

Ohio State University Horticulture and Crop Science

NON - GMO soybean treatments

Title No. 2:
Trial ID: 10NON-GMO Protocol ID: 10NON-GMO
Location: Western Branch F-8 Study Director: Bryan Reeb
Project ID: 10NON-GMO Investigator: Dr. Mark M. Loux
Sponsor Contact:

General Trial Information

Study Director: Bryan Reeb
Investigator: Dr. Mark M. Loux

Trial Location
City: South Charleston Latitude of LL Corner °: 39.85944 N
State/Prov.: Ohio Longitude of LL Corner °: 83.66972 W
Postal Code: 45368 Altitude of LL Corner, Unit: 1086.00 FT
Country: USA

Personnel

Study Director: Bryan Reeb
Investigator: Dr. Mark M. Loux

Crop Description

Crop 1: GLXMA Glycine max Soybean
Variety: SC 9349 RR Description: RR
BBCH Scale: BSOY Planting Date: May-6-2010
Planting Method: SEEDED seeded Rate, Unit: 196000 S/A
Depth, Unit: 0.75 IN
Row Spacing, Unit: 15 IN
Seed Bed: MEDIUM medium
Soil Moisture: GOOD good
Harvested Width, Unit: 6.25 FT Harvested Length, Unit: 40 FT

Pest Description

Pest 1 Type: W Code: SETFA Setaria faberi
Common Name: Giant foxtail
Pest 2 Type: W Code: AMBTR Ambrosia trifida
Common Name: Giant ragweed

Site and Design

Plot Width, Unit: 10 FT Site Type: FIELD field
Plot Length, Unit: 30 FT Experimental Unit: 1 PLOT plot
Plot Area, Unit: 300 FT2 Tillage Type: CONTIL conventional-till
Replications: 4 Study Design: RACOB� Randomized Complete Block (RCB)
Untreated Arrangement: INCLUDED single control randomized in each block

Soil Description

Description Name: E-1
% OM: 3.1 Texture: SICL silty clay loam
pH: 5.9 Soil Name: Kokomo
CEC: 23 Fert. Level: G good
Soil Drainage: G good

Application Description

| | A | B | C |
|-------------------------|------------|------------|-------------|
| Application Date: | May-7-2010 | Jun-4-2010 | Jun-17-2010 |
| Time of Day: | 1:00 P.M. | 8:30 A.M. | 8:00 AM |
| Application Method: | SPRAY | SPRAY | SPRAY |
| Application Timing: | PRE | POST | LPO |
| Application Placement: | BROSOI | BROFOL | BROFOL |
| Applied By: | Dobbels | Dobbels | Dobbels |
| Air Temperature, Unit: | 80 F | 72 F | 75 F |
| % Relative Humidity: | 50 | 85 | 72 |
| Wind Velocity, Unit: | 6 MPH | 4 MPH | 1 MPH |
| Wind Direction: | W | SW | NW |
| Dew Presence (Y/N): | N no | Y yes | Y yes |
| Soil Temperature, Unit: | 66 F | 68 F | 70 F |
| Soil Moisture: | NORMAL | WET | WET |
| % Cloud Cover: | 15 | 0 | 0 |
| Next Rain Occurred On: | May-8-2010 | Jun-4-2010 | |

Ohio State University Horticulture and Crop Science

Crop Stage At Each Application

| | A | | B | | C | |
|--------------------------|-------|------|-------|------|-------|------|
| Crop 1 Code, BBCH Scale: | GLXMA | BSOY | GLXMA | BSOY | GLXMA | BSOY |
| Stage Scale Used: | BBCH | | BBCH | | BBCH | |
| Stage Majority, Percent: | 13 | 100 | 14 | 100 | | |
| Height, Unit: | 4 | IN | 8 | IN | | |
| Height Minimum, Maximum: | 3 | 4 | 8 | 9 | | |

Pest Stage At Each Application

| | A | | B | | C | |
|---------------------------|-------|-----|-------|----|-------|---|
| Pest 1 Code, Type, Scale: | SETFA | W | SETFA | W | SETFA | W |
| Stage Majority, Percent: | 13 | 100 | | | | |
| Height, Unit: | 3 | IN | | | | |
| Height Minimum, Maximum: | 2 | 4 | | | | |
| Pest 2 Code, Type, Scale: | AMBTR | W | AMBTR | W | AMBTR | W |
| Stage Majority, Percent: | 16 | 50 | 13 | 50 | | |
| Stage Minimum, Percent: | 12 | 30 | | | | |
| Stage Maximum, Percent: | 18 | 10 | | | | |
| Height, Unit: | 5 | IN | 4 | IN | | |
| Height Minimum, Maximum: | 2 | 6 | 1 | 6 | | |

Application Equipment

| | A | | B | | C | |
|---------------------------|---------|---------|-----------|--------|-----------|--------|
| Appl. Equipment: | Tractor | | BACKPACK | | BACKPACK | |
| Equipment Type: | SPTRMO | | SPRBAC | | SPRBAC | |
| Operating Pressure, Unit: | 40 | PSI | 53 | PSI | 53 | PSI |
| Nozzle Type: | DG | | TEEJET DG | | TEEJET DG | |
| Nozzle Size: | 11002 | | 11002 | | 11002 | |
| Nozzle Spacing, Unit: | 20 | IN | 18 | IN | 18 | IN |
| Boom Length, Unit: | 20 | FT | 10 | FT | 10 | FT |
| Boom Height, Unit: | 20 | IN | 20 | IN | 20 | IN |
| Ground Speed, Unit: | 5.7 | MPH | 3 | MPH | 3 | MPH |
| Carrier: | WATER | | WATER | | WATER | |
| Spray Volume, Unit: | 20 | GAL/AC | 20 | GPA | 20 | GPA |
| Mix Size, Unit: | 10 | gallons | 3 | Liters | 3 | Liters |
| Propellant: | PUMROL | | CO2 | | CO2 | |
| Tank Mix (Y/N): | N no | | | | | |

Ohio State University Horticulture and Crop Science

NON - GMO soybean treatments

Title No. 2:
 Trial ID: 10NON-GMO Protocol ID: 10NON-GMO
 Location: Western Branch F-8 Study Director: Bryan Reeb
 Project ID: 10NON-GMO Investigator: Dr. Mark M. Loux
 Sponsor Contact:

| | | | |
|-------------------------------|-------------|-------------|-------------|
| Pest Type | | | |
| Pest Code | | | |
| Pest Scientific Name | | | |
| Pest Name | | | |
| Crop Code | GLXMA | GLXMA | GLXMA |
| BBCH Scale | BSOY | BSOY | BSOY |
| Crop Scientific Name | Glycine max | Glycine max | Glycine max |
| Crop Name | Soybean | Soybean | Soybean |
| Rating Date | Sep-22-2010 | Sep-22-2010 | Sep-22-2010 |
| Rating Type | YIELD | MOICON | YIELD |
| Rating Unit | LBS | % | BU |
| Number of Subsamples | 1 | 1 | 1 |
| Days After First/Last Applic. | 138 97 | 138 97 | 138 97 |
| Trt-Eval Interval | HARVEST | HARVEST | HARVEST |
| Plant-Eval Interval | 139 DP-1 | 139 DP-1 | 139 DP-1 |
| ARM Action Codes | | | TY1 |
| Number of Decimals | 1 | 1 | 1 |

| Trt No. | Treatment Name | Form Conc | Form Unit | Other Rate | Other Unit | Appl Code | 12 | 13 | 14 |
|---------|----------------|--------------|-----------|------------|------------|-----------|----------|----------|----------|
| 1 | Valor SX | 51 %AW/W | | 2 oz/a | | A | 25.5 a | 11.6 def | 75.1 a |
| 1 | Flexstar | 1.88 LBA/GAL | | 1.3 pt/a | | B | | | |
| 1 | Select Max | 1 LBA/GAL | | 9 oz/a | | | | | |
| 1 | Superb HC | 100 % | | 0.4 qt/a | | | | | |
| 1 | N-PAK AMS | 100 % | | 2 qt/a | | | | | |
| 2 | Valor SX | 51 %AW/W | | 2 oz/a | | A | 25.7 a | 11.5 ef | 75.9 a |
| 2 | Flexstar | 1.88 LBA/GAL | | 1.3 pt/a | | B | | | |
| 2 | Firstrate | 84 %AW/W | | 0.3 oz/a | | | | | |
| 2 | Select Max | 1 LBA/GAL | | 9 oz/a | | | | | |
| 2 | Superb HC | 100 % | | 0.4 qt/a | | | | | |
| 2 | N-PAK AMS | 100 % | | 2 qt/a | | | | | |
| 3 | Valor SX | 51 %AW/W | | 2 oz/a | | A | 21.8 abc | 11.2 f | 64.8 a-d |
| 3 | Firstrate | 84 %AW/W | | 0.3 oz/a | | B | | | |
| 3 | Select Max | 1 LBA/GAL | | 9 oz/a | | | | | |
| 3 | Superb HC | 100 % | | 0.4 qt/a | | | | | |
| 3 | N-PAK AMS | 100 % | | 2 qt/a | | | | | |
| 4 | Valor SX | 51 %AW/W | | 2 oz/a | | A | 25.1 ab | 11.4 ef | 74.3 a |
| 4 | Flexstar | 1.88 LBA/GAL | | 1.3 pt/a | | B | | | |
| 4 | Select Max | 1 LBA/GAL | | 9 oz/a | | | | | |
| 4 | Superb HC | 100 % | | 0.4 qt/a | | | | | |
| 4 | N-PAK AMS | 100 % | | 2 qt/a | | | | | |
| 4 | Cobra | 2 LBA/GAL | | 10 oz/a | | C | | | |
| 4 | Superb HC | 100 % | | 0.4 qt/a | | | | | |
| 5 | Valor SX | 51 %AW/W | | 2 oz/a | | A | 23.0 ab | 11.4 ef | 68.0 abc |
| 5 | Firstrate | 84 %AW/W | | 0.3 oz/a | | B | | | |
| 5 | Select Max | 1 LBA/GAL | | 9 oz/a | | | | | |
| 5 | Superb HC | 100 % | | 0.4 qt/a | | | | | |
| 5 | N-PAK AMS | 100 % | | 2 qt/a | | | | | |
| 5 | Cobra | 2 LBA/GAL | | 10 oz/a | | C | | | |
| 5 | Superb HC | 100 % | | 0.4 qt/a | | | | | |
| 6 | Valor SX | 51 %AW/W | | 2 oz/a | | A | 17.8 cde | 11.5 ef | 52.5 de |
| 6 | Cobra | 2 LBA/GAL | | 12.5 oz/a | | B | | | |
| 6 | Select Max | 1 LBA/GAL | | 9 oz/a | | | | | |
| 6 | Superb HC | 100 % | | 0.4 qt/a | | | | | |
| 6 | N-PAK AMS | 100 % | | 2 qt/a | | | | | |
| 7 | Valor SX | 51 %AW/W | | 2 oz/a | | A | 24.9 ab | 11.3 ef | 73.9 ab |
| 7 | Flexstar | 1.88 LBA/GAL | | 1 pt/a | | B | | | |
| 7 | Classic | 25 %AW/W | | 0.5 oz/a | | | | | |
| 7 | Select Max | 1 LBA/GAL | | 9 oz/a | | | | | |
| 7 | Superb HC | 100 % | | 0.4 qt/a | | | | | |
| 7 | N-PAK AMS | 100 % | | 2 qt/a | | | | | |

Ohio State University Horticulture and Crop Science

| | | | |
|-------------------------------|-------------|-------------|-------------|
| Pest Type | | | |
| Pest Code | | | |
| Pest Scientific Name | | | |
| Pest Name | | | |
| Crop Code | GLXMA | GLXMA | GLXMA |
| BBCH Scale | BSOY | BSOY | BSOY |
| Crop Scientific Name | Glycine max | Glycine max | Glycine max |
| Crop Name | Soybean | Soybean | Soybean |
| Rating Date | Sep-22-2010 | Sep-22-2010 | Sep-22-2010 |
| Rating Type | YIELD | MOICON | YIELD |
| Rating Unit | LBS | % | BU |
| Number of Subsamples | 1 | 1 | 1 |
| Days After First/Last Applic. | 138 97 | 138 97 | 138 97 |
| Trt-Eval Interval | HARVEST | HARVEST | HARVEST |
| Plant-Eval Interval | 139 DP-1 | 139 DP-1 | 139 DP-1 |
| ARM Action Codes | | | TY1 |
| Number of Decimals | 1 | 1 | 1 |

| Trt No. | Treatment Name | Form Conc | Form Unit | Other Rate | Other Unit | Appl Code | 12 | 13 | 14 |
|---------|-------------------|--------------|-----------|------------|------------|-----------|----------|----------|----------|
| 8 | Valor SX | 51 % | AW/W | 2 oz/a | | A | 25.4 ab | 11.7 def | 74.8 a |
| 8 | Roundup Power Max | 4.5 LBAE/GAL | | 22 oz/a | | B | | | |
| 8 | N-PAK AMS | 100 % | | 2 qt/a | | B | | | |
| 9 | Valor XLT @ 3.5oz | | | | | A | 20.9 bcd | 21.5 cde | 55.0 cd |
| 9 | Valor SX | 51 % | AW/W | 2.05 oz/a | | | | | |
| 9 | Classic | 25 % | AW/W | 1.45 oz/a | | | | | |
| 9 | Valor SX | 51 % | AW/W | 2.05 oz/a | | | | | |
| 9 | Classic | 25 % | AW/W | 1.45 oz/a | | | | | |
| 9 | Flexstar | 1.88 LBA/GAL | | 1.3 pt/a | | B | | | |
| 9 | Select Max | 1 LBA/GAL | | 9 oz/a | | | | | |
| 9 | Superb HC | 100 % | | 0.4 qt/a | | | | | |
| 9 | N-PAK AMS | 100 % | | 2 qt/a | | | | | |
| 10 | Valor XLT @ 3.5oz | | | | | A | 22.9 ab | 14.5 def | 65.3 a-d |
| 10 | Flexstar | 1.88 LBA/GAL | | 1.3 pt/a | | B | | | |
| 10 | Firstrate | 84 % | AW/W | 0.3 oz/a | | | | | |
| 10 | Select Max | 1 LBA/GAL | | 9 oz/a | | | | | |
| 10 | Superb HC | 100 % | | 0.4 qt/a | | | | | |
| 10 | N-PAK AMS | 100 % | | 2 qt/a | | | | | |
| 11 | Valor XLT @ 3.5oz | | | | | A | 16.1 e | 37.1 b | 35.1 fg |
| 11 | Firstrate | 84 % | AW/W | 0.3 oz/a | | B | | | |
| 11 | Select Max | 1 LBA/GAL | | 9 oz/a | | | | | |
| 11 | Superb HC | 100 % | | 0.4 qt/a | | | | | |
| 11 | N-PAK AMS | 100 % | | 2 qt/a | | | | | |
| 12 | Valor XLT @ 3.5oz | | | | | A | 23.2 ab | 14.4 def | 66.3 abc |
| 12 | Flexstar | 1.88 LBA/GAL | | 1.3 pt/a | | B | | | |
| 12 | Select Max | 1 LBA/GAL | | 9 oz/a | | | | | |
| 12 | Superb HC | 100 % | | 0.4 qt/a | | | | | |
| 12 | N-PAK AMS | 100 % | | 2 qt/a | | | | | |
| 12 | Cobra | 2 LBA/GAL | | 10 oz/a | | C | | | |
| 12 | Superb HC | 100 % | | 0.4 qt/a | | | | | |
| 13 | Valor XLT @ 3.5oz | | | | | A | 21.6 abc | 15.9 def | 61.0 bcd |
| 13 | Firstrate | 84 % | AW/W | 0.3 oz/a | | B | | | |
| 13 | Select Max | 1 LBA/GAL | | 9 oz/a | | | | | |
| 13 | Superb HC | 100 % | | 0.4 qt/a | | | | | |
| 13 | N-PAK AMS | 100 % | | 2 qt/a | | | | | |
| 13 | Cobra | 2 LBA/GAL | | 10 oz/a | | C | | | |
| 13 | Superb HC | 100 % | | 0.4 qt/a | | | | | |
| 14 | Valor XLT @ 3.5oz | | | | | A | 16.7 de | 29.3 bc | 39.4 ef |
| 14 | Cobra | 2 LBA/GAL | | 12.5 oz/a | | B | | | |
| 14 | Select Max | 1 LBA/GAL | | 9 oz/a | | | | | |
| 14 | Superb HC | 100 % | | 0.4 qt/a | | | | | |
| 14 | N-PAK AMS | 100 % | | 2 qt/a | | | | | |
| 15 | Valor XLT @ 3.5oz | | | | | A | 22.8 ab | 21.9 cd | 60.0 cd |
| 15 | Flexstar | 1.88 LBA/GAL | | 1 pt/a | | B | | | |
| 15 | Classic | 25 % | AW/W | 0.5 oz/a | | | | | |
| 15 | Select Max | 1 LBA/GAL | | 9 oz/a | | | | | |
| 15 | Superb HC | 100 % | | 0.4 qt/a | | | | | |

Ohio State University Horticulture and Crop Science

| | | | | | | |
|-------------------------------|--------------|-------------|-------------|-------------|----------------|------------------------|
| Pest Type | | | | | | |
| Pest Code | | | | | | |
| Pest Scientific Name | | | | | | |
| Pest Name | | | | | | |
| Crop Code | | GLXMA | GLXMA | GLXMA | | |
| BBCH Scale | | BSOY | BSOY | BSOY | | |
| Crop Scientific Name | | Glycine max | Glycine max | Glycine max | | |
| Crop Name | | Soybean | Soybean | Soybean | | |
| Rating Date | | Sep-22-2010 | Sep-22-2010 | Sep-22-2010 | | |
| Rating Type | | YIELD | MOICON | YIELD | | |
| Rating Unit | | LBS | % | BU | | |
| Number of Subsamples | | 1 | 1 | 1 | | |
| Days After First/Last Applic. | | 138 97 | 138 97 | 138 97 | | |
| Trt-Eval Interval | | HARVEST | HARVEST | HARVEST | | |
| Plant-Eval Interval | | 139 DP-1 | 139 DP-1 | 139 DP-1 | | |
| ARM Action Codes | | | | TY1 | | |
| Number of Decimals | | 1 | 1 | 1 | | |
| Trt Treatment No. Name | Form Conc | Form Unit | Other Rate | Other Rate | Appl Unit Code | |
| 15 N-PAK AMS | 100 % | | 2 qt/a | | | 12 13 14 |
| 16 Valor XLT @ 3.5oz | | | | | A | 17.4 cde 58.0 a 22.9 g |
| 16 Roundup Power Max | 4.5 LBAE/GAL | | 22 oz/a | | B | |
| 16 N-PAK AMS | 100 % | | 2 qt/a | | | |
| LSD (P=.05) | | | | | | 4.51 10.24 13.03 |
| Standard Deviation | | | | | | 3.16 7.17 9.12 |
| CV | | | | | | 14.41 37.71 15.13 |
| Bartlett's X2 | | | | | | 32.97 128.356 32.726 |
| P(Bartlett's X2) | | | | | | 0.005* 0.001* 0.005* |
| Replicate F | | | | | | 1.881 0.744 2.468 |
| Replicate Prob(F) | | | | | | 0.1464 0.5315 0.0742 |
| Treatment F | | | | | | 4.347 12.829 12.040 |
| Treatment Prob(F) | | | | | | 0.0001 0.0001 0.0001 |

Means followed by same letter do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Crop Code
GLXMA, BSOY, Glycine max, = US

Rating Type
YIELD = yield
MOICON = moisture content

Rating Unit
% = percent
BU = bushel

Plant-Eval Interval
139 DP-1 = 1 May-6-2010

ARM Action Codes
TY1 = 2.904*[C12]*(100-[C13])/87