Extension and Research Programs Addressing the Threat of Tropical Spiderwort in Georgia

E.P. Prostko*, J.T. Flanders, A.S. Culpepper,
T. M. Webster, T.L. Grey,
W.K. Vencill, and J. R. Carter
UGA/USDA-ARS/VSU

WSSA 2006

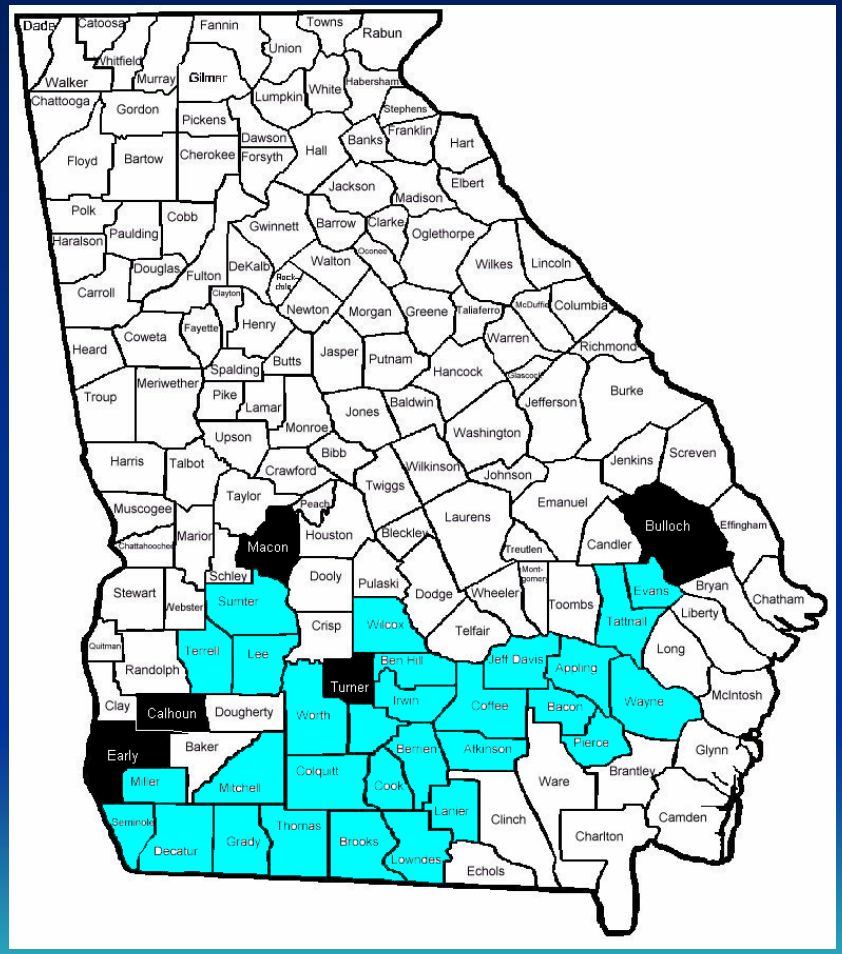
Tropical spiderwort (a.k.a. Benghal dayflower, wandering jew, airweed)
Commelina benghalensis

- tropical Africa native
- annual or perennial
- seeds and rhizomes
- above and below ground flowers
- 1,600 seeds/plant
- alternate host of southern root-knot nematode
- Reservoir for southern stem blight (white mold)
- #31 in World's Worst Weeds *(Holm's)*

Why?
(textbook example of a weed shift)

- Increases in glyphosate use
- Decreases in soil applied herbicides such a Cotoran
- Increases in reduced tillage
- Decreases in cultivation
- Delayed emergence in early planted field corn
- Lag phase

TSW in Georgia



* confirmed in 29 counties by GA Dept. of Ag and UGA in 2004 **(blue)**

* identified in 5 more counties in 2005 **(black)**

How do we distinguish TSW from other common members of family?

- common spiderwort (*Tradescantia ohiensis)*
- Asiatic dayflower (*C. communis*)
- spreading dayflower (*C. diffusa*)
- marsh dayflower (*Murdannia keisak*)
- doveweed (*Murdannia nudiflora*)

TSW seedling with filamentous cotyledonary stalk

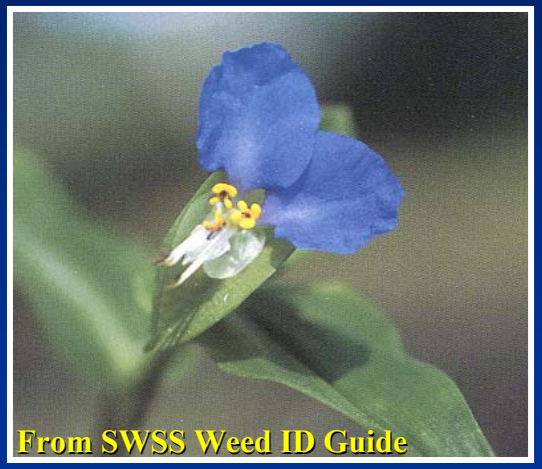

Red Hairs On Stems


Leaf Sheaths


Leaf Length: Leaf Width ~ 1.5
(Less than 3:1)
Mike Burton, NCSU

Dayflower/Spiderwort Flowers
(*Commelina* spp.)

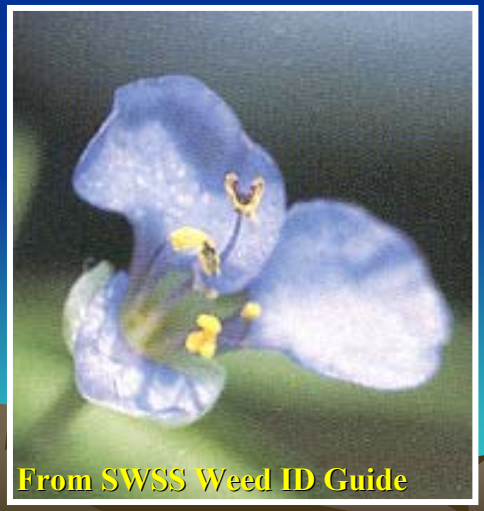
Asiatic Dayflower



Tropical spiderwort

Stanley Culpepper, UGA

Spreading Dayflower



What have we done?
Research Trials (since 2000)

- cotton (36)
- corn (2)
- soybeans (3)
- peanuts (10)
- fallow/post-harvest (5)
- biology (28)
- physiology (4)
- Total (88)

What have we done?
Publications

- refereed journal articles (4)
- abstracts (15)
- popular press articles (3)
- extension bulletins (1)
- research-extension reports (6)
- newsletter articles (7)
- Slide sets (9) (www.gaweed.com)
- Total (45)

Getting the Word Out

- At least 60 county meetings a year
  - 360 total (since 2000')
- specific presentations about TSW at other meetings
  - 30 total (since 2000')

Learning From Australians

- Invited by Peanut Company of Australia (PCA) to visit country to discuss this weed problem (Feb 2004)

Biology/Ecology Discoveries

- 60% emergence after June 1
- May planting less cotton yield loss than June planting (< 20% vs > 45%)
- Season-long interference eliminates peanut pod production
- 1570 seeds, 352 aerial spathes, 6 subterranean spathes in 19 weeks
- underground spathes 2 weeks before aerial


Weed-free Peanuts
Weedy Peanuts
No peanuts to harvest!!

Herbicides

- *s*-metolachlor (Dual Magnum)
- 2,4-D, paraquat (Gramoxone), carfentrazone (Aim)
- diclosulam (Strongarm), imazapic (Cadre), imazethapyr (Pursuit), MSMA, bentazon (Basagran), clomazone (Command)

Tropical Spiderwort Control in Peanut - 2004

Untreated

Gramoxone Max @ 5.5 ozs/A
+ Dual Magnum @ 11 ozs/A (13 DAP)
fb
Cadre @ 1.44 ozs/A +
Dual Magnum @ 11 ozs/A (28 DAP)
(83% control on August 5, 2004)

PE-07B-04
June 23, 2004
47 DAP

Tropical Spiderwort Control in RR Soybeans - 2005

Untreated

Sequence @ 3 pts/A
($16/A)
(Glyphosate + Dual Magnum)

Extreme @ 3 pts/A
($12/A)
(Glyphosate + Pursuit)

33 DAT

Applied 20 DAP

Tropical Spiderwort Control in Field Corn - 2005

Untreated
(166 bu/A)

Aim 2EC @ 1.5 ozs/A
Dual Magnum 7.62EC @ 1.33 pt/A
Herbimax @ 1% v/v
(168 bu/A)

34 DAT

$24/A treatment cost (excluding application)

Have our programs been successful??

- Growers have been receptive to our information and have adopted many of our recommendations.

- However, spiderwort continues to spread at an alarming rate!!!


www.gaweed.com
UGA
ARS