New Weed Science Research Projects

Nicholas Shay and Dr. Eric Prostko

UGA Agent Training

2022

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Project(s) Overview

- **Sorghum (*Sorghum bicolor*)**
- **Pink Purslane (*Portulaca pilosa*)**
- **Peanut (*Arachis hypogaea*)**

- Corn (*Zea mays*)
- Soybean (*Glycine max*)

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Watermelon Production & Management

States That Produce The Most Watermelons

United States		3,400,450,000	
Rank	State	Pounds	% Of U.S.
1	Florida	1,016,400,000	29.89%
2	Georgia	693,000,000	20.38%
3	California	490,000,000	14.41%
4	Texas	366,000,000	10.76%
5	North Carolina	255,750,000	7.52%
6	Indiana	240,500,000	7.07%
7	Arizona	205,800,000	6.05%
8	South Carolina	133,000,000	3.91%

Source: NASS/USDA - 2021 (Rob Cook)

$103,742,000 (NASS/USDA 2021)

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Watermelon Production & Management

CUCURBITS

RECOMMENDED HERBICIDE USES IN SPECIFIC CUCURBIT CROPS

HERBICIDE	APPLICATION METHOD*	WATERMELON
carfentrazone Aim EC	Pre-plant	X
paraquat (numerous)	Pre-plant	X
pyraflufen ET	Pre-plant	X
glyphosate Roundup, others	Pre-plant	X
fomesafen Reflex	Pre-plant or PRE	X
bensulide Prefar	PPI or PRE	X
clomazone Command 3 ME	Pre-plant or PRE	X
halosulfuron Sandea	Pre-plant or PRE	X
terbacil Sinbar	Pre-plant or PRE	X

(UGA Pest Management Handbook – Veggies, 2021)

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VEGETABLES

$103,742,000 (NASS/USDA 2021)

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Impact of Residuals on Sorghum (*Sorghum bicolor*)

CUCURBITS

RECOMMENDED HERBICIDE USES IN SPECIFIC CUCURBIT CROPS		
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terbacil Sinbar	Pre-plant or PRE	X

VEGETABLES

10 mos.

24 mos.

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Sorghum Production Systems

- **Sorghum production in GA:**
  GA - 41,000 acres
  Farm gate value $16 million (UGA Farmgate Report 2019)

- **Objective:**
  Simulating sorghum planting behind watermelon production

  Sorghum tolerance following fomesafen & terbacil applications 100 DAA

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Sorghum: Preliminary Results

2019

- PRE applications of Terbacil & Fomesafen:
  - Did not reduce **plant stand**, and **biomass** (14 DAA)
  - Did not reduce **plant stand**, and **height** (21 DAA)
  - Yield:
    - **Range:** 58 – 77 bu ac^{-1} **or** 3,657 – 4,781 lbs ac^{-1}
    - Trt differences ($P = 0.03$) but none from NTC

2020 – 2022

- PRE applications of Terbacil & Fomesafen:
  - Did not reduce **plant stand**, and **biomass** (14 DAA)
  - Did not reduce **plant stand**, and **height** (21 DAA)
  - Necrosis was observed 139 DAA – transient by Sep.
  - Yield:
    - **Range:** 41 – 53 bu ac^{-1} **or** 2,519 – 3,254 lbs ac^{-1}
    - No Trt differences ($P > 0.1$)

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Controlling Pink Purslane (*Portulaca pilosa*)

- **Increased frequency**
  - Disturbed gravelly and sandy field edges
- **Occurrence:**
  - Southwest
  - Southeast (Railroad)
- **Summer annual / weak-perennial**
  - 212,000 – 292,000 seeds plant^{-1}
  - Germination ~ 10 days
  - 6 – 8 weeks – flowering / mature capsules
  - Non-dormant seed
- **Management difficulties:**
  - Succulent vegetative structures
  - Densely populated hairs
  - Continuous seed production

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Controlling Pink Purslane (*Portulaca pilosa*)

- **Limited research for desired control in southeastern U.S.**

- **Objective:**
  - Investigating herbicidal options for controlling pink purslane in the coastal plain region of Georgia

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Controlling Pink Purslane (*Portulaca pilosa*)

Greenhouse POST Treatments

- NTC
- Roundup PowerMaxx3: 22.0 oz ac^{-1}
- Gramoxone: 32.0 oz ac^{-1}
- Liberty: 32.0 oz ac^{-1}
- Engenia: 12.8 oz ac^{-1}
- Enlist One: 32.0 oz ac^{-1}
- Diuron: 24.0 oz ac^{-1}
- Aatrex: 48.0 oz ac^{-1}
- Ultra Blazer: 24.0 oz ac^{-1}
- Storm: 24.0 oz ac^{-1}
- 2,4-DB: 16.0 oz ac^{-1}
- Strongarm: 0.30 oz ac^{-1}
- Cobra: 12.5 oz ac^{-1}
- Impact: 1.25 oz ac^{-1}
- Callisto: 3.0 oz ac^{-1}
- Laudis: 3.0 oz ac^{-1}
- Shieldex: 1.0 oz ac^{-1}
- Gramoxone 12.0 + Storm 16.0 oz ac^{-1}
- Reflex: 24.0 oz ac^{-1}
- AIM: 1.0 oz ac^{-1}
- Cadre: 4.0 oz ac^{-1}

[a] Treatments followed by letter indicate efficacious herbicides selected from greenhouse experiment for in-field research.

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Controlling Pink Purslane (*Portulaca pilosa*)

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Investigating New Peanut Cultivar Responses to Postemergence Applications of Chlorimuron

Classic® HERBICIDE

- Rescue herbicide
- Chlorimuron ↑ TSWV
- Disease management
- Cultivar resistance
- Lack of understanding on new cultivars

Objective:

- Evaluate impact of chlorimuron on the incidence of TSWV and yield on AUNPL-17, FLORUN 331, GA-12Y, GA-16HO, GA-18RU, GA-20VHO, & TIFNV HIGH O/L

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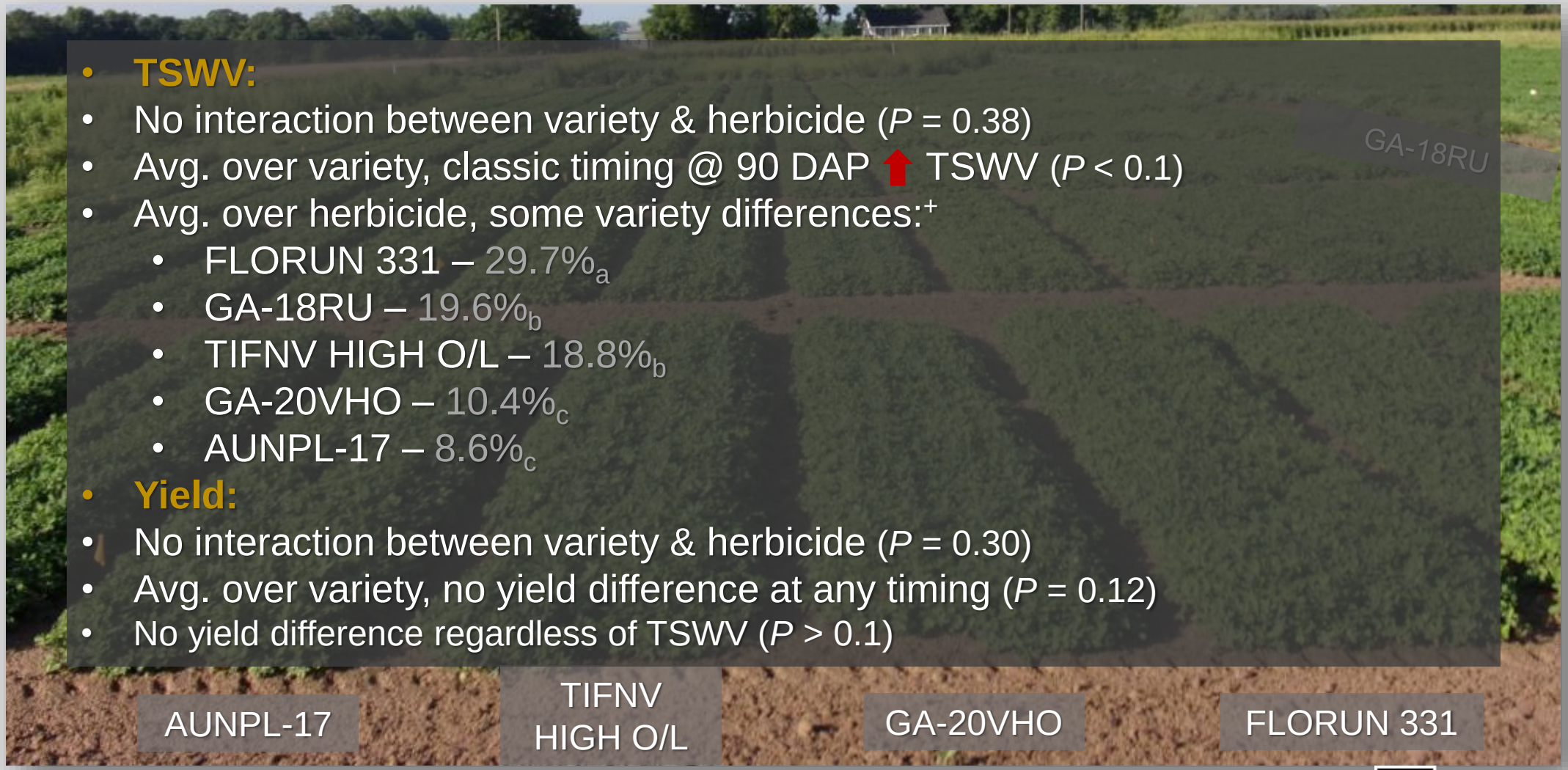
Response to Chlorimuron



- **TSWV:**
- No interaction between variety & herbicide (*P* = 0.38)
- Avg. over variety, classic timing @ 90 DAP ⬆ TSWV (*P* < 0.1)
- Avg. over herbicide, some variety differences:[+]
  - FLORUN 331 – 29.7%$_a$
  - GA-18RU – 19.6%$_b$
  - TIFNV HIGH O/L – 18.8%$_b$
  - GA-20VHO – 10.4%$_c$
  - AUNPL-17 – 8.6%$_c$
- **Yield:**
- No interaction between variety & herbicide (*P* = 0.30)
- Avg. over variety, no yield difference at any timing (*P* = 0.12)
- No yield difference regardless of TSWV (*P* > 0.1)

[+] Varieties with different letter indicated statistical difference at (*P* = 0.05).

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Response to Chlorimuron

GA-12Y

- **Plant height:**
  No trt. Influence ($P = 0.43$)
- **TSWV:**
  No trt. Influence ($P = 0.16$)
- **Yield:**
  Trt differences ($P = 0.05$)
  - 77_a = 6772 lb ac^{-1}
  - 0_{ab} = 6573 lb ac^{-1}
  - 65_{ab} = 6432 lb ac^{-1}
  - 90_b = 5943 lb ac^{-1}

GA-16HO

- **Plant height:**
  65 & 77 DAP ($P = 0.01$)
- **TSWV:**
  No trt. influence ($P = 0.13$)
- **Yield:**
  No yield difference ($P = 0.30$)
  4833 – 5835 lbs ac^{-1}

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Peanut Response to Delayed Timing Applications of Fluridone and Trifludimoxazin

- Limited herbicide options
- Herbicide resistance ⬆
- Newly developed herbicides
- Repurpose herbicides
- **Objective:**
  - Test peanut response to delayed timing applications of fluridone & Trifludimoxazin
  - Application timing: 1,3,5, & 7 DAP

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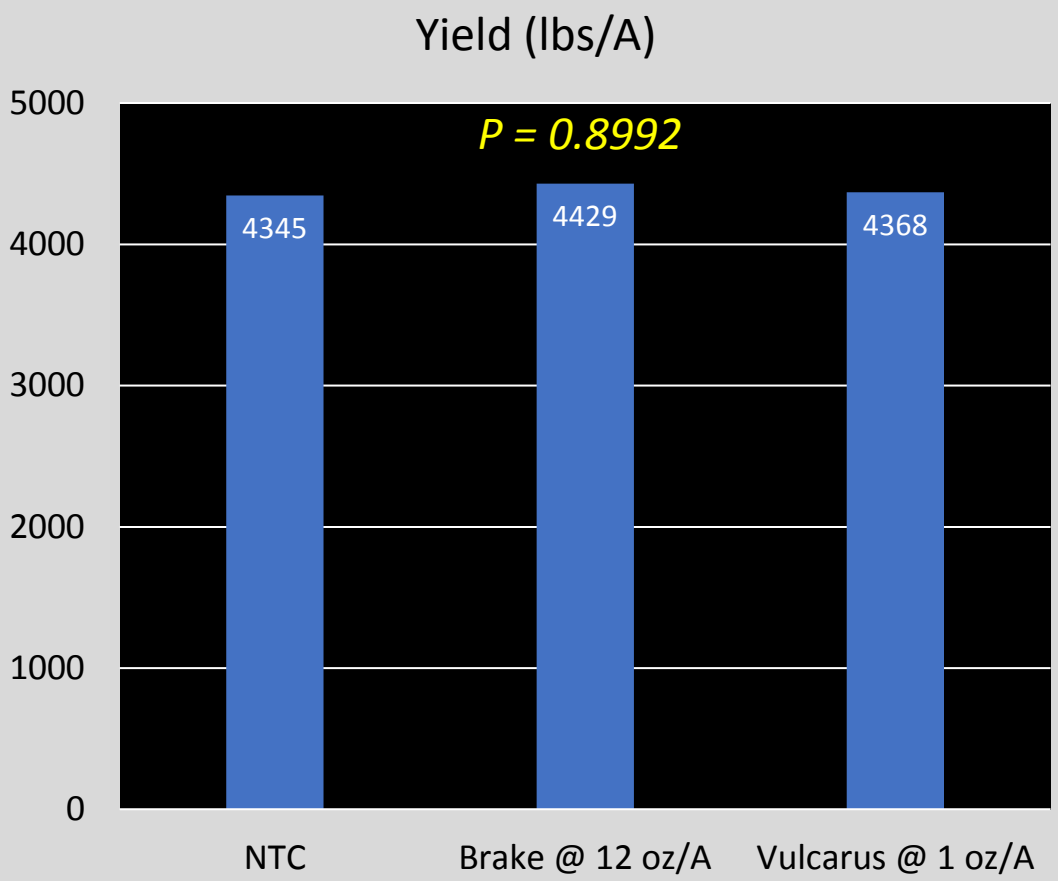
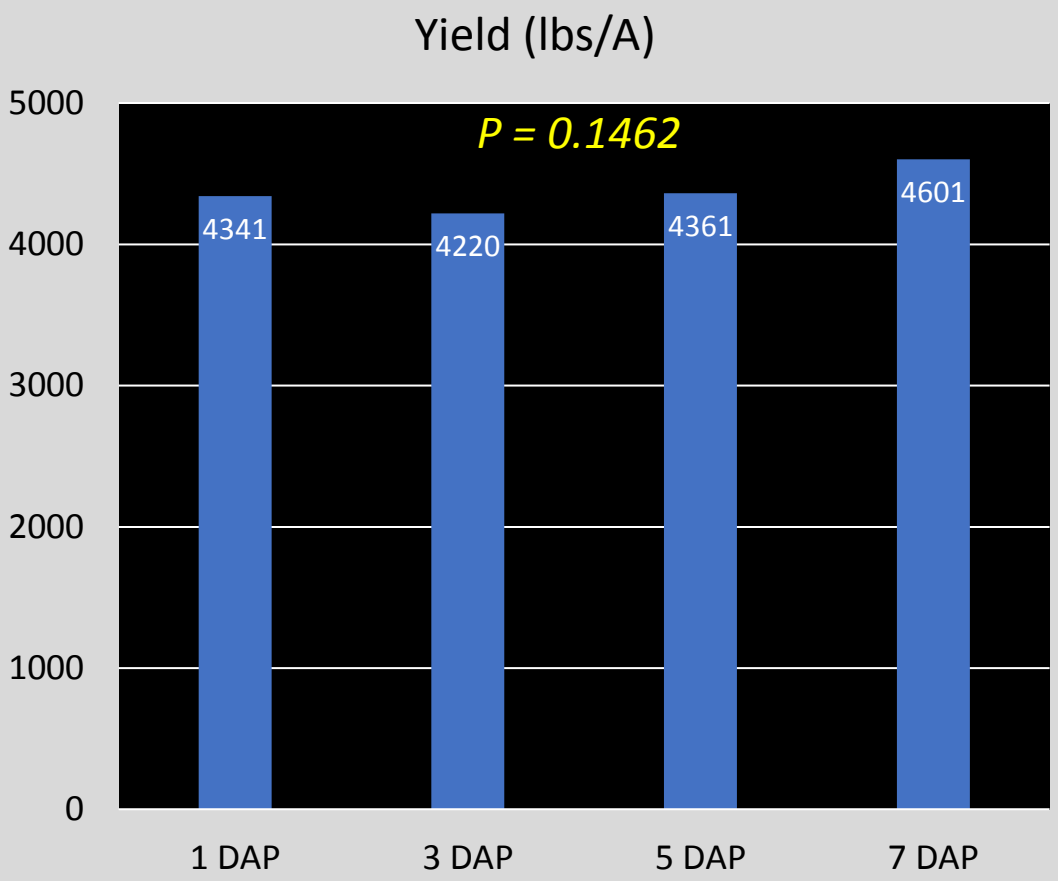
Peanut (GA-06G) Yield Response to Brake and Vulcarus Applied 1,3,5,7 DAP





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Thank you.
Questions?

nicholas.shay@uga.edu

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