Turf Weeds and Management

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PAT Category 3B - Commercial Turf
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Managing weeds requires a strong understanding of:

- weed identification
- weed biology and life cycle
  - annual - summer or winter
  - biennial
  - perennial (solitary or creeping)
- weed ecology
- control strategies

Successful weed management programs will require that you PLAN AHEAD!!!!!


Statue of Weed Scouting
Scout for weeds every time you are on a site!!


Be Persistent!!!!

PLANT ID MADE EASY!!

Poor Identification = Poor results

Most often the cause of poor weed control!!!!!!!!

Preventative Strategies!!
Can your customer help you??

Reduce adjacent areas that are weedy or overgrown

Minimize weed seed on equipment: mowers, aerators, etc.

Minimize movement and/or introduction of weed seed via soil, especially if weed populations at the site are initially low.

“Bagged weed seeds” ?? Composting often does not kill all weed seeds. Check compost. Compost can grow really nice weeds!!!!

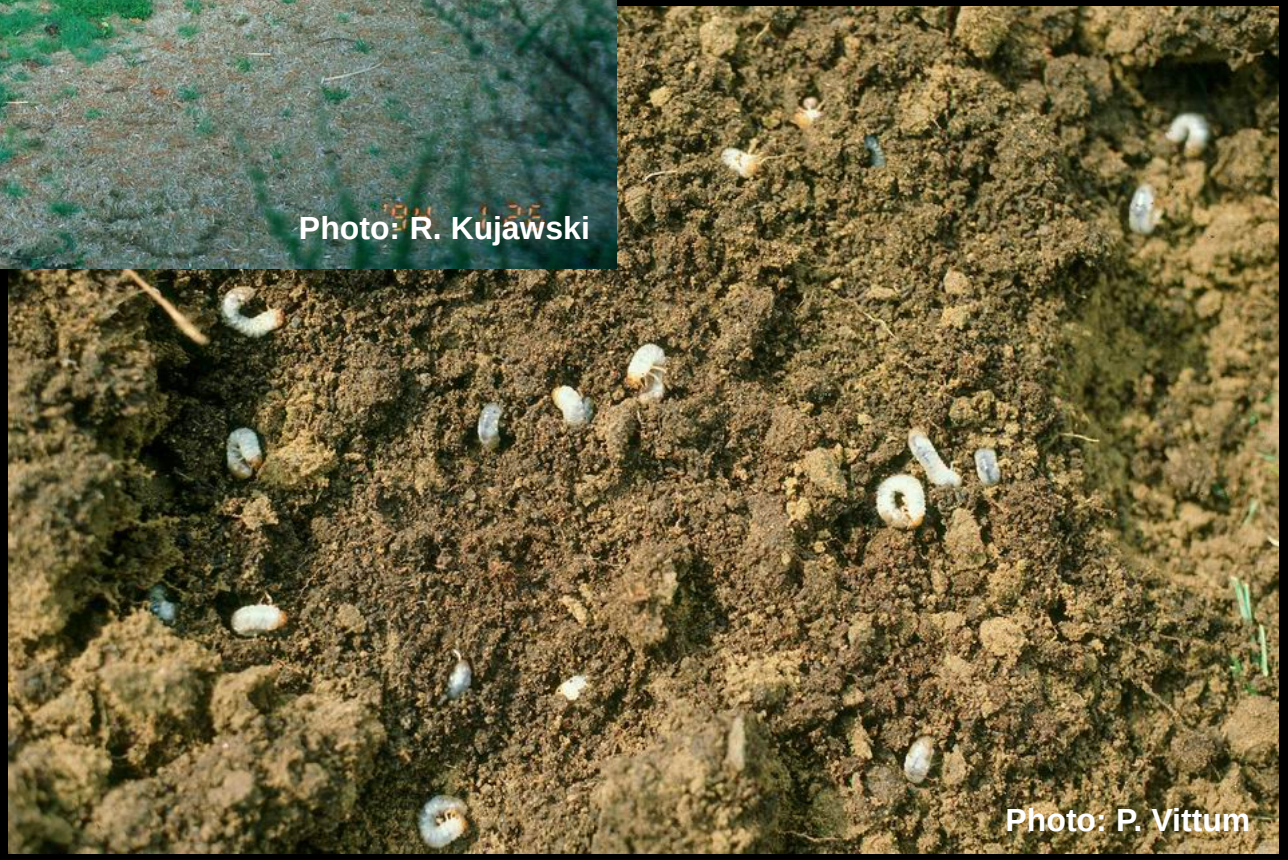
Are you introducing weed problems with compost?

Compost can grow GREAT weeds!!!!


Control tough perennials in root balls before planting

Manage diseases & insects

Reseed damaged areas to prevent weed encroachment






Weeds are the <u>RESULT</u> of a poor turf, not the <u>CAUSE</u> of a poor turf.




The best defense against weed encroachment is to achieve and maintain a healthy, dense and functional turf.

The Impact of Cultural Practices on Weed Management

Mowing -

- raise during germ. (May - June)
- lower + collect clippings during seed production (late Aug - Oct)
- highest acceptable height of cut will prevent light on soil

Irrigation

- avoid summer dormancy
  turf not actively growing but weed are (crabgrass)
- avoid overwatering
  (annual bluegrass, bentgrass)


Irrigation - avoid summer dormancy
- turf is not growing but weeds are
- if allowing dormancy have effective control measures in place

Fertilization

- maintain density & healthy turf
- reduce N when weeds are competitive
- avoid high N @ turf summer dormancy

Aeration

- reduce compaction
- increase infiltration
- avoid peak weed germ. periods

Selection best adapted species and cultivars

- **fertility level**
- **soil moisture**
- **use of turf**

Correct problems:

fertility, pH, excessive moisture, compaction, shade, dry areas

Will greatly impact weed management in the future!!!!!

Optimal Establishment Time

- avoid weed germination periods I.e. low pressure from annual weeds
- best time (Aug 15 to Sept 15, PR- Oct 1)
- temperature and moisture
- adequate moisture, phosphorus?? & nitrogen
- quality turf seed

Sod

- results in instant cover
- weeds will still a problem in the future

Crabgrass Control

Preemergence

- timing

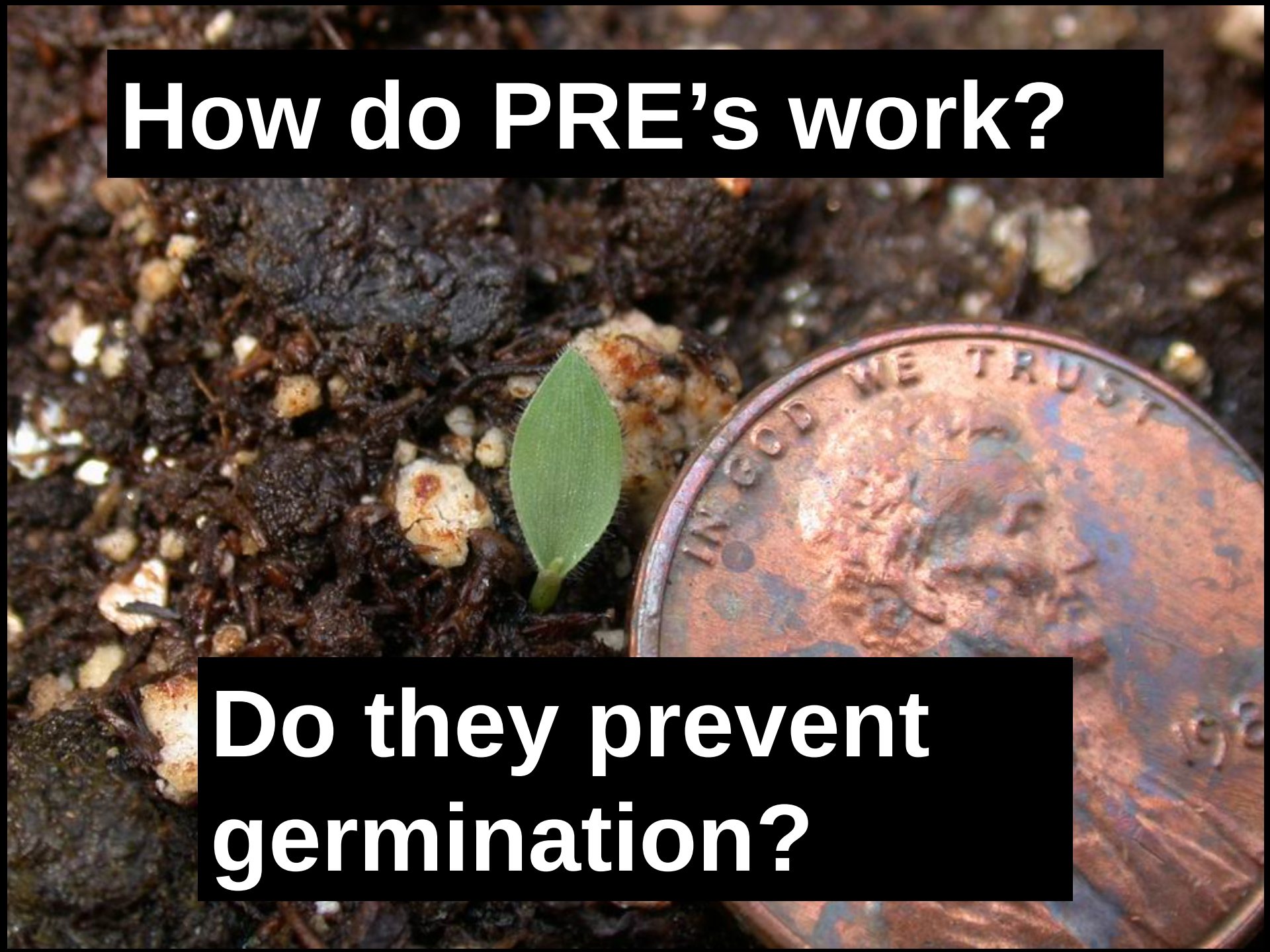
full bloom of forsythia

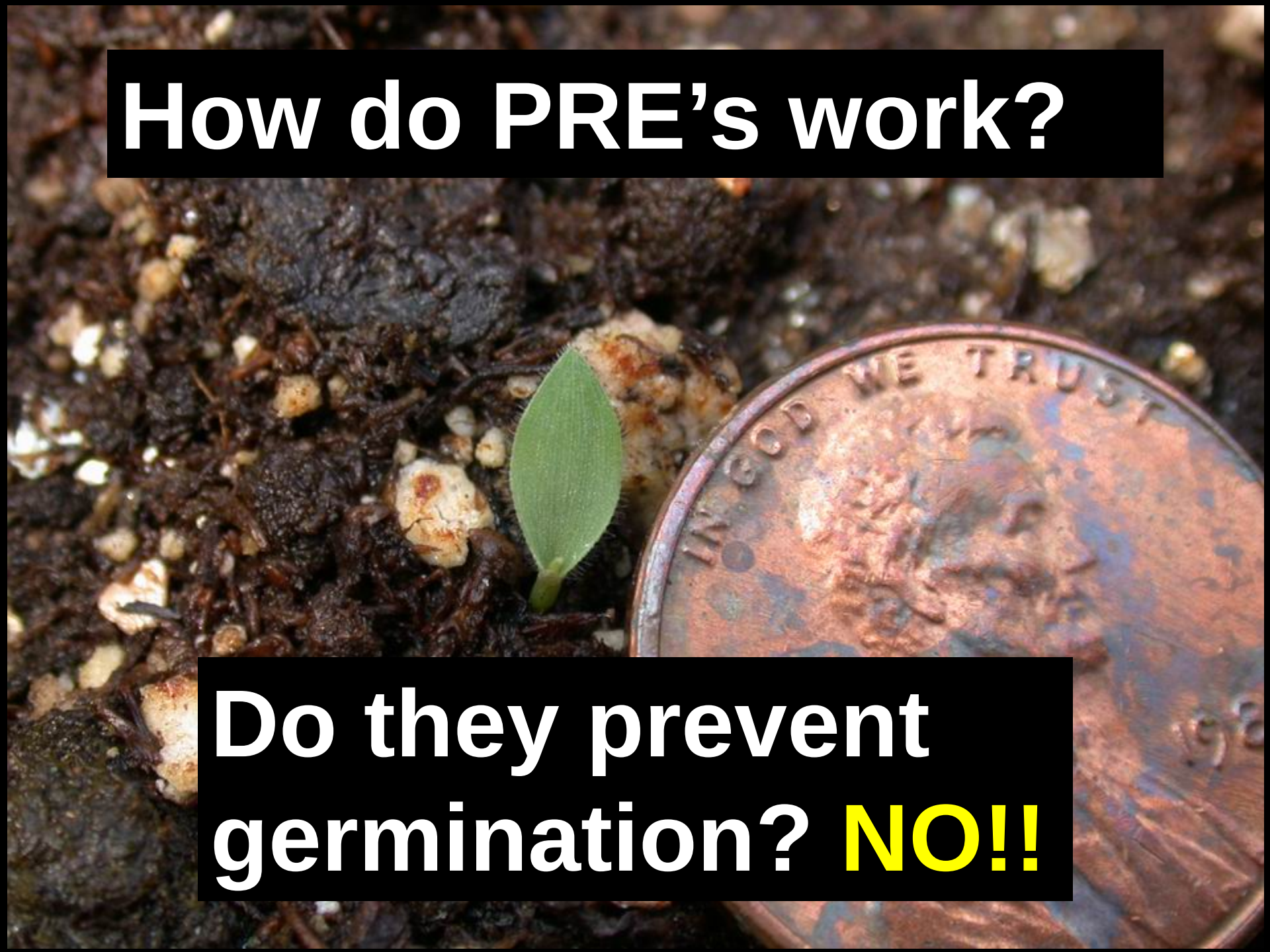
NEED TO BE WATERED IN !!!!!!!!!

(if not they may not work well)

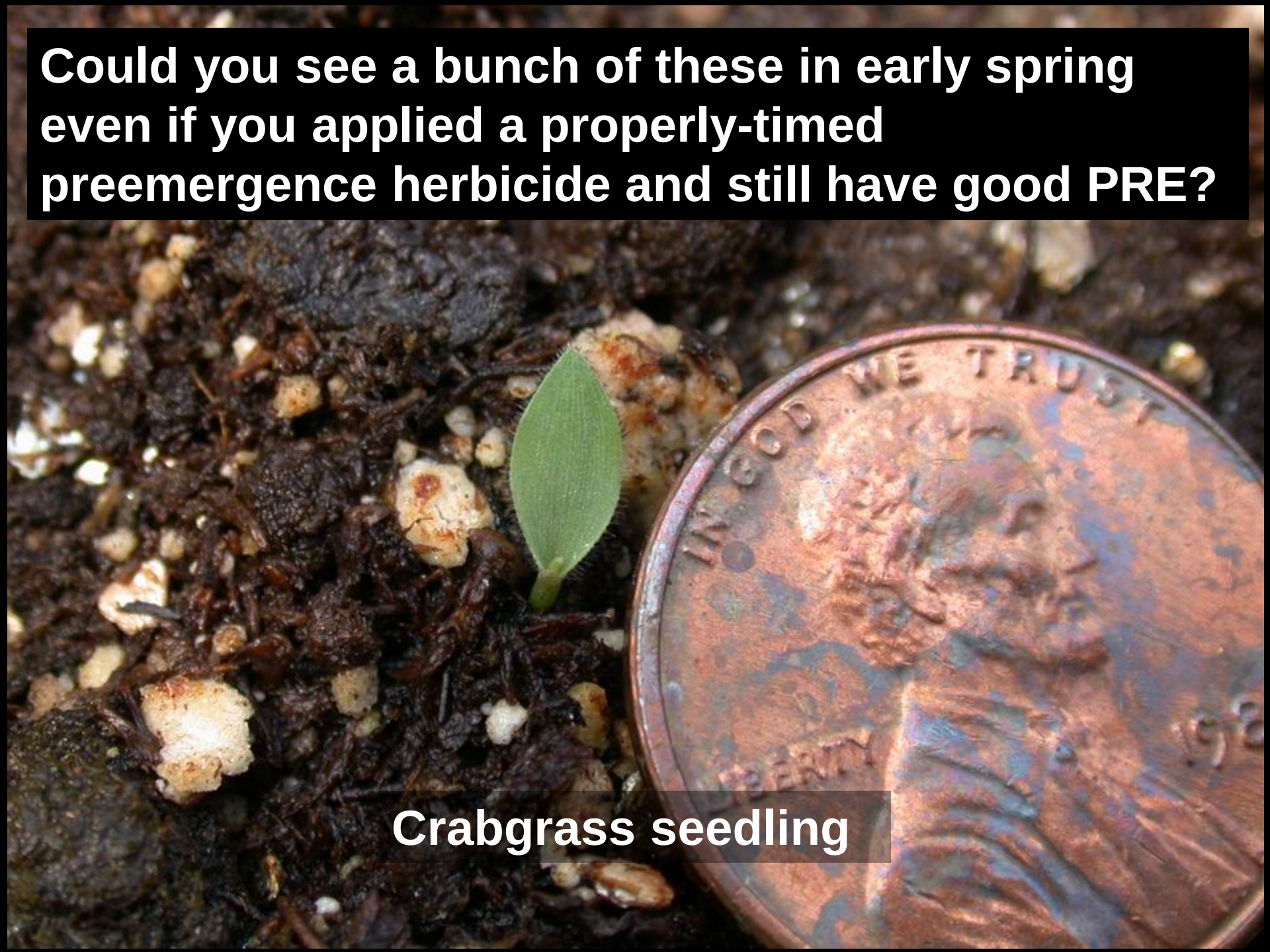
- herbicides (alone or on-fertilizer formulations)
  - dithiopyr - Dimension
  - prodiamine - Barricade
  - pendimethalin - Pre-M, Pendulum, Halts
  - oxadiazon - Ronstar
  - benefin + trifluralin - Team
  - dimethenamid - Tower

(all above - reseeding after 3 to 4 months)

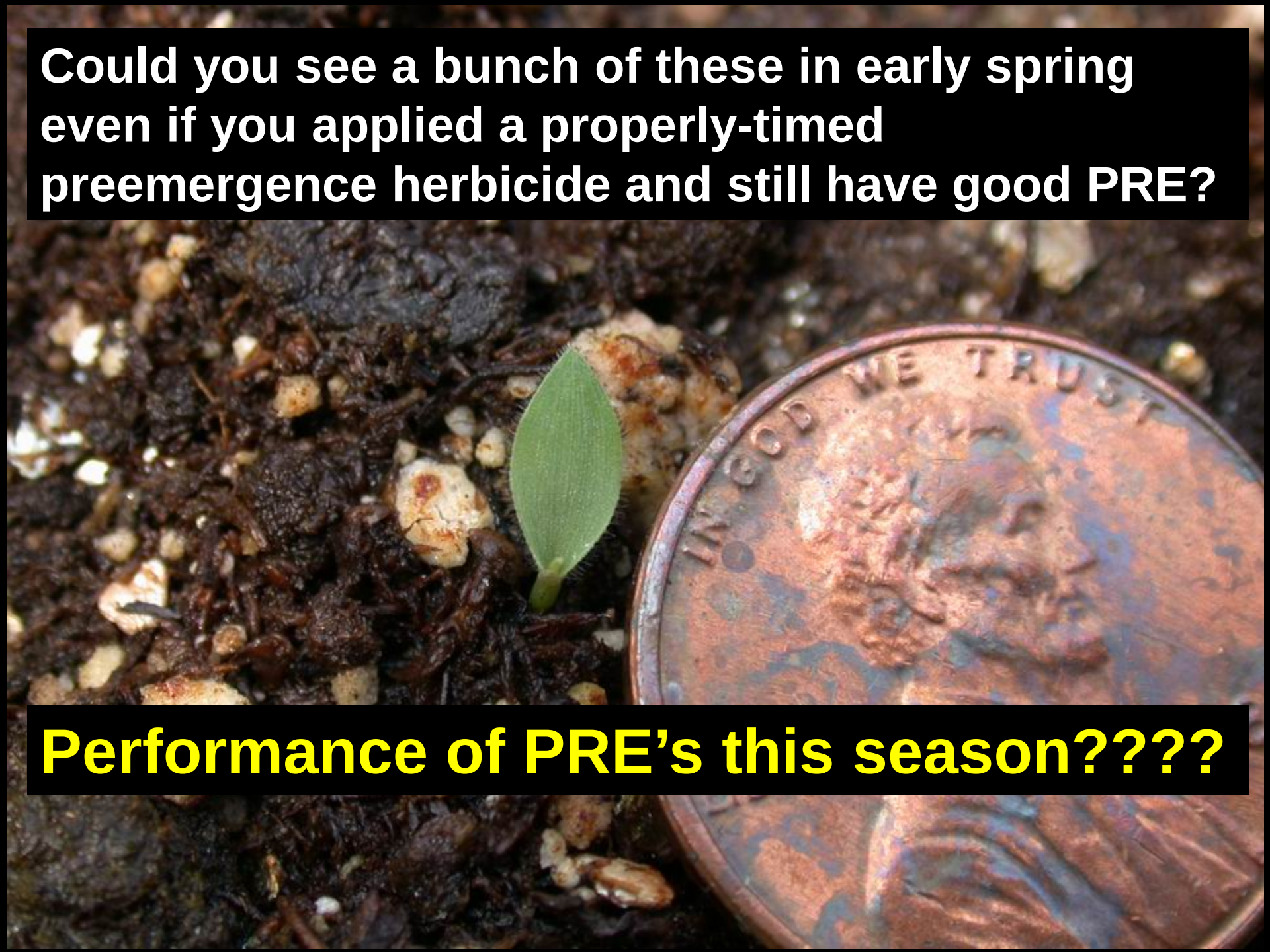

How do PRE's work?
IN GOD WE TRUST
Do they prevent germination?


How do PRE's work?
IN GOD WE TRUST
Do they prevent germination? NO!!

Could you see a bunch of these in early spring even if you applied a properly-timed preemergence herbicide and still have good PRE?



Crabgrass seedling


Could you see a bunch of these in early spring even if you applied a properly-timed preemergence herbicide and still have good PRE?
IN GOD WE TRUST
Performance of PRE's this season????

(safe on new seedings & reseeding)

siduron - Tupersan

quinclorac - Drive, SquareOne

mesotrione - Tenacity

Postemergence

- timing
  - best before first tiller

- herbicides
  - fenoxaprop: Acclaim Extra
  - dithiopyr: Dimension - very early POST
  - quinclorac:
    - (small and large, miss 2- to 4- tiller)
    - before, at and after seeding
  - mestrione: Tenacity

DO NOT RELY ON “POST ONLY” PROGRAMS!

Effective crabgrass programs use PRE and POST as needed for escapes.

Reason:

1. **PRE - control per $ is greater**
2. **POST - narrow application window**

mesotrione

Trade name: TENACITY

Label: initial label: golf course and sod fields
2010 label additions: athletic fields, parks,
residential & commercial properties & lawns

Mode of action: HPPD inhibitor (p-hydroxyphenylpyruvate dioxygenase) which blocks formation of plastoquinone and carotenoid synthesis production
symptoms - bleaching followed by necrosis

BETTER HERBICIDE PERFORMANCE WITH SUNNY WX

mesotrione - Tenacity

- preemergence annual bluegrass - suppression

- postemergence annual bluegrass
  - no control, will light it up

- crabgrass (< 4-tiller), common chickweed, white clover, yellow foxtail, oxalis, groundivy

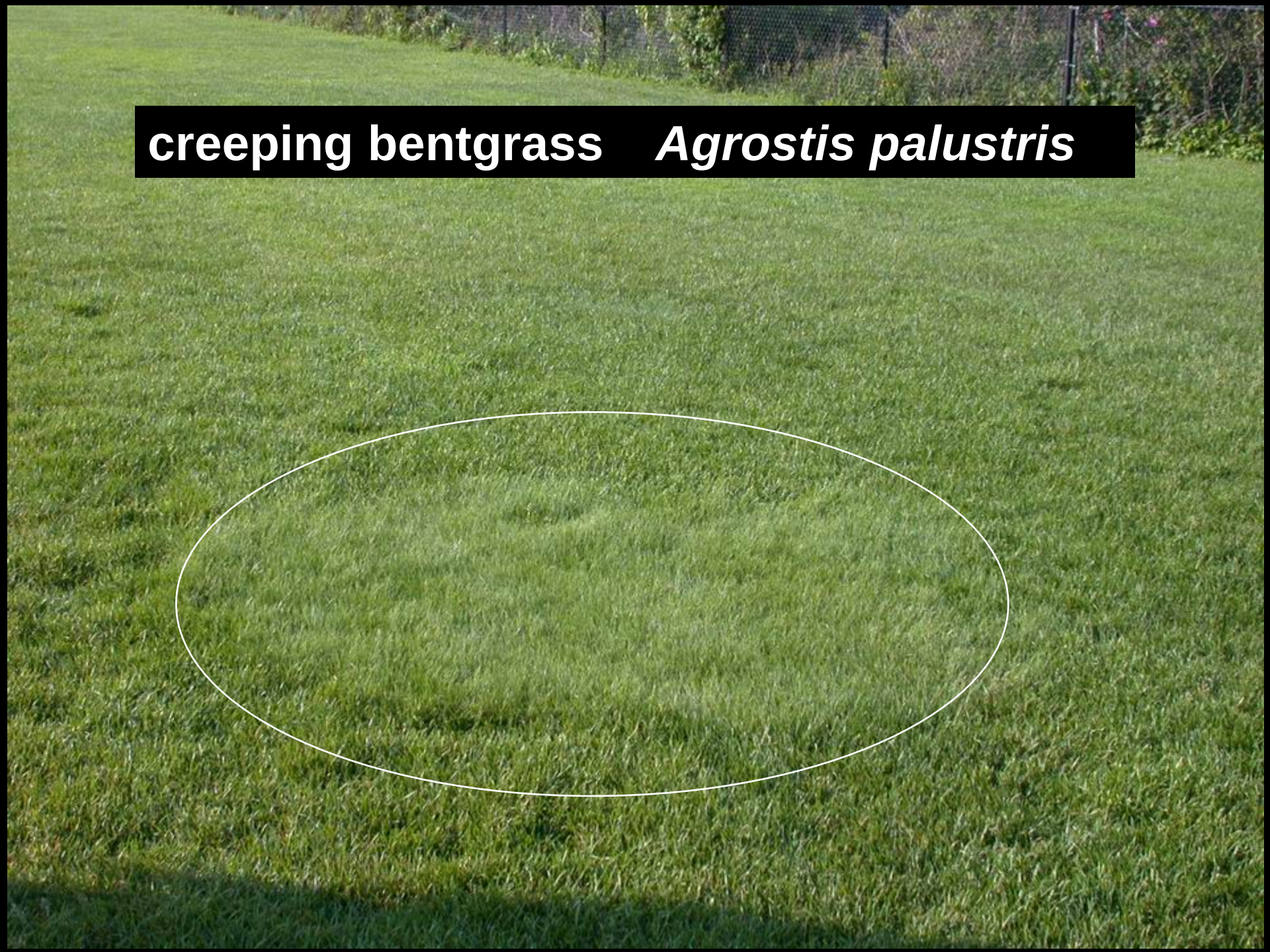
- activity on creeping bentgrass


nimblewill *Muhlenbergia schreberi*
- very shade tolerance
- warm-season grass confused with zoysia

creeping bentgrass

Agrostis stolonifera

Agrostis palustris


creeping bentgrass *Agrostis palustris*

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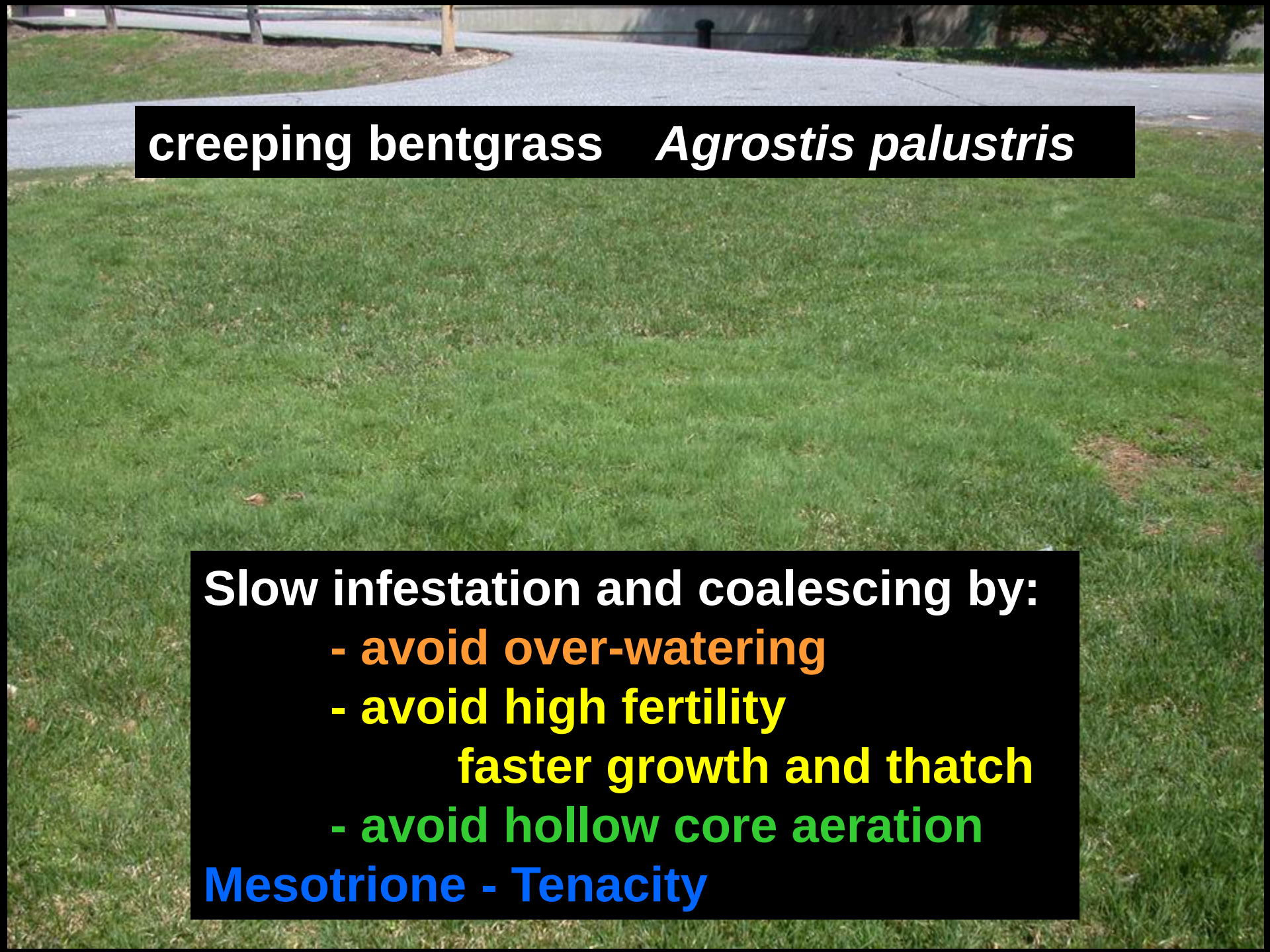

creeping bentgrass *Agrostis palustris*
Slow infestation and coalescing by:
- avoid over-watering
- avoid high fertility
faster growth and thatch
- avoid hollow core aeration
Mesotrione - Tenacity

mesotrione - Tenacity

selective control of creeping bentgrass
tight mow and hard overseed of PR


CRABGRASS????


paspalum Paspalum setaceum

paspalum ***Paspalum setaceum***

***Paspalum* spp.**

- renovate after glyphosate

- old standard - MSMA (gone)

- Tenacity application in late summer

NEW ACTIVE!!

topramezone - Pylex

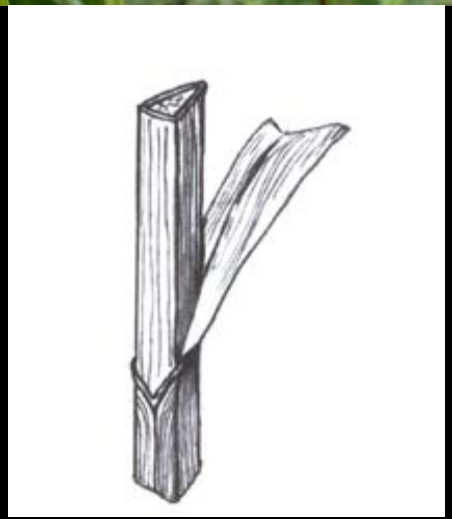
- HPPD inhibitor - “bleacher”
- residential and athletic, spot trt. only
- 0.023 - 0.034 fl oz (7 -10 ml) / 1000
- notable weeds:
  - POST goosegrass at all stages
  - crabgrass, barnyardgrass, stiltgrass crp. bentgrass, dallisgrass
  - white clover, ground ivy, dandelion, *Oxalis*, speedwell

HPPD inhibitors
such as Pylex and Tenacity

bleachers - weeds and some turfgrasses turning white!!!!

Alleviate bleaching by tank-mixing a product that containing triclopyr

yellow nutsedge
Cyperus esculentus



triangular stem

yellow nutsedge *Cyperus esculentus*

Yellow nutsedge

Less obvious with frequent mowing

Early season POST:

bentazon: Basagran

halosulfuron:

Manage, Sedgehammer, ProSedge

sulfentrazone - Q4 Plus, Surge, Dismiss

mesotrione - Tenacity

PRE - before spring emergence:

dimethenamid - Tower (PRE nutlet sprout)

Heavy infestations:

glyphosate early season: before June 21st

Timing important!!!!!!!!

yellow nutsedge

Cyperus esculentus

dimethenamid - TOWER

- preemergence crabgrass material
- RUP in Massachusetts
- groundwater protection list - MA Zone ll
- PRE activity on yellow nutsedge
- FREEHAND - landscape use
  dimethenamid + pendimethalin
  not for cool-season turf

Broadleaf Weed Control

Broadleaf preemergence

- isoxaben (Gallery)
- dimethanamid (Tower)
- conventional crabgrass PRE herbicides

control BRDLF weeds as a “bonus”

- benefin
- bensulide
- dithiopyr
- mesotrione
- oxadiazon
- pendimethalin
- prodiamine
- quinclorac

Broadleaf Weed Control

Broadleaf postemergence (more common)

- herbicides – alone & 2- to 4-way combinations

2,4-D, 2,4-DP, bromoxynil, MCPP, MCPA, dicamba, triclopyr, clopyralid, fluroxapyr, quinclorac, carfentrazone, sulfentrazone, pyralflufen, penoxsulam, florasulam

- timing

1. **late summer - early fall**
2. **spring to early summer**

Broadleaf Herbicide Products

Sprayable formulations provide better control than granular formulations.

Granular materials difficult to control in areas near sensitive landscape beds.

Amine or Ester Formulations

amines

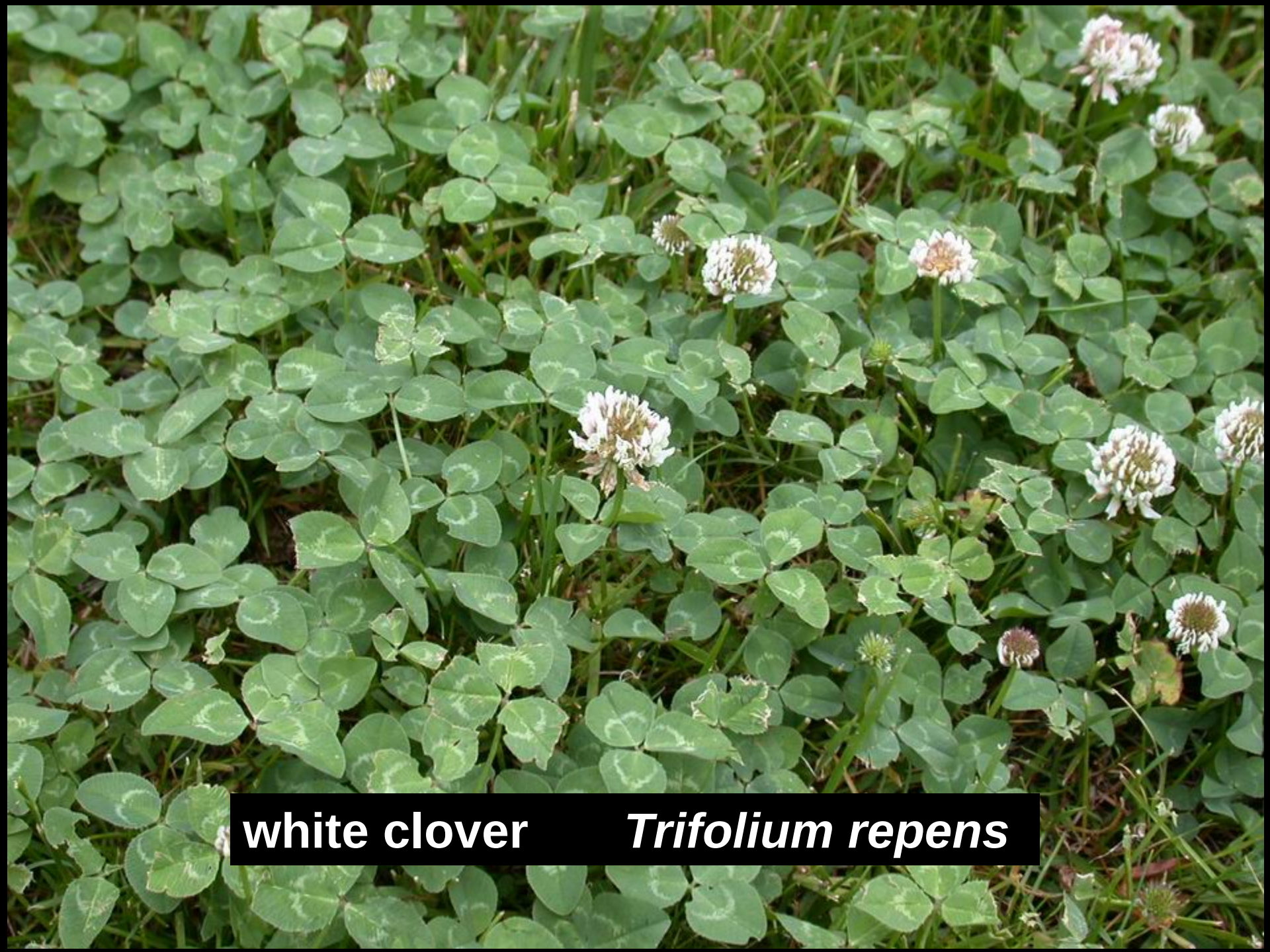
- less volatile, safer around susceptible ornamentals
- safer in spring near soft ornamentals
- common for turf herbicides

esters

- more volatile, low-volatile available
- better penetration of leaf cuticle
- more effective on “difficult-to-control” weeds
- better in cooler weather, use in the fall
- common for brush herbicides

Winter annual weeds!!!!!!!!

- POST BRD herbicide in spring
- hold irrigation and dry down site
- score the BRD “two-for” (fall trt.)
- PRE annual grass herbicides applied in late summer to early fall


white clover Trifolium repens

White Clover Control

- 2 and 3-way comb phenoxy/dicamba
  - good w/ retreat

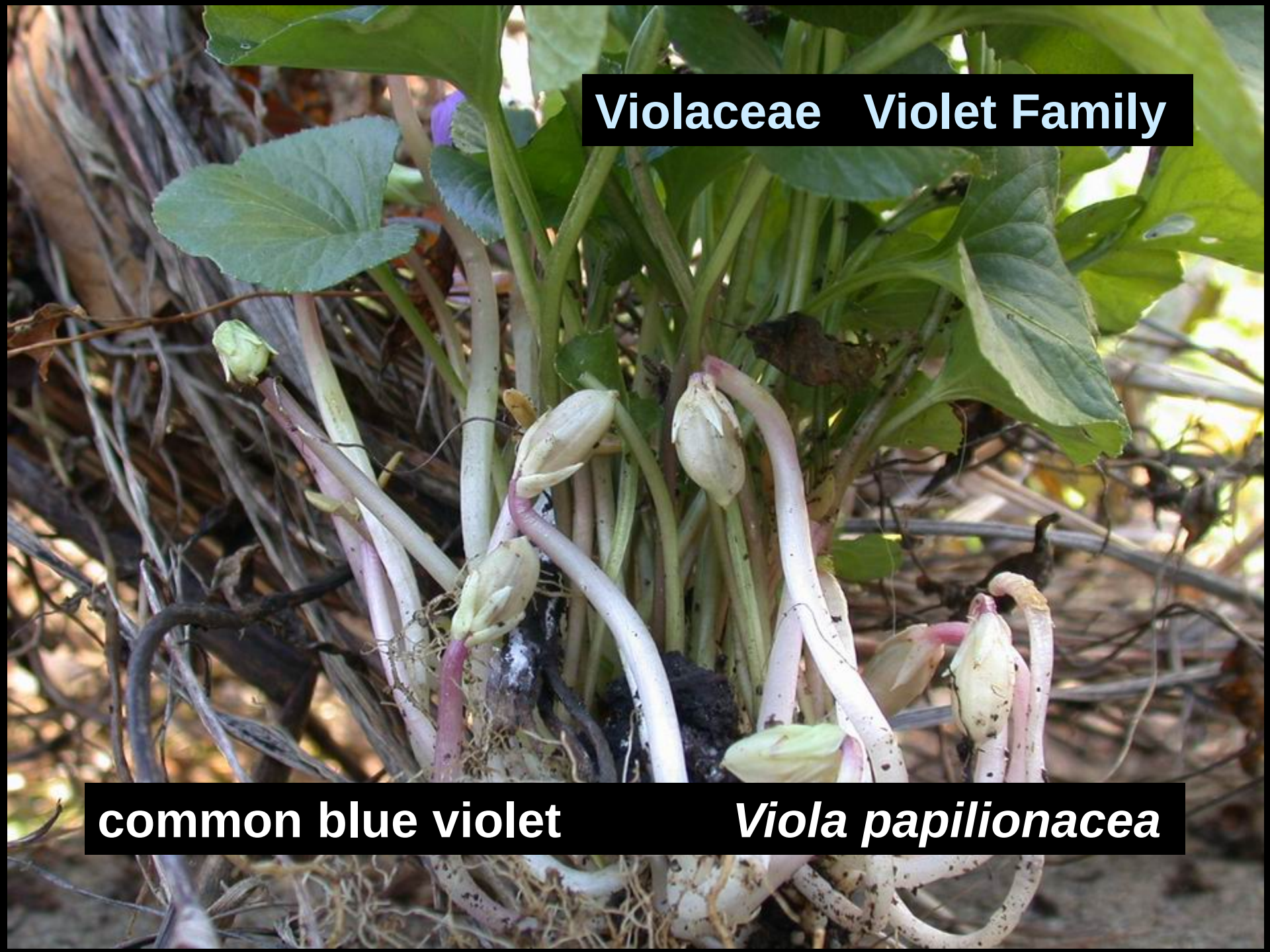
- combinations with clopyralid or fluroxypyr
  - no clopyralid on residential turf

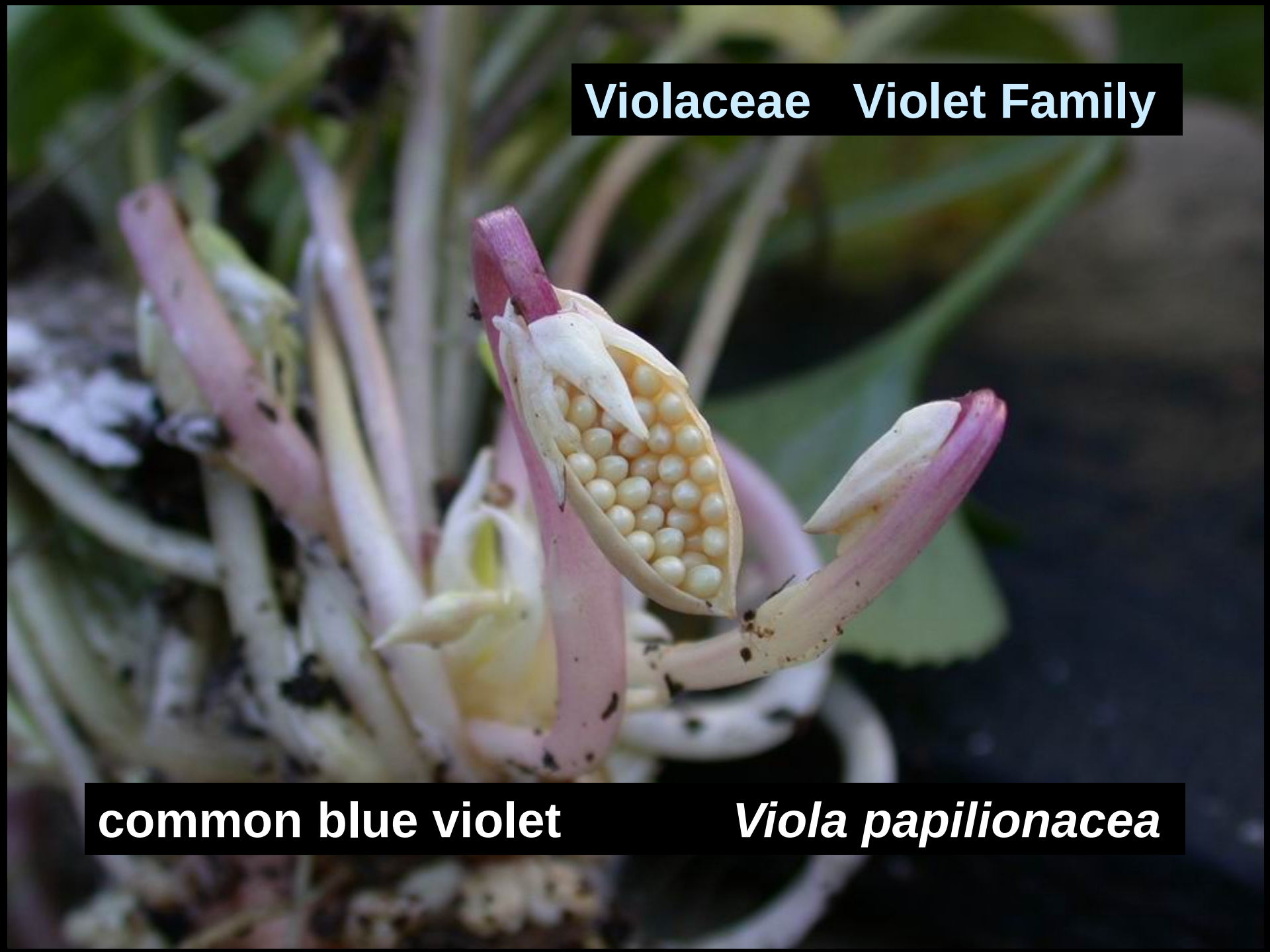
- quinclorac (DRIVE) – excellent, complete

Ground Ivy
Glechoma hederacea

Very competitive in shaded turf

Wild violet


Violaceae Violet Family
common blue violet Viola papilionacea


Violaceae Violet Family
common blue violet
Viola papilionacea

Wild Violet and Ground Ivy Control

- combination products w/ triclopyr and/or dicamba

- timing
  1. fall (BEST) - Sept. to mid-Oct.
  2. mid-spring - early summer

- sprayable > granular

- retreat at first signs of weed regrowth

- glyphosate for heavy infestations

JAPANESE KNOTWEED

JAPANESE KNOTWEED CONTROL

- frequent cultivation or digging (equipment)

- repeated cutting/mowing - slow spread & reduced vigor

- glyphosate - flowering (late summer)
  - cut back in late May to early June to facilitate treatment


Photo:Art Gover, Penn State

JAPANESE KNOTWEED MANAGEMENT

- frequent cultivation or digging (equipment)

- repeated cutting/mowing - slow spread & reduced vigor

- glyphosate - flowering (late summer)
  - cut back in late May - early June to facilitate treatment

- stem injection –
  inc. in herbicide and labor

- several years of mgt.


THANK YOU!!!!!!
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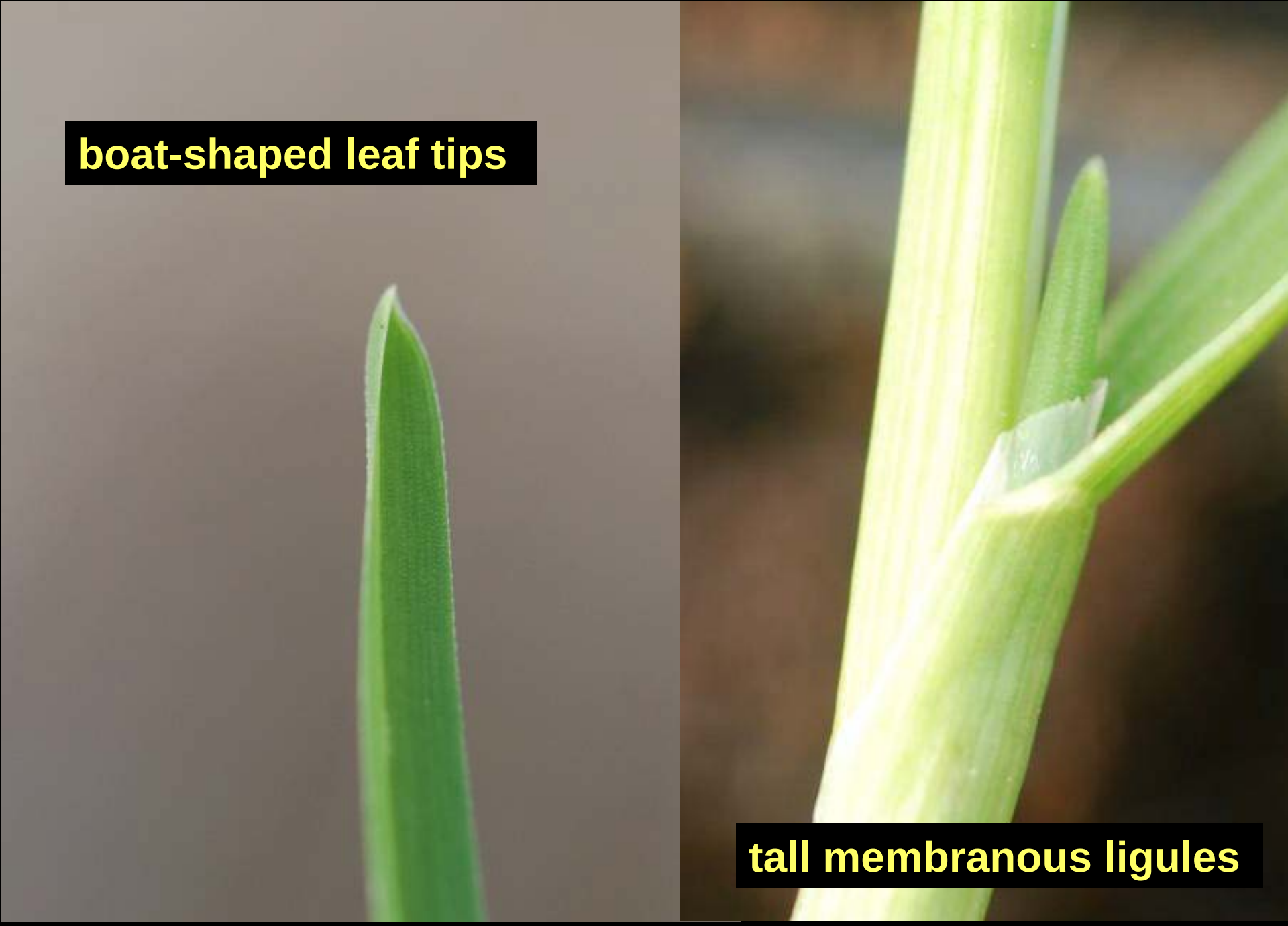
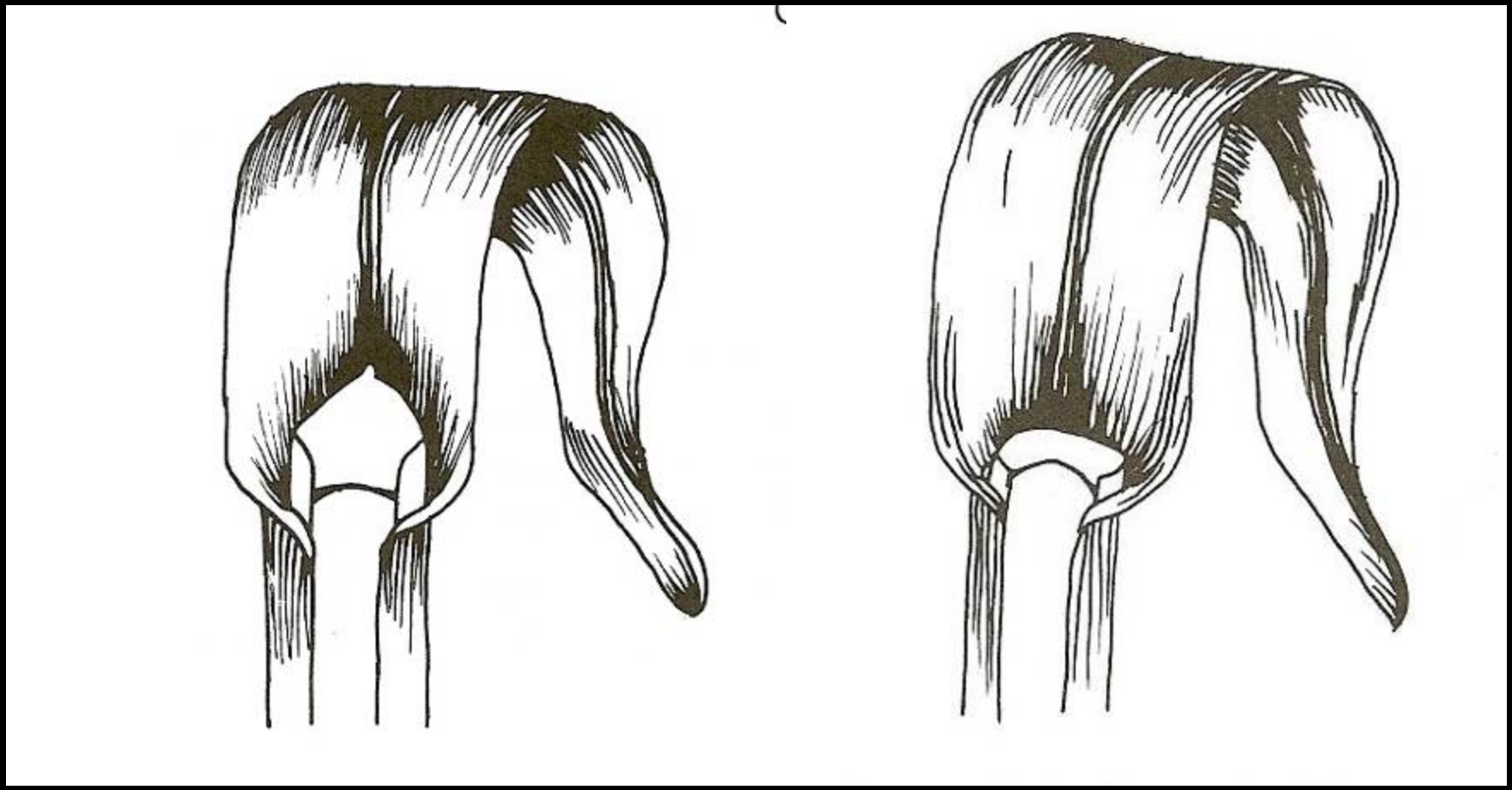
Annual bluegrass, *Poa*, grows in dense spreading tufts with lower nodes often rooting.


boat-shaped leaf tips
tall membranous ligules



annual bluegrass
Poa annua

Kentucky bluegrass
Poa pratensis


There is little seed dormancy and seeds germinate readily once disseminated.

Factors the Favor Annual Bluegrass Infestations

Intense traffic
- compaction
- wear

Thin turf

Close mowing

Frequent and excessive watering

Annual Bluegrass Control - Cultural

Prevention of spread

clean equipment after use

- mowers
- aerators
- rollers

Avoid excessive nitrogen

Avoid excessive irrigation

Increase mowing height if practical

Annual Bluegrass Control - Cultural

Annual bluegrass is tolerant in low soil oxygen levels.

Well-adapted to compacted soil and poor drainage

Alleviate compaction and correct poor drainage

Avoid cultivation when soil temperature are cool enough for annual bluegrass germination. Try Summer?????

Annual Bluegrass Control - Cultural

soil pH - 5.5?
indication that *Poa* will struggle

Annual Bluegrass Control

"Force Winter Annuality"

- CST can withstand hot dry condition and periods of dormancy

- withhold water and dry down CST, *Poa* will check out

- irrigation to aid in CST recovery, over-seeding to fill in dying *Poa*

- irrigation is infrequent and deep to aid CST *Poa* is shallowly rooted

Annual Bluegrass Control - Cultural

“One of the best weed control tools is a bag of good quality turf seed”

Overseeding often with perennial ryegrass especially in high traffic areas.

High seeding rates

Can follow “Forced Winter Annuality” strategy

Annual Bluegrass Control - Chemical

"Crabgrass PRE products"

pendimethalin - Pendulum, Pre-M
dithiopyr - Dimension
prodiamine - Barricade
bensulide - Bensumec
oxadiazon - Ronstar

- late summer to early fall before germ.
- interfere with seeding, decrease flexibility
- useful in residential and commercial turf
- appropriate for non-crop and adjacent areas
- areas were seeding will not likely be needed

Annual Bluegrass Control - Chemical

“Crabgrass POST Materials”

fenoxaprop* - Acclaim Extra

quinclorac* - Drive

*** not effective on annual bluegrass**

Annual Bluegrass Control - Chemical

ethofumesate - Prograss, Poa Constrictor

- POST when young and some PRE
- multiple applications (2-3 apps. at 3-4 wk int.)
- fall more effective than spring
- spot treat ABG areas
- RTFL - label for cultivar info and CST timing

Annual Bluegrass Control - Chemical

amicarbazone - Xonerate

- residential & commercial lawns, park & recreation areas, golf, sod

- established KBG, PR, TF, FF

- two applications at 14 to 21 day intervals

- carpetweed, henbit, chickweed, purslane, speedwell, spurge

- tank-mix with other broadleaf herbicides


THANK YOU!!!!!!
Have a Great 2016 Season!!!
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