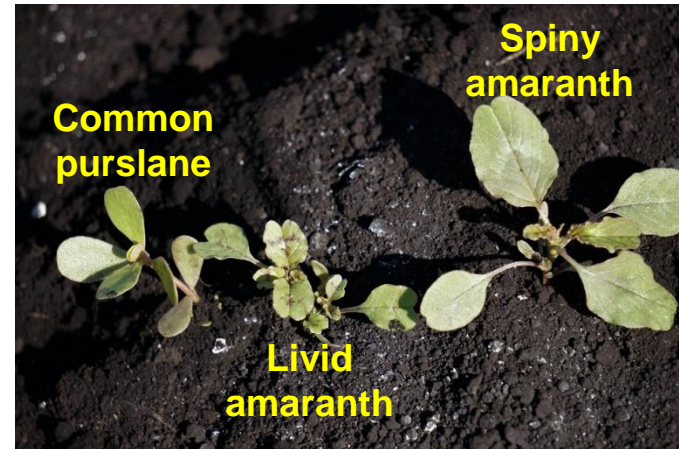
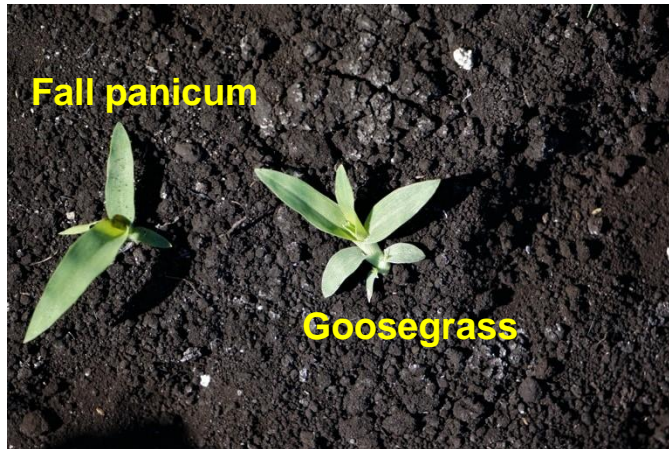


Identification and Management of Grass Weeds

Calvin Otero
Everglades Research & Education Center

Weed identification

🦋 *Correct weed identification:* first step in developing a successful weed management program



🦋 The management strategy must be based on the sensitivity of the target species to control measures

Grasses

Sedges (grass-like)

Family	<ul style="list-style-type: none"> Poaceae (grass) 	<ul style="list-style-type: none"> Cyperaceae (sedge)
Stem	<ul style="list-style-type: none"> Round, flattened Hollow, occasionally solid Nodes (jointed) 	<ul style="list-style-type: none"> Triangular (three-sided) Solid No nodes
Leaf	<ul style="list-style-type: none"> One seed leaf Parallel veins, flat, linear Extend in two directions 	<ul style="list-style-type: none"> One seed leaf Parallel veins, flat, linear Extend in three directions
Flower	<ul style="list-style-type: none"> Small, inconspicuous 	<ul style="list-style-type: none"> Small, inconspicuous
Fruit	<ul style="list-style-type: none"> Grain (caryopsis) 	<ul style="list-style-type: none"> Nutlet



Fall panicum



Yellow nutsedge

Grass classification

Life history

Annuals



Goosegrass

Completes life cycle in
one year

Perennials

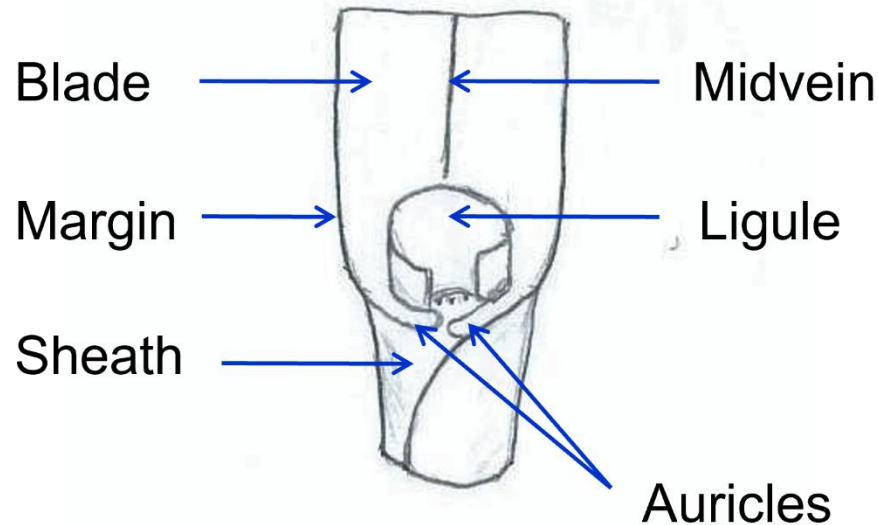


Bermudagrass

Persist over several years
Short- to long-lived

Grass identification: parts of the leaf

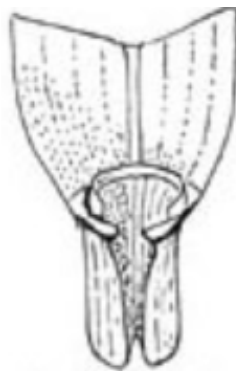
- 🦎 Blade
- 🦎 Margin
- 🦎 Midvein
- 🦎 Ligule
- 🦎 Auricles
- 🦎 Sheath



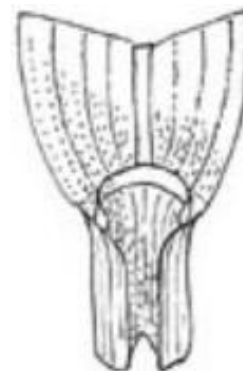
Auricle variations



Prominent
(long, clasping)



Intermediate
(small, rudimentary)



Absent

**All grass weeds in
Florida sugarcane**

Step 1 to grass identification

Overall characteristics

- Leaf blade, margin, midvein



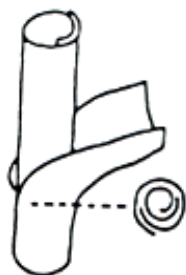
- Fall panicum
- Crowfootgrass
- Southern sandbur
- Bearded sprangletop



- Goosegrass
- Southern crabgrass

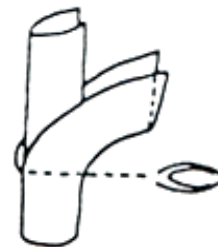
Step 2 to grass identification

Stem type



Round

- Fall panicum
- Bermudagrass
- Southern crabgrass
- Crowfootgrass
- Bearded sprangletop

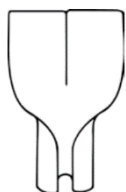


Flat or compressed

- Goosegrass
- Southern sandbur

Step 3 to grass identification

Ligule type



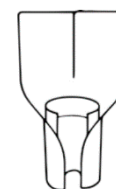
Absent

- Coast cockspur



Hairy

- Fall panicum
- Bermudagrass
- Crowfootgrass
- Southern sandbur

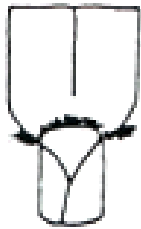


Membranous

- Goosegrass
- Southern crabgrass
- Sprangletop

Step 4 to grass identification

Blade



Blade smooth

- Fall panicum
- Southern sandbur
- Crowfootgrass
- Sprangletop



Blade hairy

- Goosegrass
- Bermudagrass



Midrib prominence

- Napiergrass
- Columbus grass

Step 5 to grass identification

Root system



Perennial: rhizomes

- Bermudagrass
- Torpedograss



Annual: fibrous

- Fall panicum
- Southern crabgrass
- Goosegrass
- Crowfootgrass
- Bearded sprangletop

Ligule absent



BLADE HAIR

Blade with no hair

COLLAR MARGIN

Sometimes hairy



Barnyardgrass

BLADE HAIR

Blade with no hair

COLLAR MARGIN

Hairy



Coast cockspur

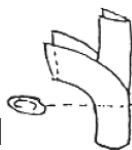


Hairy ligule

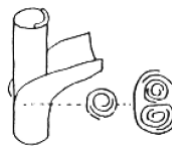


STEM SHAPE

Compressed

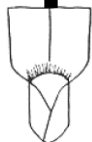


Rounded



BLADE HAIR

Upper surface sandpapery
Blades without hair
Collar margin occasionally hairy
Sheath hairless, occasionally hairy



Southern sandbur

BLADE HAIR

Blade with hair
prominent midrib



Perennial

Napiergrass

Blade with little
or no hair

ROOT SYSTEM

Annual

Perennial

Stolons and rhizomes
Tufts of hair at
base of ligule



Bermudagrass

Bending and rooting
at lower nodes

Sheath with long
stiff hairs



Crowfootgrass

Sheath smooth
or hairy



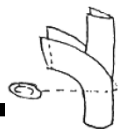
Fall panicum

No bending and rooting
at lower nodes

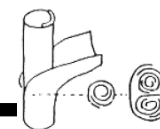
Membranous ligule



STEM SHAPE



Flattened



Rounded

ROOT SYSTEM

Annual

Annual

Weak perennial, prominent midvein

BLADE SHAPE

First blade is long and narrow

First blade often blunt

SHEATH MARGINS

Sheath margin not hairy

Sheath margin hairy

Hairy

Not hairy

Midrib not green

Green midrib

Red sprangletop

Southern crabgrass

Smooth crabgrass

Bearded sprangletop

Amazon sprangletop









Sheath light green to white at base

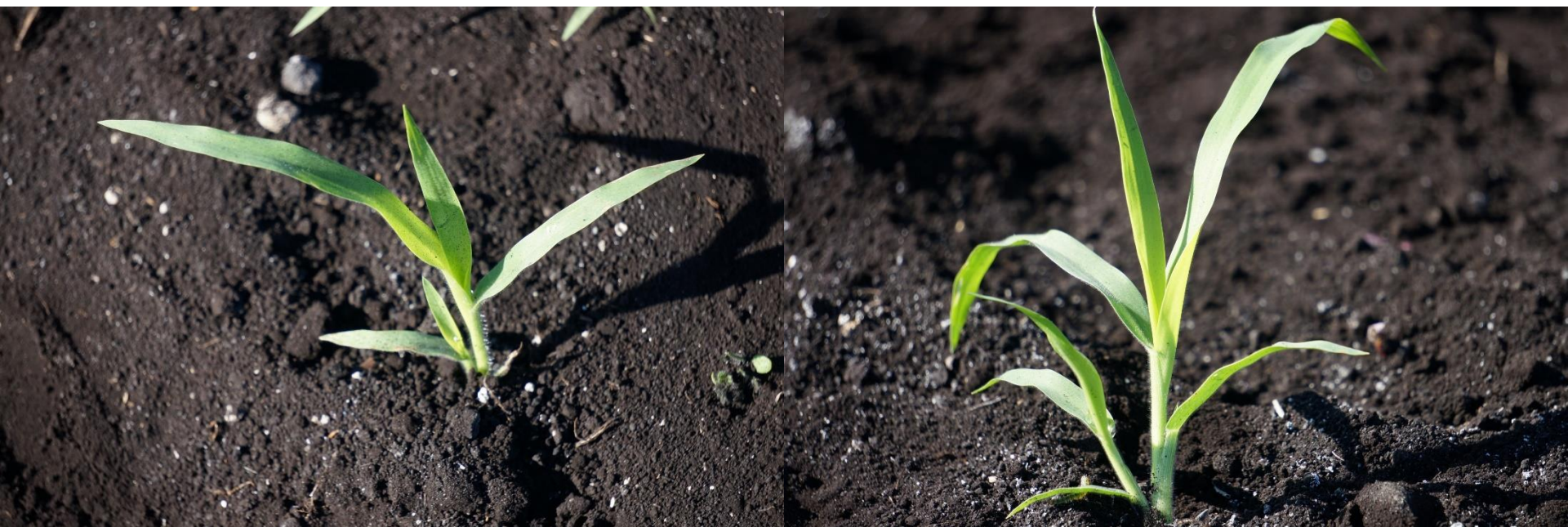
Goosegrass

Blade midvein white above and prominent below

Columbus grass






Fall panicum (*Panicum dichotomiflorum*)

-  **Life cycle:** annual
-  **Blade:** first blade longer than wider, opens parallel to the ground. Blades rolled in a bud and hairy with a prominent midvein
-  **Ligule:** hairy
-  **Sheath:** hairy on first few leaves
-  Collar densely hairy, seedlings become less hairy with age
-  **Root:** fibrous



Fall panicum (*Panicum dichotomiflorum*)







Goosegrass (*Eleusine indica*)

-  **Life cycle:** annual
-  **Blade:** first leaf wider, opens parallel to the ground
-  **Ligule:** unevenly toothed membrane
-  **Sheath:** smooth, prominently flattened, light green to white at the base
-  **Root:** fibrous



Goosegrass (*Eleusine indica*)







Crowfootgrass (*Dactyloctenium aegyptium*)

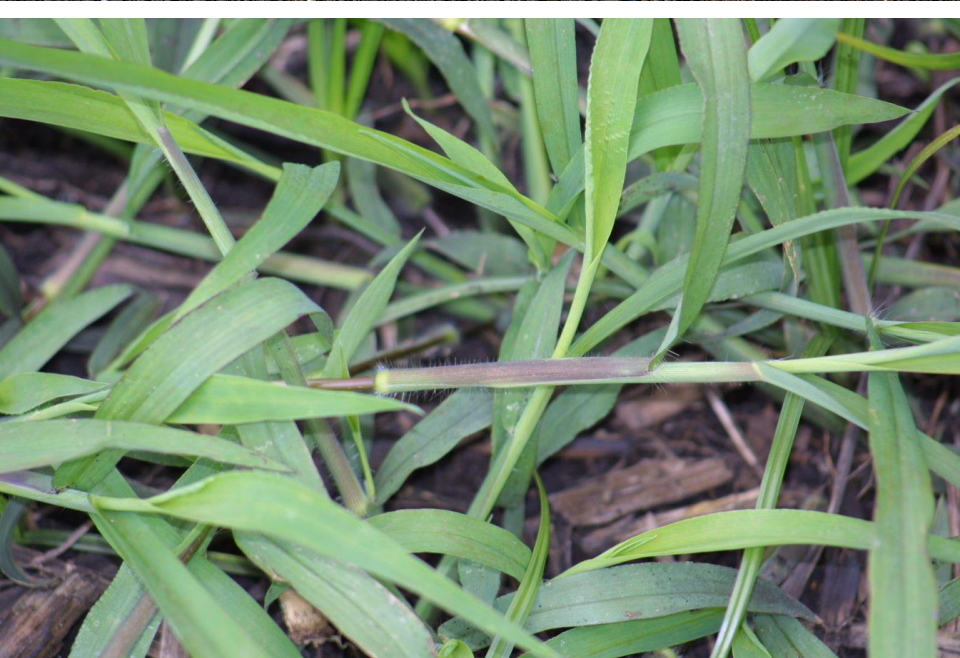
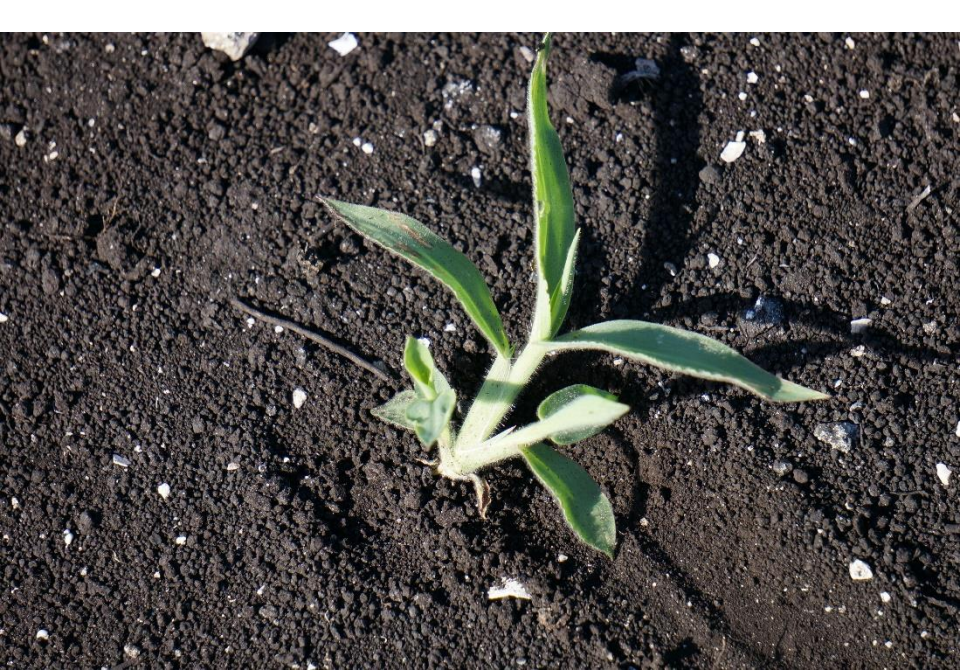
-  **Life cycle:** annual
-  **Blade:** first blade is longer than wider, opens parallel to the ground, smooth
-  **Ligule:** membrane with a fringe of hairs
-  **Sheath:** smooth with long stiff hair along the margin
-  Stems bending, rooting at lower nodes
-  **Root:** fibrous



Crowfootgrass (*Dactyloctenium aegyptium*)

Southern crabgrass (*Digitaria ciliaris*)

-  **Life cycle:** annual
-  **Blade:** first blade, longer than wide, opens parallel to the ground. Only hairy near the collar, rolled in a bud
-  **Ligule:** membranous and jagged
-  **Sheath:** hairy
-  Stem spreading, branched, rooting at nodes, hairy nodes
-  **Root:** fibrous



Southern crabgrass (*Digitaria ciliaris*)

Southern sandbur (*Cenchrus echinatus*)

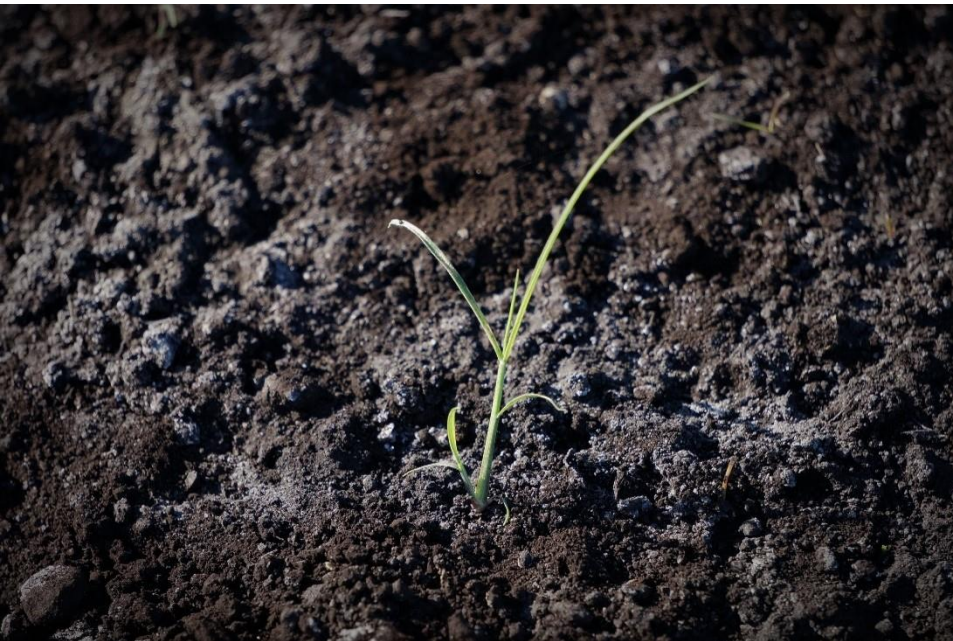
- 🌿 **Life cycle:** annual
- 🌿 **Leaf blade:** first blade is longer than wider, opens upright. Blades are rough, hairless, and folded in a bud
- 🌿 **Ligule:** fringe of hairs
- 🌿 **Sheath:** smooth except for fine hairs at the margin, compressed and often tinged red. Tillers initially ascend but become more prostrate with age
- 🌿 **Root:** fibrous



Southern sandbur (*Cenchrus echinatus*)






Bearded sprangletop (*Leptochloa fusca*)

- 🦎 **Life history:** annual
- 🦎 **Leaf blade:** first blade is longer than wide, flat.
Blades are rough, will be tightly rolled when dry
- 🦎 **Ligule:** papery jagged membrane
- 🦎 **Sheath:** rough
- 🦎 **Root:** fibrous



Bearded sprangletop (*Leptochloa fusca*)







Coast cockspur (*Echinochloa walteri*)

-  **Life history:** annual
-  **Leaf blade:** first blade is longer than wider and opens parallel to the ground. Blades are smooth, rolled in a bud
-  **Ligule:** absent
-  **Sheath:** hairy, somewhat compressed
-  **Root:** fibrous



Coast cockspur (*Echinochloa walteri*)

Bermudagrass (*Cynodon dactylon*)

-  **Life cycle:** perennial
-  **Leaf blade:** smooth on both surfaces, relatively short, narrow, slightly rough margins, rolled in a bud
-  **Ligule:** hairy
-  **Sheath:** green and smooth
-  Collar narrow, white, smooth on youngest seedling only, hairy on older seedlings
-  **Root:** fibrous, rooting at nodes from stolons and rhizomes



Bermudagrass (*Cynodon dactylon*)



Goosegrass

Fall panicum



Goosegrass

Fall panicum



Fall panicum

**Bearded
sprangletop**



**Coast
cockspur**

**Bearded
sprangletop**



Coast
cockspur

Bearded
sprangletop

Goosegrass

Fall panicum

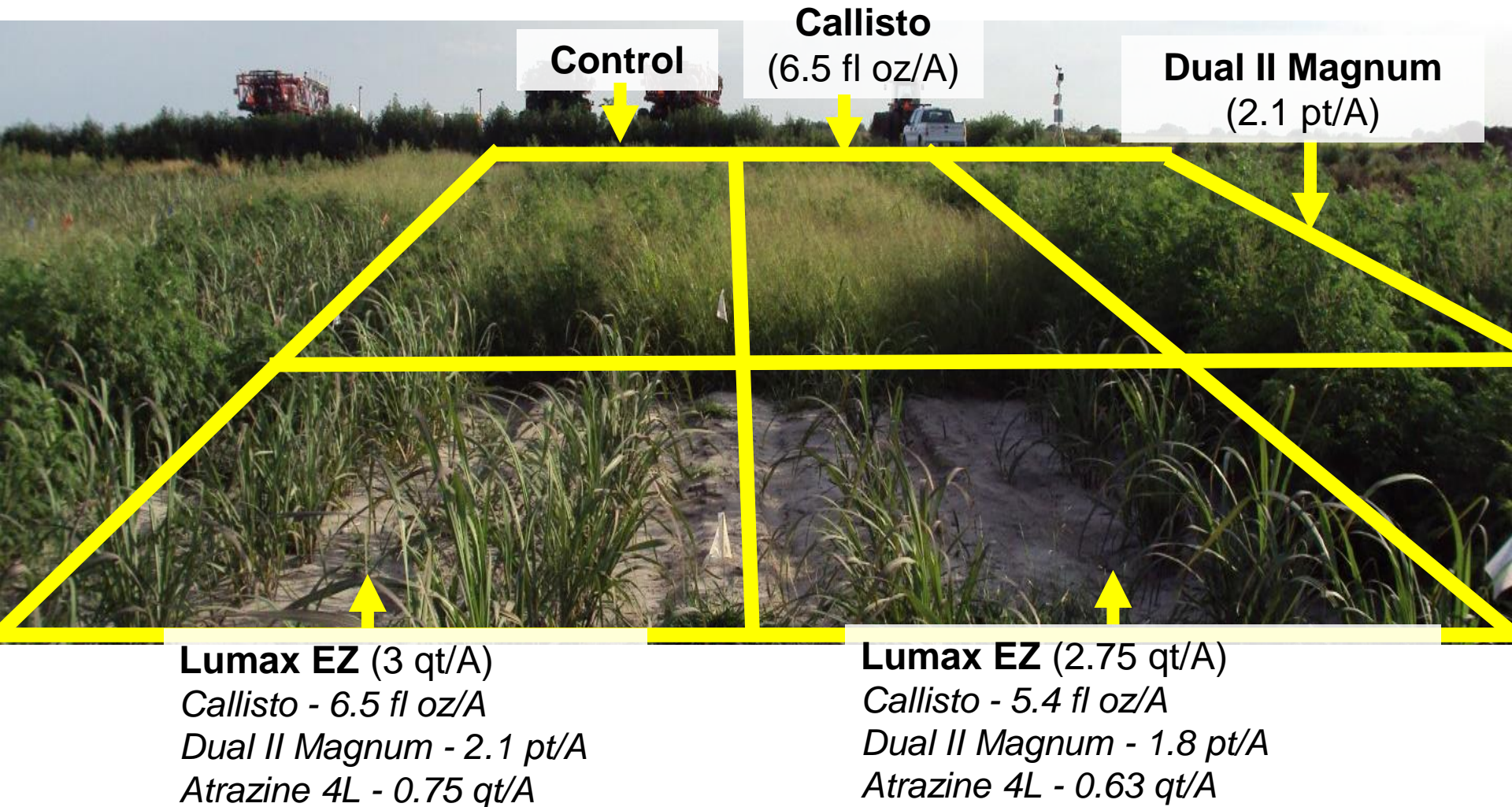
Control: preemergence herbicides

Herbicide	MOA	Chemical family	Group
Pendimethalin	Microtubule inhibitor	Dinitroaniline	3
S-metolachlor + Atrazine + Mesotrione	Long-chain fatty acid Photosystem II inhibitor HPPD inhibitor	Chloroacetamide s-triazine Triketone	15 5 27

- 🌿 Prowl H₂O (pendimethalin)
at 4.2 – 8.4 pt/acre
- 🌿 Lumax EZ (S-metolachlor + atrazine +
mesotrione) at 3.0 qt/acre
- 🌿 Glyphosate (several) at 3.25 – 4 qt/acre
 - Only use before cane spiking



PRE Lumax EZ at 70 DAT



Control: postemergence herbicides

Herbicide	MOA	Chemical family	Group
Ametryn	Photosystem II inhibitor	s-triazine	5
S-metolachlor + Atrazine + Mesotrione	Long-chain fatty acid Photosystem II inhibitor HPPD inhibitor	Chloroacetamide s-triazine Triketone	15 5 27
Asulam	DHP inhibitor	Carbamate	18
Topramezone	HPPD inhibitor	Pyrazolone	27
Trifloxysulfuron	ALS inhibitor	Sulfonylurea	2

Control: postemergence herbicides

Triazines

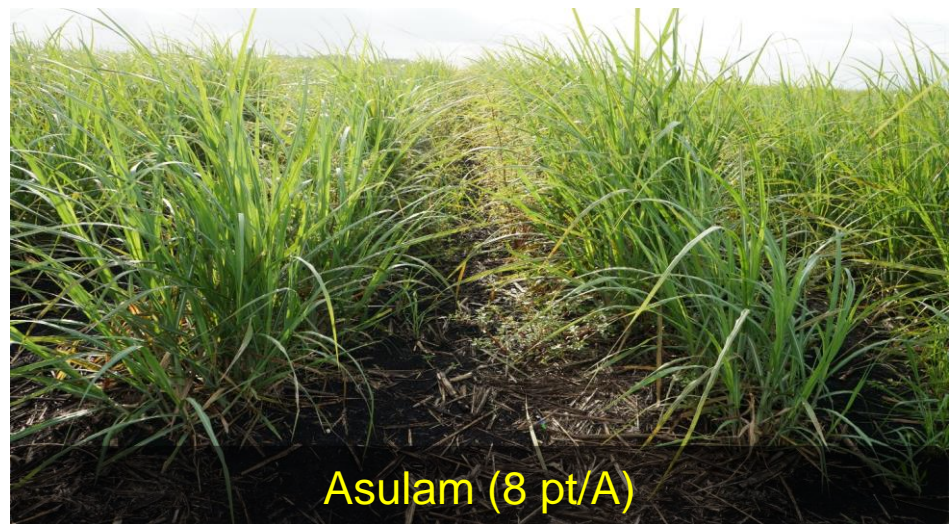
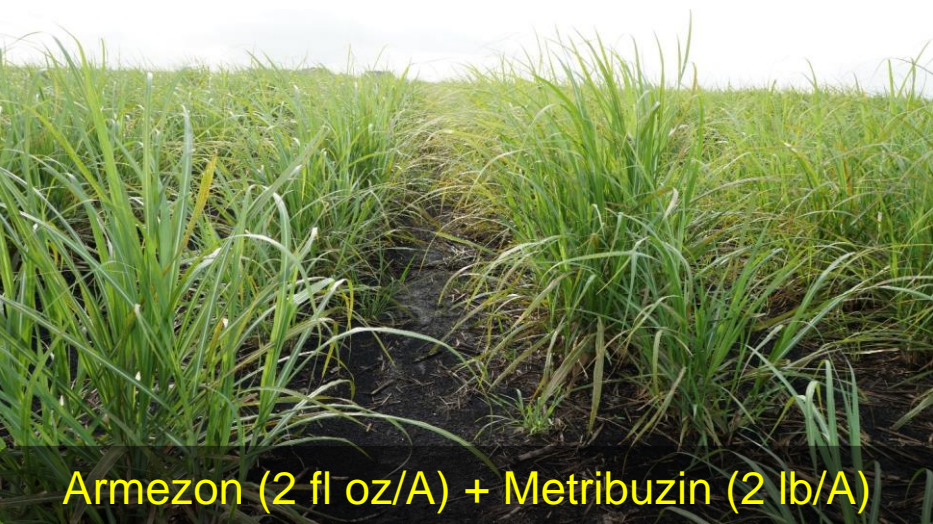
- Metribuzin at 1.33 – 2.67 lb/acre – very small grasses, muck only
- Evik (ametryn) at 0.5 to 1.5 lb/acre – small grasses, tank-mixed with Atrazine

Asulox (asulam) at 6 – 8 pt/acre and Envoke (trifloxysulfuron) at 0.3 oz/acre

- Annual grasses
- Phytotoxicity occurs when applied under high temperature and moisture stress
- Post-directed to minimize phytotoxicity

Control: postemergence herbicides

- 🦎 Armezon (topramezone) at 1 – 2 fl oz/acre
 - Annual grasses
 - Effective in providing acceptable control and suppression of newly established bermudagrass
 - Tank-mixes with Atrazine, Metribuzin, Lumax EZ, and Asulox to enhance control



Fall panicum control at 42 DAT



Untreated control
at 70 DAT



Armezon (2 fl oz/A) +
Metribuzin (2 lb/A)
at 70 DAT

Newly established bermudagrass response to Armezon

Treatment ^a	Rate	Control ^b	Probability of new growth ^c
	(fl oz/A)	-----	%-----
Armezon	0		100a
Armezon	1	58c	100a
Armezon	2	90ab	75ab
Armezon	1 fb 1	84ab	50b
Armezon	2 fb 2	100a	0c
Armezon	1 fb 1 fb 1	96ab	50b
Armezon	2 fb 1	100a	0c
Armezon	1 fb 2	88ab	50b
Armezon	1 fb 1 fb 1 fb 1	100a	0c
Armezon	2 fb 1 fb 1	100a	0c
Armezon	1 fb 1 fb 2	100a	0c

^aAll treatments included MSO at 1% v/v

^bVisual control 14 days after the final sequential application (DAFSA)

^cNo new growth produced 14 DAFSA

Bermudagrass 6 weeks after initial treatment



Bermudagrass 6 weeks after initial treatment



Bermudagrass 6 weeks after initial treatment



Bermudagrass 6 weeks after initial treatment



For herbicide use

- 🦋 Scout field, identify weed species
- 🦋 Select appropriate herbicide(s)
 - Mixtures and sequential treatments
 - Compatibility
 - Proper adjuvants
- 🦋 Application equipment
 - Proper calibration




Remember for chemical weed control

 Do it right

- Proper herbicide(s)
- Proper herbicide placement
- Proper time of application
- Proper manner of application

 **READ THE HERBICIDE LABEL, IT'S THE LAW**



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 **@EREC Weed Science**