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Cotton response to Valor applied prior to planting in no-till or strip tillage.

Trial ID: C6-03

Study Dir.: Stanley Culpepper

Location: Ponder farm (5139)

Investigator: Stanley Culpepper

GENERAL TRIAL INFORMATION

Study Director: Stanley Culpepper

Title: ext. weed science

Affiliation: University of Georgia

Postal Code: 31794

Investigator: Stanley Culpepper

Title: ext. weed science

Affiliation: University of Georgia

Postal Code: 31794

TRIAL LOCATION

City: TyTy

Trial Status: completed

State/Prov.: Ga

Trial Reliability: excellent

Postal Code: 31794

Initiation Date: Apr-02-03

Country: U.S.A.

Conducted Under GLP (Y/N): N

Conducted Under GEP (Y/N): N

CROP AND WEED DESCRIPTION

| Weed | Code | Common Name | Scientific Name |
|------|------|-------------|-----------------|
| 1. | . | | |

Crop 1: GOSHI cotton

Variety: DP 555 B/RR

Planting Date: May-01-03

Planting Method: strip or no-till

Rate: 0.

Depth: 0.5 in

Perennial Age: 0.

Row Spacing: 36 inch

Spacing Within Row: 0.

Seed Bed: bed

Soil Temperature: 80 F

Soil Moisture: moist

Emergence Date: May-06-03

SITE AND DESIGN

Plot Width, Unit: 6 FT

Plot Length, Unit: 25 FT

Reps: 4

Site Type: research station

Tillage Type: various

Study Design: FACTORIAL

SOIL DESCRIPTION

% Sand: 94

% OM: 1.1

Texture: loamy sand

% Silt: 2

pH: 5.4

Soil Name: Tifton sandy loam

% Clay: 4

Overall Moisture Conditions: wet

APPLICATION DESCRIPTION

| | A | B | C | D | E |
|----------------------|-----------|-----------|-----------|-----------|-----------|
| Application Date: | Apr-02-03 | Apr-11-03 | Apr-16-03 | Apr-28-03 | May-19-03 |
| Time of Day: | 8 am | 8 am | 8 am | 10 am | 9 am |
| Application Method: | Broadcast | Broadcast | Broadcast | Broadcast | Broadcast |
| Application Timing: | before pl | before pl | before pl | before pl | before pl |
| Applic. Placement: | on soil | on soil | on soil | on soil | on soil |
| Air Temp., Unit: | 70 F | 64 F | 75 F | 71 F | 85 F |
| % Relative Humidity: | 45 | 50 | 62 | 59 | 44 |
| Wind Velocity, Unit: | 2 mph | 3 mph | 2 mph | 3 mph | 2 mph |
| Dew Presence (Y/N): | n | y | n | n | n |
| Soil Temp., Unit: | 64 F | 60 F | 72 F | 68 F | 80 F |
| Soil Moisture: | fair | fair | moist | moist | fair |
| % Cloud Cover: | 0 | 0 | 10 | 0 | 75 |

CROP STAGE AT EACH APPLICATION

| | A | B | C | D |
|---------------------|----------|----------|----------|----------|
| Crop 1 Code, Stage: | GOSHI BP | GOSHI BP | GOSHI BP | GOSHI BP |
| Stage Scale: | . | . | . | . |
| Height, Unit: | 0. | 0. | 0. | 0. |

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| | |
|----------------------------|----------|
| | E |
| Crop 1 Code, Stage: | GOSHI BP |
| Stage Scale: | . |
| Height, Unit: | 0. . |

WEED STAGE AT EACH APPLICATION

| | A | B | C | D | E |
|-----------------------|-----|---|---|---|---|
| | . | | | | |
| Stage Scale: | . | | | | |
| Density, Unit: | . . | | | | |

APPLICATION EQUIPMENT

| | A | B | C | D | E |
|------------------------------|----------|----------|----------|----------|----------|
| Appl. Equipment: | backpack | backpack | backpack | backpack | backpack |
| Operating Pressure: | 22 | 22 | 22 | 22 | 22 |
| Nozzle Type: | flat fan | flat fan | flat fan | flat fan | flat fan |
| Nozzle Size: | 11002 | 11002 | 11002 | 11002 | 11002 |
| Nozzle Spacing, Unit: | 18 inch | 18 inch | 18 inch | 18 inch | 18 inch |
| Nozzles/Row: | 2 | 2 | 2 | 2 | 2 |
| Boom Length, Unit: | 4.5 feet | 4.5 feet | 4.5 feet | 4.5 feet | 4.5 feet |
| Boom Height, Unit: | 15 inch | 15 inch | 15 inch | 15 inch | 15 inch |
| Ground Speed, Unit: | 3 mph | 3 mph | 3 mph | 3 mph | 3 mph |
| Carrier: | water | water | water | water | water |
| Spray Volume, Unit: | 14.8 GPA | 14.8 GPA | 14.8 GPA | 14.8 GPA | 14.8 GPA |
| Propellant: | Co2 | Co2 | Co2 | Co2 | Co2 |
| Tank Mix (Y/N): | Y | Y | Y | Y | Y |

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| Weed Code | Crop Code | GOSHI injury percent | GOSHI injury percent | GOSHI plants 7 feet | GOSHI plants 7 feet | GOSHI plants 7 feet | seed GOSHI yield lb/plot | seed GOSHI yield lb/A | | |
|------------------|---|----------------------|----------------------|---------------------|---------------------|---------------------|--------------------------|-----------------------|------|--------|
| Rating Data Type | Rating Unit | May-12-03 | May-26-03 | May-13-03 | May-20-03 | Jun-06-03 | Sep-26-03 | Sep-26-03 | | |
| ARM Action Codes | # Subsamples, Dec. | | | | | | | TY1 | | |
| Trt No. | Treatment Name | Rate | Unit | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1 | 28 DBP Roundup UltraMax Valor No till | 16 oz/a 1 oz/a | | 0.0 | 0.0 | 20.3 | 20.0 | 19.5 | 10.2 | 2951.9 |
| 2 | 28 DBP Roundup UltraMax Valor Strip Till | 16 oz/a 1 oz/a | | 0.0 | 0.0 | 20.0 | 20.0 | 19.3 | 9.1 | 2649.9 |
| 3 | 28 DBP Roundup UltraMax Valor No till | 16 oz/a 2 oz/a | | 7.0 | 4.3 | 20.8 | 18.0 | 18.0 | 10.3 | 2989.7 |
| 4 | 28 DBP Roundup UltraMax Valor Strip Till | 16 oz/a 2 oz/a | | 0.0 | 0.0 | 17.8 | 17.5 | 17.0 | 10.4 | 3021.6 |
| 5 | 21 DBP Roundup UltraMax Valor No till | 16 oz/a 1 oz/a | | 6.5 | 4.5 | 19.8 | 19.0 | 19.3 | 10.6 | 3065.2 |
| 6 | 21 DBP Roundup UltraMax Valor Strip Till | 16 oz/a 1 oz/a | | 0.0 | 0.0 | 19.8 | 18.3 | 18.3 | 10.4 | 3024.5 |
| 7 | 21 DBP Roundup UltraMax Valor No till | 16 oz/a 2 oz/a | | 22.8 | 16.3 | 16.8 | 15.5 | 13.0 | 8.1 | 2359.5 |
| 8 | 21 DBP Roundup UltraMax Valor Strip Till | 16 oz/a 2 oz/a | | 0.8 | 0.0 | 18.3 | 17.0 | 17.3 | 9.6 | 2787.8 |
| 9 | 14 DBP Roundup UltraMax Valor No till | 16 oz/a 1 oz/a | | 8.5 | 6.5 | 20.3 | 19.8 | 19.5 | 10.6 | 3065.2 |
| 10 | 14 DBP Roundup UltraMax Valor Strip Till | 16 oz/a 1 oz/a | | 0.0 | 0.0 | 17.3 | 16.5 | 15.3 | 9.2 | 2660.8 |
| 11 | 14 DBP Roundup UltraMax Valor No till | 16 oz/a 2 oz/a | | 24.8 | 13.8 | 11.8 | 10.3 | 10.3 | 8.0 | 2321.7 |
| 12 | 14 DBP Roundup UltraMax Valor Strip Till | 16 oz/a 2 oz/a | | 0.0 | 0.0 | 18.5 | 17.0 | 16.8 | 9.1 | 2645.5 |
| 13 | 7 DBP Roundup UltraMax Valor No till | 16 oz/a 1 oz/a | | 24.5 | 15.5 | 15.8 | 14.5 | 14.5 | 9.6 | 2786.4 |

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| Weed Code | | | | | | seed | seed | | | | | |
|--------------------|--|-----------|--------------|-----------|-----------|-----------|-----------|--------|-----|--------|--------|--------|
| Crop Code | | GOSHI | GOSHI | GOSHI | GOSHI | GOSHI | GOSHI | | | | | |
| Rating Data Type | | injury | injury | plants | plants | plants | yield | | | | | |
| Rating Unit | | percent | percent | 7 feet | 7 feet | 7 feet | lb/plot | | | | | |
| Rating Date | | May-12-03 | May-26-03 | May-13-03 | May-20-03 | Jun-06-03 | Sep-26-03 | | | | | |
| ARM Action Codes | | | | | | | | | | | | |
| # Subsamples, Dec. | | | | | | | TY1 | | | | | |
| Trt | Treatment | | | | | | | | | | | |
| No. | Name | Rate | Unit | 1 | 2 | 3 | 4 | | | | | |
| | | | | 5 | 6 | 7 | | | | | | |
| 14 | 7 DBP Roundup UltraMax Valor Strip Till | 16 1 | oz/a oz/a | 0.0 | 0.0 | 17.3 | 16.5 | 15.8 | 9.5 | 2764.6 | | |
| 15 | 7 DBP Roundup UltraMax Valor No till | 16 2 | oz/a oz/a | 59.8 | 27.5 | 5.0 | 4.5 | 4.8 | 6.6 | 1918.8 | | |
| 16 | 7 DBP Roundup UltraMax Valor Strip Till | 16 2 | oz/a oz/a | 0.0 | 0.0 | 17.3 | 17.0 | 17.0 | 9.7 | 2813.3 | | |
| 17 | Roundup UltraMax NO VALOR | 16 | oz/a | 0.0 | 0.0 | 20.0 | 19.5 | 19.0 | 9.2 | 2673.1 | | |
| 18 | Roundup UltraMax Valor 0 DBP Strip Till | 16 2 | oz/a oz/a | 0.0 | 0.0 | 17.8 | 17.3 | 17.3 | 9.1 | 2647.0 | | |
| LSD (P=.05) | | 6.66 | | 1.91 | | 4.77 | | 3.77 | | 3.92 | 2.29 | 665.94 |
| Standard Deviation | | 4.71 | | 1.35 | | 3.37 | | 2.66 | | 2.77 | 1.62 | 470.89 |
| CV | | 54.87 | | 27.57 | | 19.34 | | 16.08 | | 17.12 | 17.25 | 17.25 |
| Bartlett's X2 | | 16.498 | | 6.087 | | 22.583 | | 14.943 | | 13.194 | 44.665 | 44.664 |
| P(Bartlett's X2) | | 0.021* | | 0.414 | | 0.163 | | 0.60 | | 0.723 | 0.001* | 0.001* |

Means followed by same letter do not significantly differ (P=.05, Duncan's New MRT)

Column 7: TY1 = 290.4*[6]

Trial Comments

GENERAL COMMENTS: Treatments were applied to bareground instead of weeds to enhance potential for injury. Study was also irrigated at cotton emergence. Roundup was applied overtop at the 4 leaf stage (May 19) and Caparol + MSMA was directed to entire cotton trial on June 13.

OBJECTIVE: Determine time interval needed after apply Valor as burndown but prior to planting cotton.

RESULTS AND DISCUSSION:

Visual cotton injury (plant loss and crop vigor):

1. When strip tilling cotton, injury detected was 1% or less even when applying 2 oz/A of Valor the same day of planting.
2. At 11 DAP when no tilling, there was a rate and time of planting effect on visual cotton injury. For example injury from 1 oz of Valor went from 0-6-8-24% when applied 28-21-14-7 DBP while 2 oz/A injured cotton 7-23-25-60% when applied 28-21-14-7 DBP.

Plant Stands:

1. Plant stands followed similar trends to visual injury.
2. Compared to the no Valor, applying Valor at 2 oz/A in no-till reduced plant stands when applied 7 and 14 DBP. At 21 DBP with 2 oz of Valor in no till, there was a trend to reduce plant stands at 12 and 19 DAP and there was a statistical reduction of plants for this application at 35 DAP.
3. Compared to the no Valor, applying Valor at 1 oz/A in no-till reduced plants stands when only applied 7 DBP.
4. When using strip till, Valor did not impact plant stands.

Cotton Yield (cotton yield was the only variable when the three way interaction was not significant; however Valor rate main effects and Valor by tillage interactions were significant).

1. Pooled over application intervals and tillage regimes, yields were less with Valor (2 oz/A) than with Valor (1 oz/A).
2. Pooled over plant interval, yields from Valor at 1 oz/A strip or no-till and from Valor at 2 oz/A in strip-till were greater than those with 2 oz/A Valor in no-till.
3. There is also an obvious trend when pooling over tillage for Valor at 2 oz/A applied at 7, 14, or 21 DBP to have lower yields.

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CONCLUSIONS:

1. Apply Valor 2 oz/A at least 28 DBP in no-till.
2. Apply Valor 1 oz/A at least 14 DBP in no-till.
3. If strip tilling, it doesn't appear to matter when Valor is applied prior to planting.
4. Study needs to be conducted again to verify results.