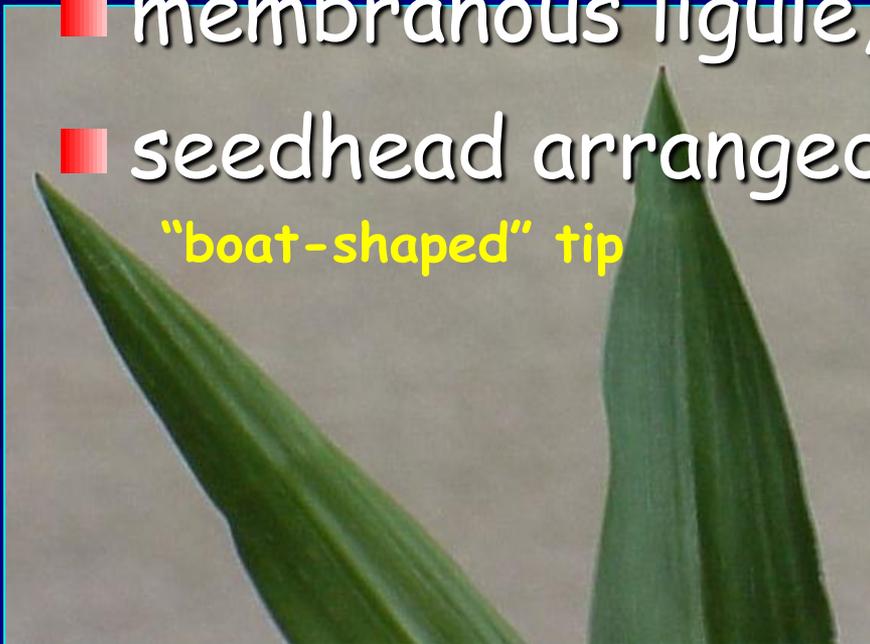
sprawling growth habit,
leaves smooth, shiny,
boat shaped tip



flowers emerge along
stem at opposing sides
resembling a “signal flag”

Tropical signalgrass

- roots at nodes
 - rolled vernation
 - leaf blade and sheath sparsely hairy, shiny
 - membranous ligule, fringe of hairs
 - seedhead arranged like "signal-flags"
- "boat-shaped" tip



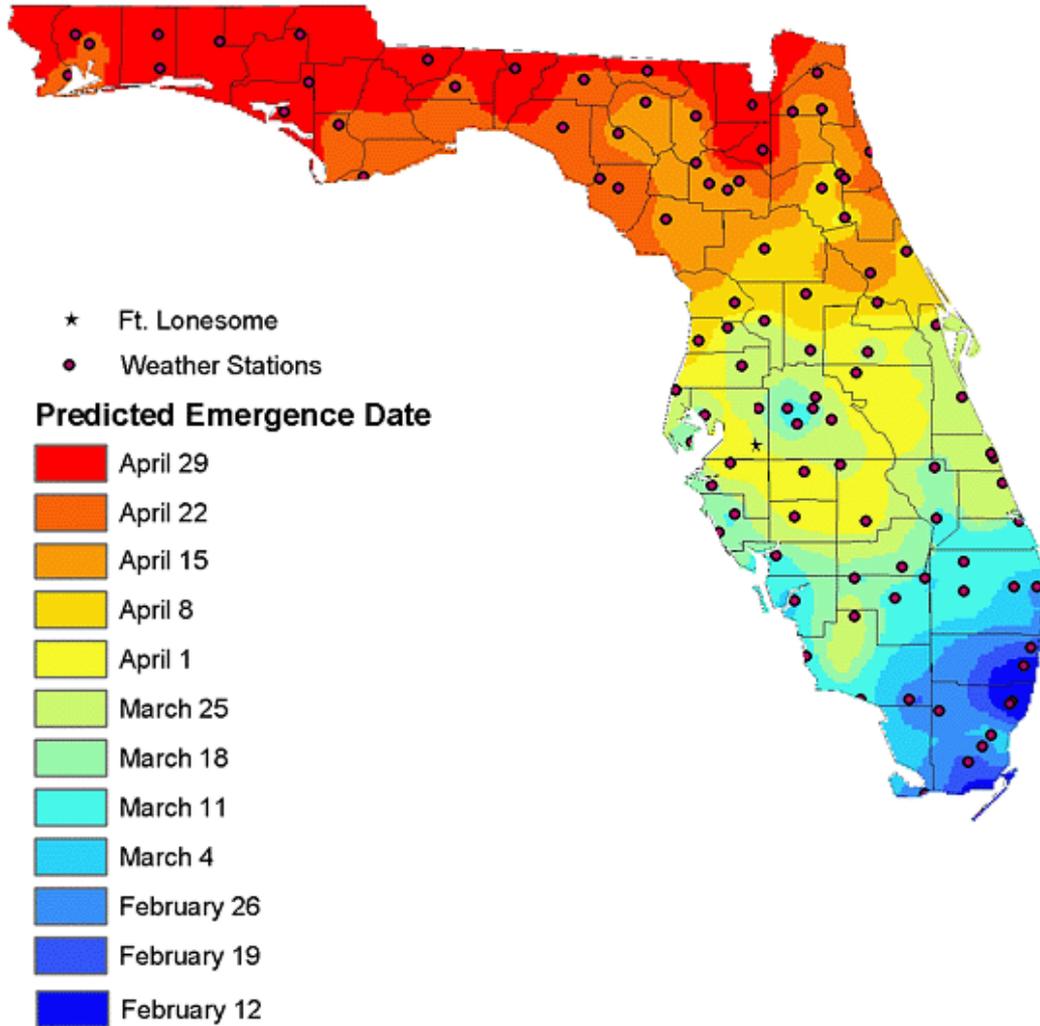
Tropical signalgrass

Perennial south of I-4

Annual north of I-4

Does well in dry conditions

Predicted Tropical Signalgrass Emergence



Predicted pattern of tropical signalgrass emergence.
Teuton et al. Applied Turfgrass Science.

Tropical Signalgrass Preemergence

- Pendulum
- Barricade
- Surflan
- XL
- Team Pro
- Dimension

Tropical Signalgrass Control

■ POSTEMERGENCE: difficult at best!!

TREATMENT

Roundup – spot treatment and re-sod

Sedges

Nutsedge

Control – Residential Turf

- Certainty
- Dismiss
- Image
- Sedgehammer
- Monument (bermudagrass, zoysiagrass)

Broadleaf Weed Management

Pennywort (Dollarweed) (*Hydrocotyle spp.*)

- Perennial from rhizomes, occasionally with tubers.
- Long-stalked leaves with scalloped margins and petiole in center of leaf, “umbrella-like.”
- Flowers in elongated spikes.
- Found in moist to wet sites.



Dollarweed



Dicandra



Pennywort (Dollarweed) Control

- Generally found in wet / overwatered sites -
CORRECT THIS PROBLEM FIRST!
- Multiple applications, 10 to 14 days apart.
- Injury to turfgrass can be expected.

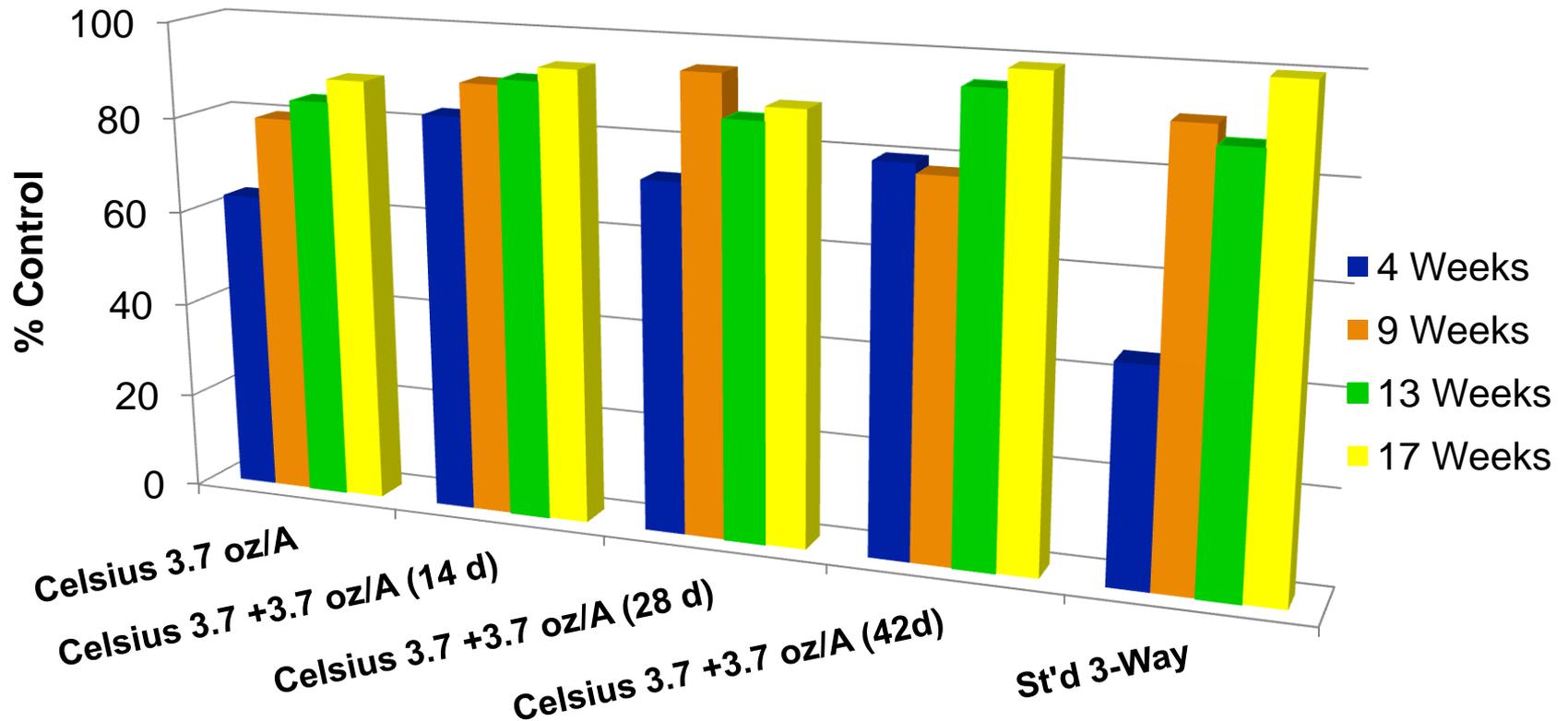
2,4-D, Dicamba, MCPP, MCPA (Mixtures)

- DO NOT use Dicamba under trees!!!

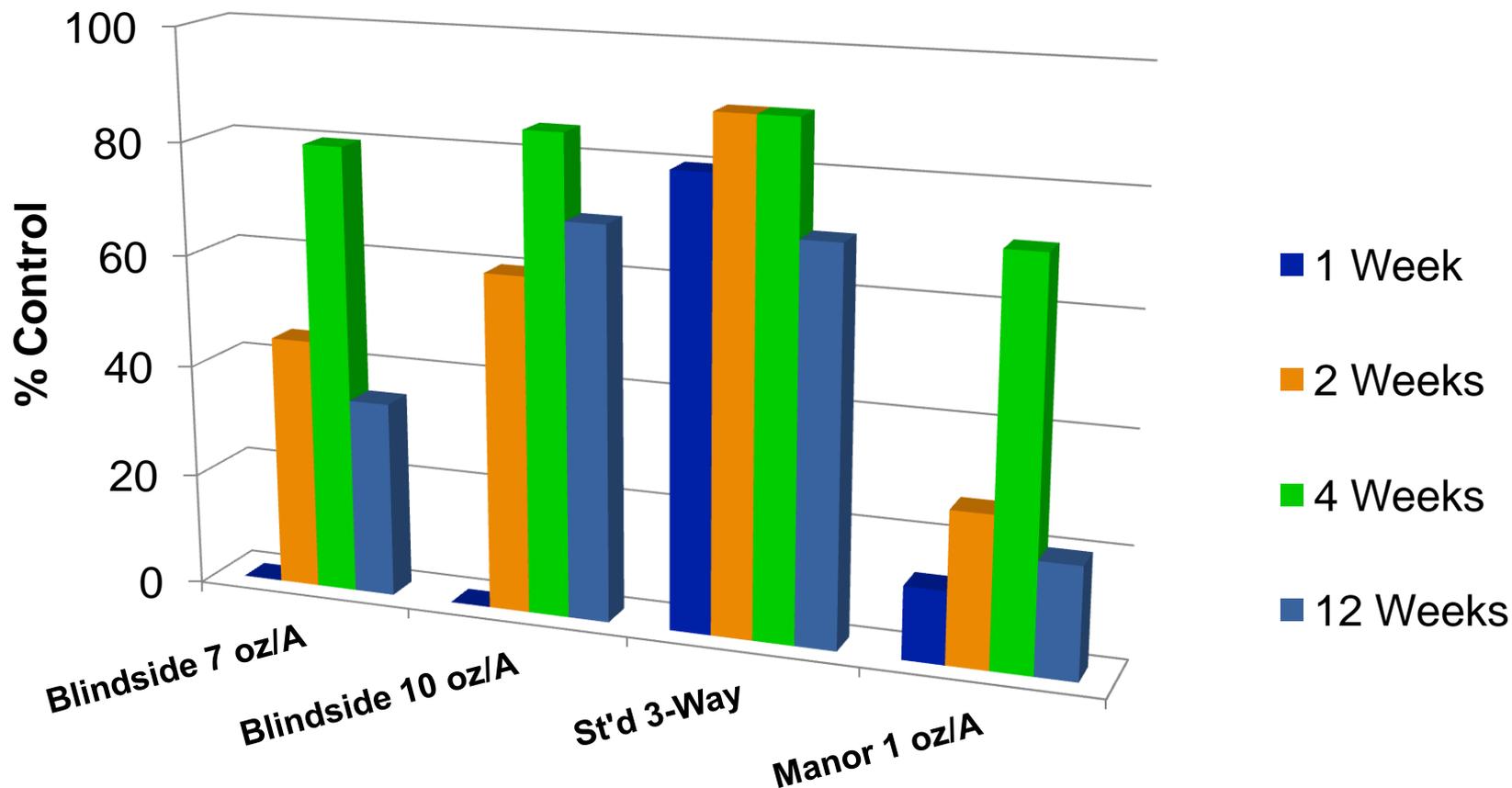
Atrazine

Celsius

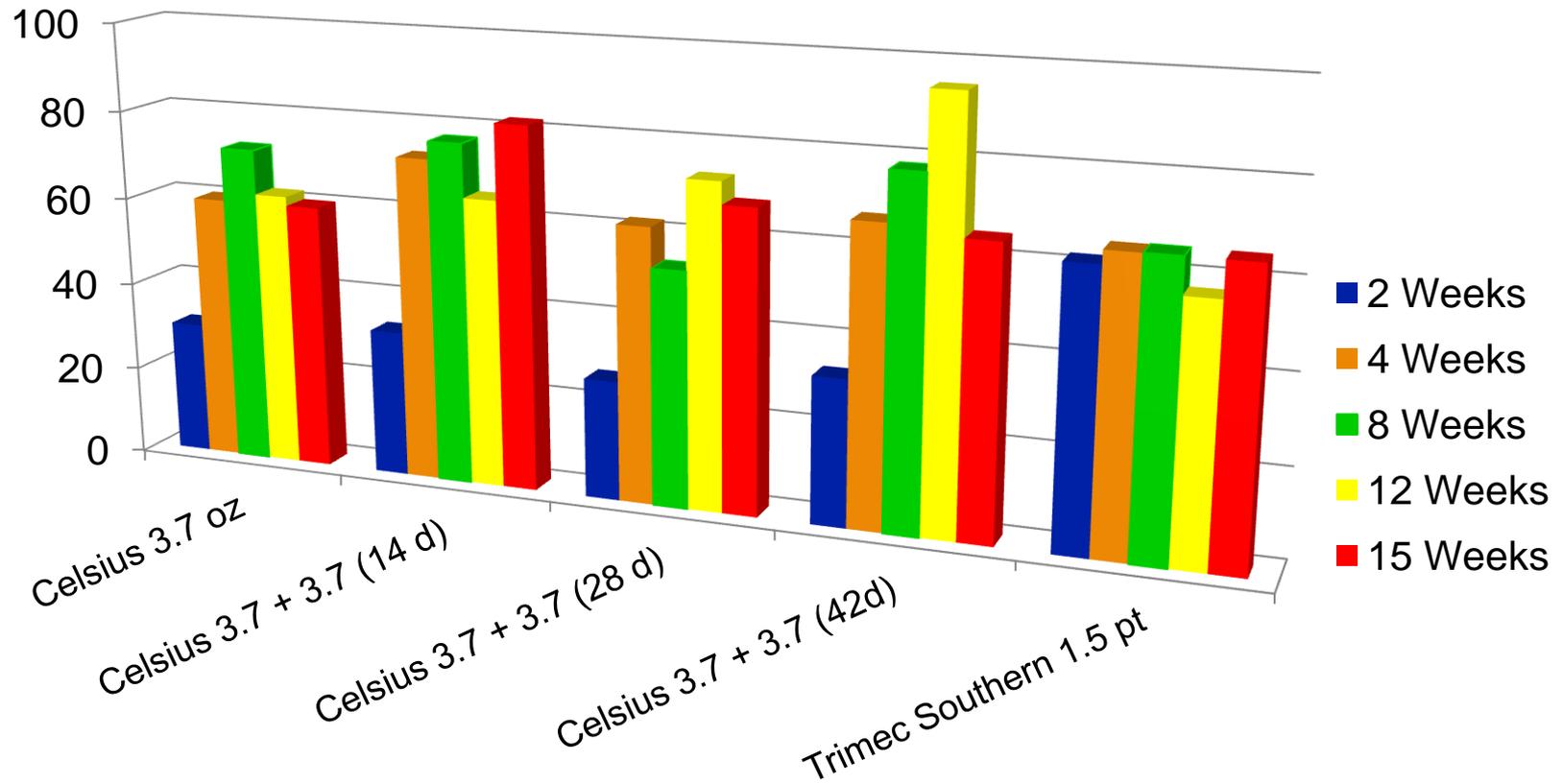
Dollarweed Control with Celsius



Dollarweed Control with Blindside



Dollarweed Control in St. Augustinegrass with Celsius – 2010



Doveweed

(*Murdannia nudifolia*)

- Prostrate “runner”
- Annual with fleshy, creeping stems, rooting at nodes.
- Leaves fleshy, alternate, narrowly lanced-shaped.
- Few hairs at base of leaf blade on margin
- Tiny blue flowers
- Seed in round capsules
- Opportunistic



Doveweed Control

- 2,4-D, Dicamba, MCPP, MCPA (Mixtures)
- Atrazine
 - applied twice 30 days apart
- Celsius – repeat applications
- Blindside – repeat applications
- Tribute Total – repeat applications

Lawn Burweed (Spurweed) (*Soliva pterosperma*)

- Low-growing, branched, winter annual.
- Leaves divided into narrow segments or lobes.
- Flowers small and inconspicuous.
- Fruits clustered in leaf axils with sharp spines that can cause pain and injury to humans.



Lawn Burweed (Spurweed) Control

- Key is to treat in when weeds are small

- Preemergence:
 - Atrazine
- Postemergence:
 - Atrazine
 - Trimec Southern
 - 2,4-D
 - Dicamba
 - MCPP

Chamberbitter (*Phyllanthus urinaria*)

aggressively competitive

summer annual



Chamberbitter (*Phyllanthus urinaria*)



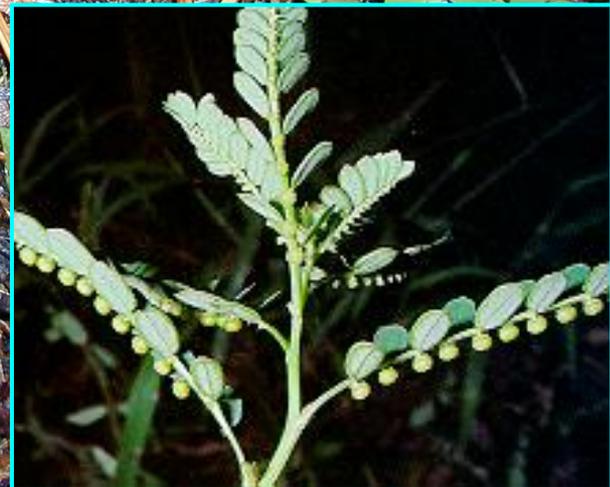
widely spatulate shaped cotyledons

oblong leaflets arranged alternately

green fruiting structure

attached directly

beneath stem



Chamberbitter Control (Phyllanthus)

- atrazine, 2 appl., 3 wks apart
- Gallery - Pre
- 2,4-D+MCPP+dicamba - multiple
- Manor
- Celsius

Virginia Buttonweed (*Diodia virginiana* L.)

- Spreading perennial with hairy branched stems.
- Leaves lance-shaped, joined across the stem by membrane.
- White tubular flowers with four lobes at each leaf axil along stem.
- Reproduces by seed, fleshy roots and stem fragments.
- Favors moist to wet sites.



Virginia Buttonweed Control

- Generally found in wet / overwatered sites -
CORRECT THIS PROBLEM FIRST!

2,4-D, Dicamba, MCPP, MCPA (Mixtures)

Blindside

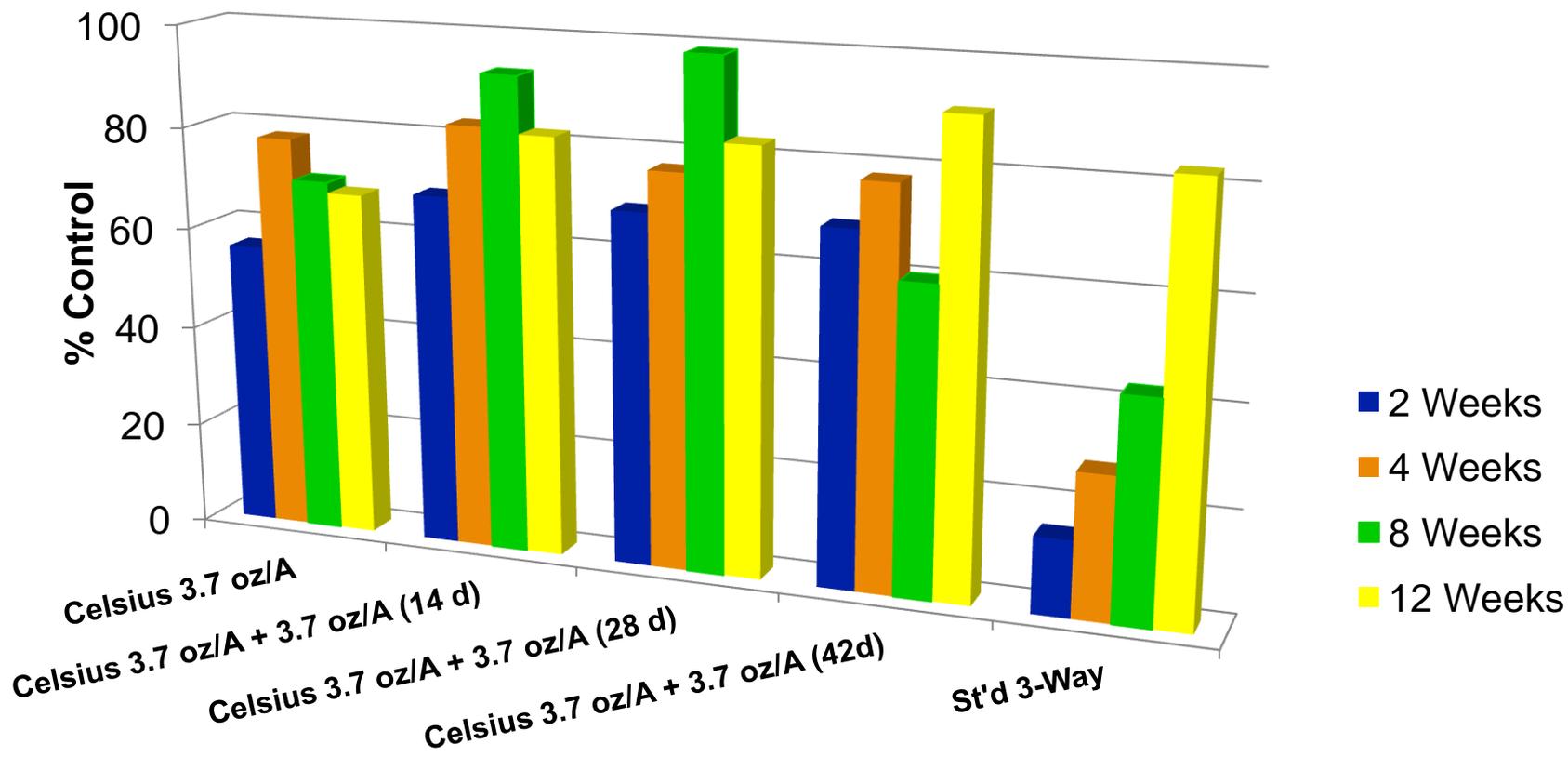
Tribute Total

Celsius

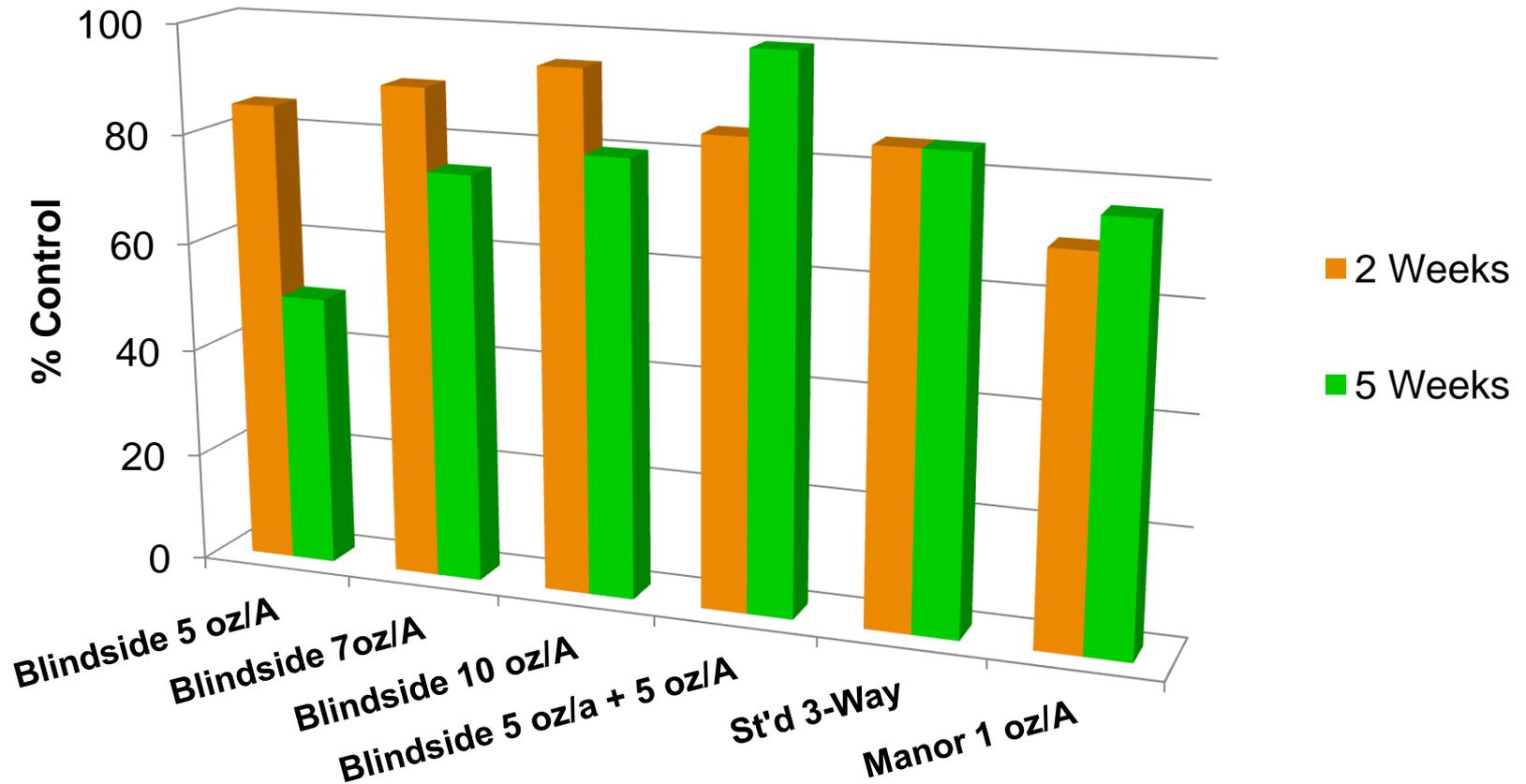
-Repeat applications.

If only a few plants present – hand remove, including below ground parts

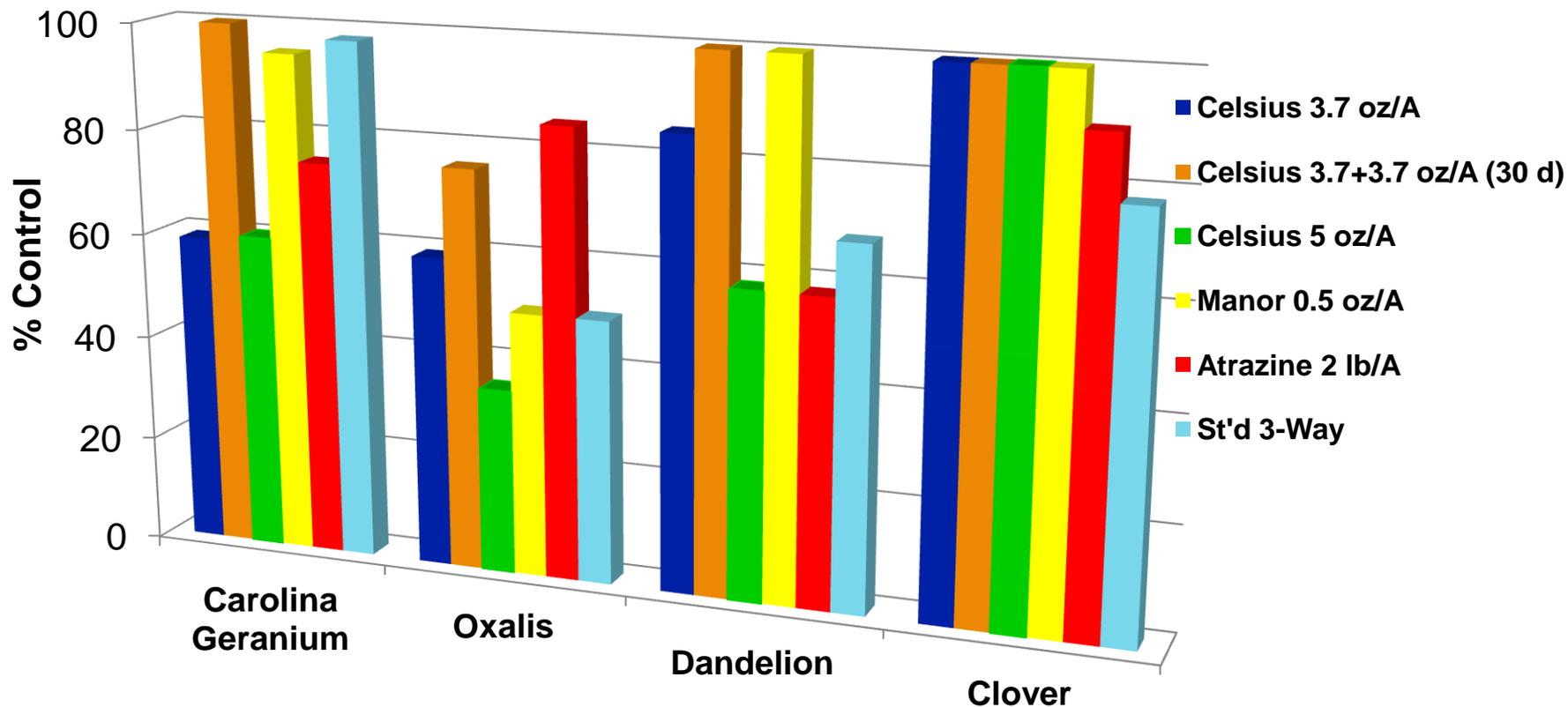
Virginia Buttonweed Control with Celsius



Virginia Buttonweed Control with Blindside

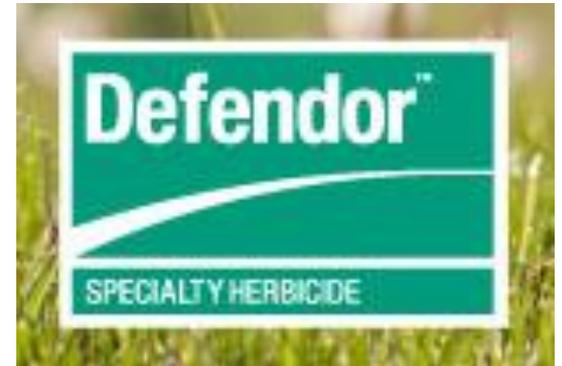


Winter Weed Control with Celsius



New Products

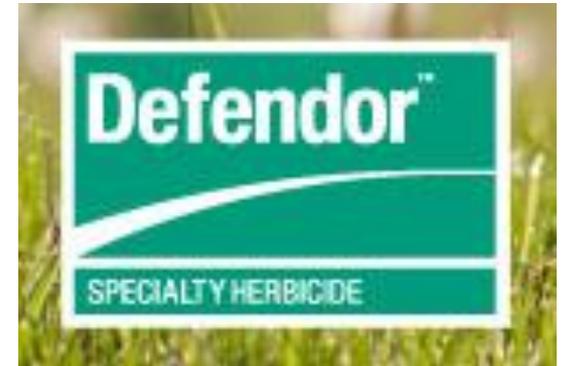
Defendor



- New postemergence product from Dow AgroSciences
- Active ingredient is florasulam
- 0.42 EC formulation
- Application Rate: 4 fl. oz./A
- Add surfactant when applied alone

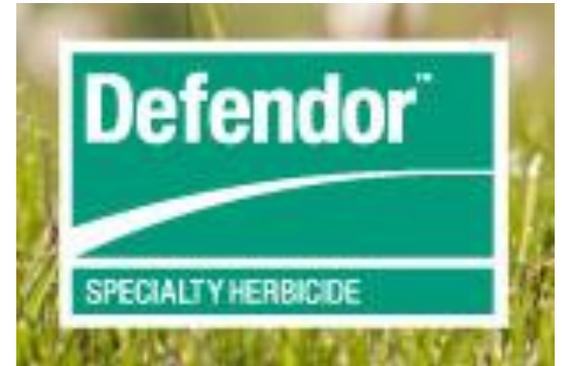
Defender

- Labeled for use on:
 - Bahiagrass
 - Bermudagrass
 - Centipedegrass
 - Seashore paspalum
 - St. Augustinegrass
 - Zoysiagrass



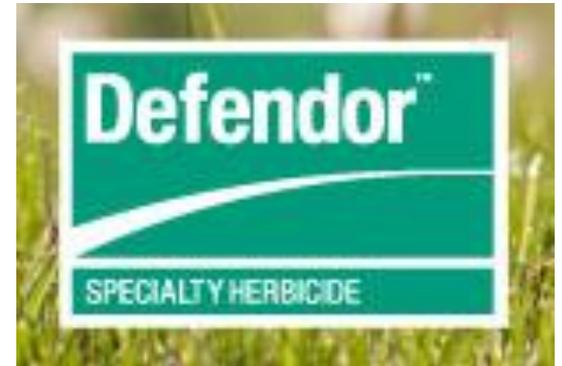
Defendor

- Can be used:
 - Residential lawns
 - Golf courses
 - Sports fields
 - Sod farms
 - Commercial turfgrass

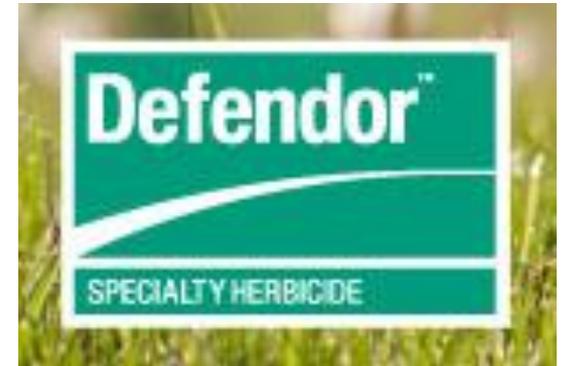


Defender

- Weeds Controlled:
 - Carolina geranium
 - Chickweed
 - Clover
 - Dandelion
 - Dollarweed
 - Black medic



Defender



- Can be tank-mixed with Dimension for application at preemergence crabgrass timing
 - Defender provides postemergence control of winter broadleaves
 - Dimension provides preemergence crabgrass control

Tribute Total

- 3-way combination product
 - Thiencarbazono
 - Foramsulfuron
 - Halosulfuron
- 60.5 % WDG
- Add non-ionic surfactant
- For difficult to control weeds add MSO + AMS
 - Do not use COC



Tribute Total



- Postemergence 1 to 3.2 oz./A
 - Annual bluegrass – 1 oz./A
 - Grass weeds 3.2 oz./A
 - Crabgrass
 - Goosegrass – moderate level of control
 - Dallisgrass – include MSO and AMS
 - Late summer, repeat 4-6 wk
 - Moderate level of control

Tribute Total

- Postemergence 3.2 oz./A
 - Sedges
 - Yellow
 - Purple
 - Broadleaf weeds
 - Virginia buttonweed
 - Doveweed – moderate level of control



Tribute Total

- Commercial and Residential
 - Bermudagrass
 - Zoysiagrass



Negate

- Postemergence herbicide
 - Quali-Pro
- 37% WDG
- Metsulfuron + rimsulfuron



Negate

- Bermudagrass and zoysiagrass
- Postemergence control in
 - Golf courses
 - Sod farms
 - Sports fields
 - Commercial lawns
- **Non-Residential**



Negate

- Weeds controlled at 1.5 oz./A + NIS
 - Bahiagrass
 - Annual bluegrass
 - Perennial ryegrass (transition aid)
 - Clover
 - Henbit
 - Dollarweed
 - Oxalis



TOWER[®] HERBICIDE

- “New” **Preemergence** herbicide from BASF
 - New to turfgrass use
- Dimethenamid – 6 EC
 - 21 to 32 fl oz./A



- Registered for:
 - Bermudagrass
 - Centipedegrass
 - St. Augustinegrass
 - Seashore paspalum
 - Zoysiagrass



- **Turfgrass uses:**
 - **Golf course**
 - **Sod farms**
 - **Commercial**
 - **Athletic and sports fields**
 - **Residential**
 - **Recreational and parks**

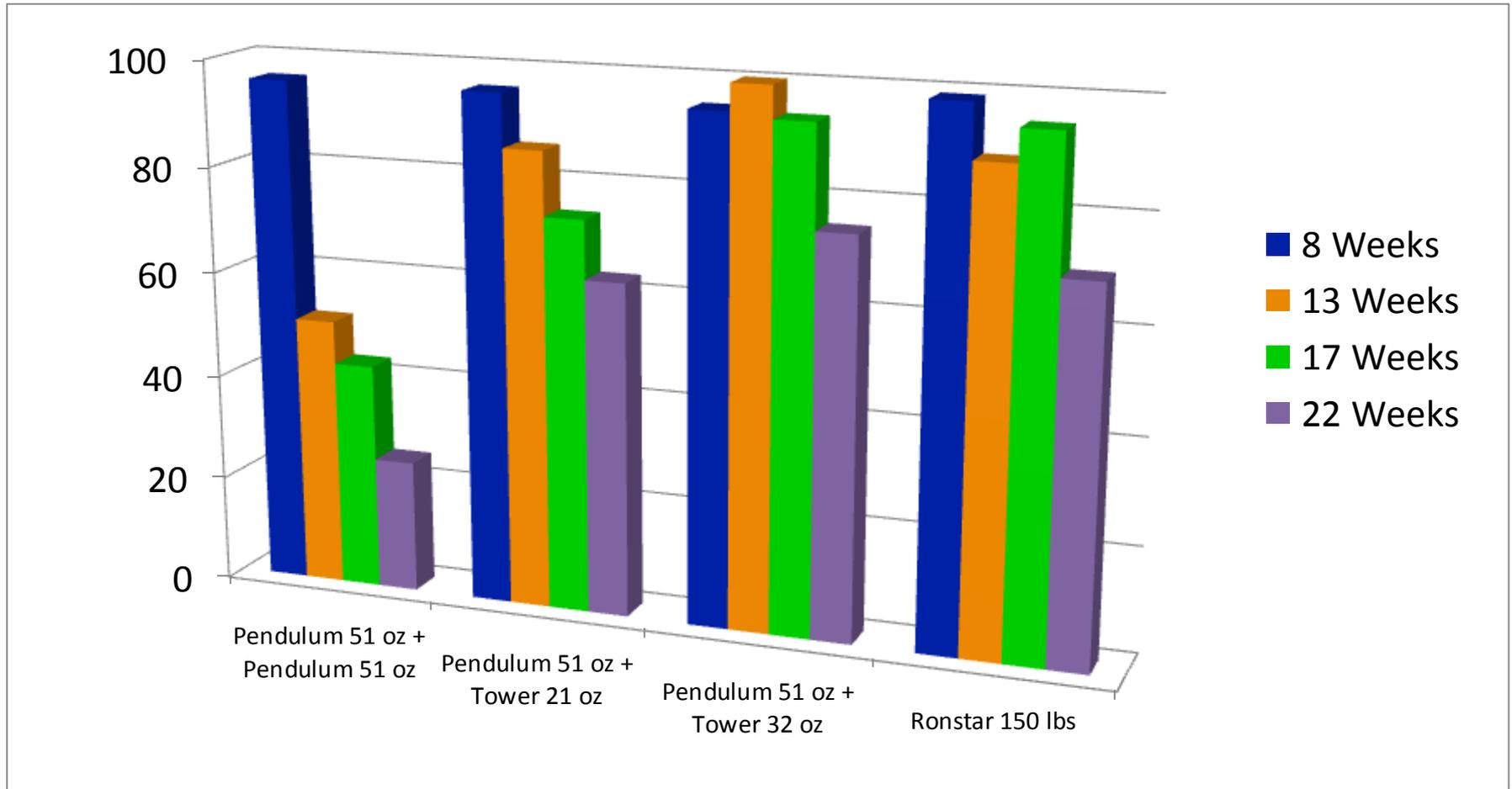
TOWER[®] HERBICIDE

- **Preemergence control of:**
 - **Crabgrass**
 - **Goosegrass**
 - **Sandbur**
 - **Doveweed**
 - **Florida pusley**
 - **Spurge**
 - **Yellow nutsedge**



- Used in a program with Pendulum

Goosegrass Control with Tower Herbicide – 2010





- Recently registered in Turfgrass
- Dimethenamid + pendimethalin
- 1.75 G formulation
- 100 to 200 lb./A



- **Registered in:**
 - **Bermudagrass**
 - **Centipedegrass**
 - **St. Augustinegrass**
 - **Seashore paspalum**
 - **Zoysiagrass**



- **Turfgrass uses:**
 - **Golf course**
 - **Sod farms**
 - **Commercial**
 - **Athletic and sports fields**
 - **Residential**
 - **Recreational and parks**



- **Weed Controlled Preemergence:**

- Annual bluegrass
- Chickweed
- Crabgrass
- Cudweed
- Doveweed
- Goosegrass
- Spurge
- Lawn burweed
- Clover
- Yellow woodsorrel

Questions?

