



Cotton Specialists' Roundtable

**Cotton Focus
8th Feb 2018**

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SWG

MidSouth Cotton Specialists' Working Group



Outline

- Season Overview/Recap
- Variety selection (Darrin Dodds)
- Varietal tolerance to herbicides (Tyler Sandlin)
 - Cover crops (Bill Robertson)
 - Open discussion



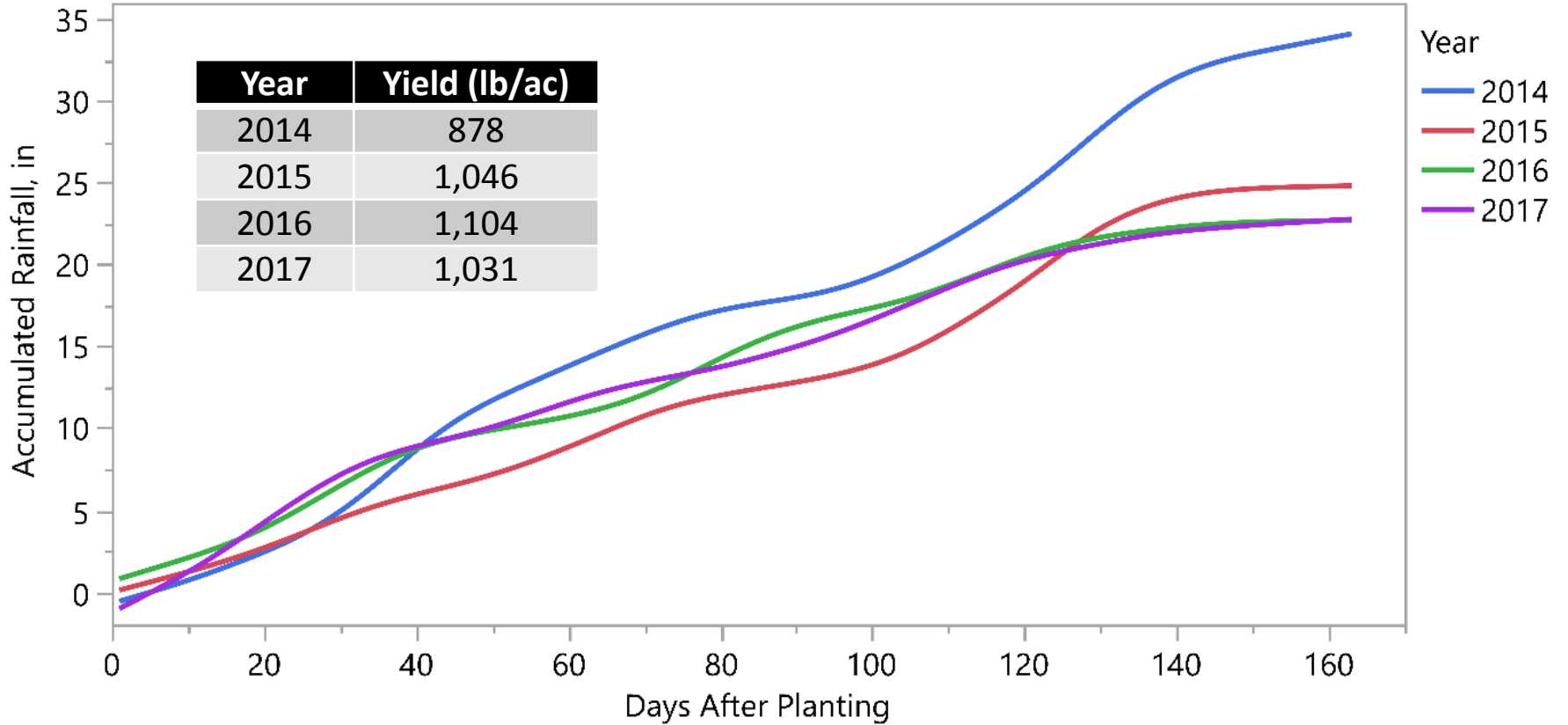
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Season Recap



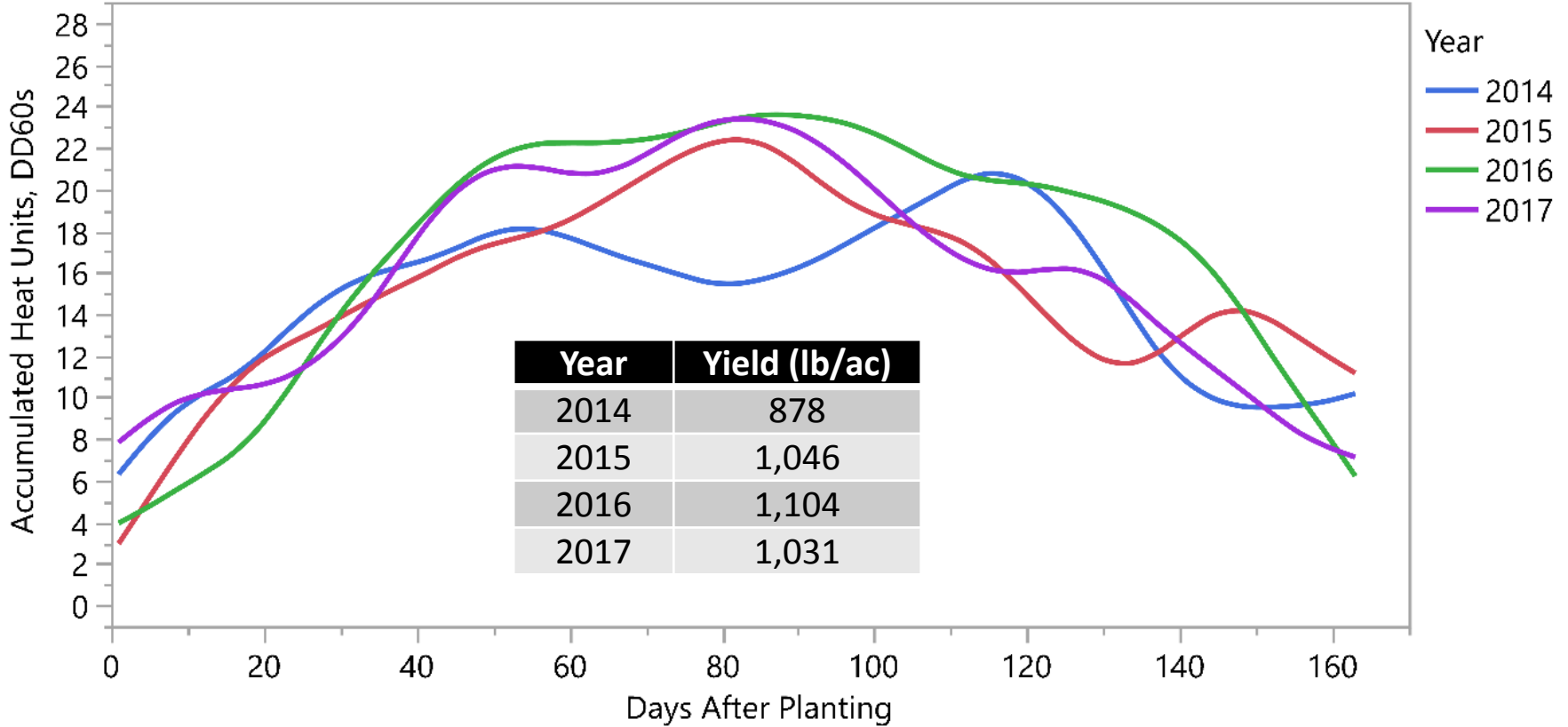


TN Heat Unit Accumulation

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Challenges with cover crops

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Bacterial Blight > Target Spot

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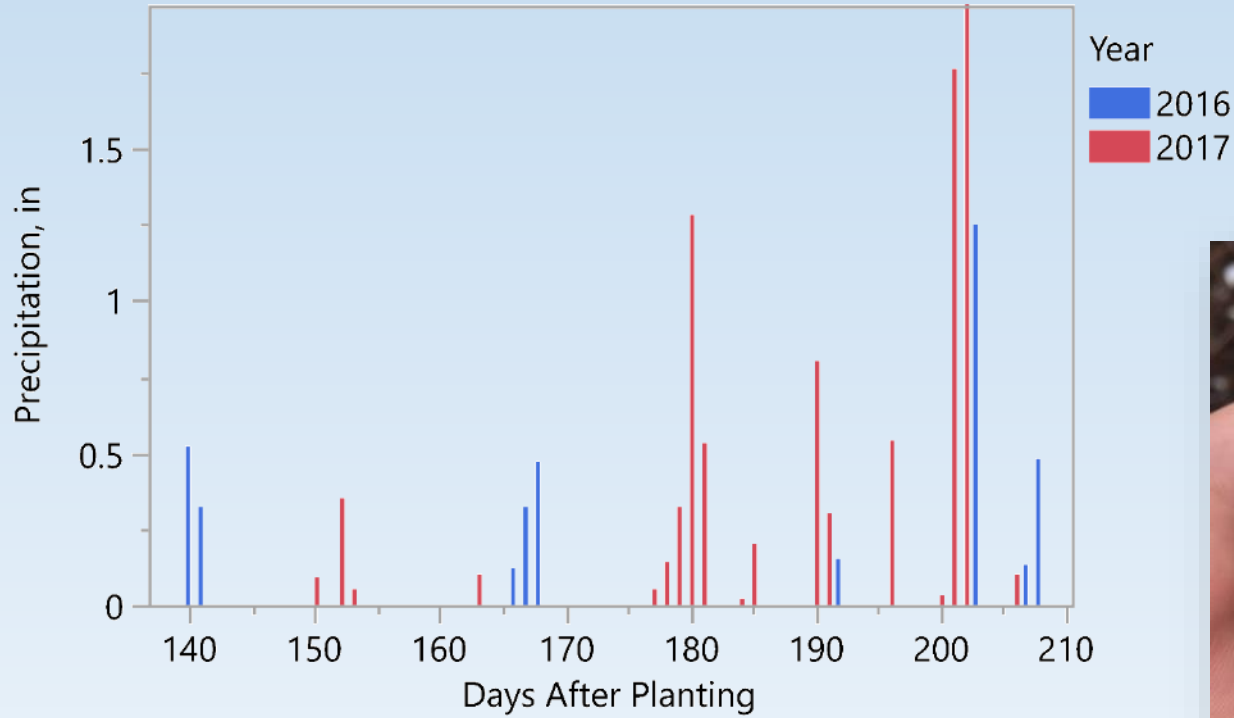


Interrupted harvest

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The 2018 season

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- TN Acreage? Increasing
 - 2017- 340,000
 - 2018- 400,000
- Factors
 - Supporting:
 - 2017 represents 3rd year in a row over 1,000 lb lint/acre state average
 - Returns relative to grain
 - Limiting
 - Picker capacity/equipment constraints
 - Labor constraints



Terry W. Griffin, Ph.D., Kansas State University
Michael J. Buschermohle, University of Tennessee
Edward M. Barnes, Cotton Incorporated

December 2015

Planting and Harvesting Capacity in Cotton Production

Estimated from Days Suitable for Fieldwork

INTRODUCTION

Machine capacity information is crucial for making machinery management decisions. Machine capacity is used to predict how equipment will perform for a specific farming operation and it determines the timeliness of that operation. Machinery capacities have improved over time, however optimal decisions for planting and harvesting equipment selection remain heavily dependent upon climate conditions. Days suitable for fieldwork (DSFW) were evaluated during cotton planting and harvest windows for 13 cotton-producing states. Additionally, scenarios for different planting and harvest equipment configurations were analyzed to give an approximate indication of how many acres cotton producers can realistically expect to cover for each state under various equipment configurations. These results are usable to farmers, practitioners, and researchers for decision making including determining the number of acres that can be planted and/or harvested in a given year. These results are also important for farm decision makers to make machinery selection and acreage allocation decisions.

METHODS

Days suitable for fieldwork data were collected from USDA National Agricultural Statistics Service (NASS). Data were generally available from 1996 to 2013 although a few states (Arkansas, Missouri, Mississippi, and Kansas) had 30 plus years of data. DSFW is determined by weather conditions such as rainfall and temperature that influence the condition of the soil surface thereby affecting the ability of machinery to conduct fieldwork. Weekly DSFW were collected for 13 of the 17 cotton-producing states. Arizona, California, Florida, and Texas do not have historical DSFW data available. USDA reports DSFW at the Crop Reporting District (CRD) level for only Kansas and Missouri, and only state-wide DSFW for the remaining 11 cotton-producing states. Since cotton production only occurs in relatively small areas of Kansas and Missouri, DSFW for southeastern Missouri and south central Kansas were chosen rather than state-level data. The relevant planting and harvest dates for each state were selected from the 2010 USDA NASS Agricultural Handbook Number 628 listed as 'most active'. Griffin et al. (2015) provide additional details on how DSFW was calculated.

Arkansas Cotton Statistics

2017 Annual Summary

- Acres
 - 438,000 acres harvested
 - Up 17% from 2016
- Yield
 - 1206 lbs lint/A (new record)
 - Up 130 lbs from 2016
 - 1130 lbs lint/A five-year average
- Production
 - 1.1 million bales
 - Up 31% from 2016

Mississippi Cotton 2017

- Acres
 - 630,000 Planted
 - Up 40% from 2016
- Yield
 - 1075 lbs lint/A
 - 4th Highest
 - 1,148 lbs lint/A 5 Year Avg.
- Production
 - 1,410,938 bales
 - Up 25% from 2016

Alabama Cotton 2017

- Acres
 - 435,000 Planted
 - Up 26% from 2016
- Yield
 - 931 lbs lint/A
 - 3rd Highest
 - 890 lbs lint/A 5 Year Avg.
- Production
 - 715,550 bales
 - Up 7% from 2016



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Variety Selection



1ST Area to Maximize Investment: Variety Selection

-- 2017 Data --

Irrigated Locations

- **Highest Yielding Variety: 1182 lbs**
- **Median Yielding Variety: 1018 lbs**
 - **Difference: 164 lbs/A**
 - **\$120/A @ \$0.73 cotton**

- **Lowest Yielding Variety: 885 lbs**
 - **Highest to Lowest: 297lbs/A**
 - **Difference: \$217@ \$0.73 cotton**

- **Median to Lowest: 133 lbs**
- **Difference: \$97 @ \$0.73 cotton**

Dryland Locations

- **Highest Yielding Variety: 1228 lbs**
- **Median Yielding Variety: 1090 lbs**
 - **Difference: 138 lbs/A**
 - **\$101/A @ \$0.73 cotton**

- **Lowest Yielding Variety: 960 lbs**
 - **Highest to Lowest: 268 lbs/A**
 - **Difference: \$196/A @ \$0.73 cotton**

- **Median to Lowest: 130 lbs**
- **Difference: \$95/A @ \$0.73 cotton**

1ST Area to Maximize Investment: Variety Selection

-- 2016 Data --

Irrigated Locations

- Highest Yielding Variety: 1552 lbs
- Median Yielding Variety: 1451 lbs
 - Difference: 101 lbs/A
 - \$73/A @ \$0.73 cotton

- Lowest Yielding Variety: 1330 lbs
 - Highest to Lowest: 222 lbs/A
 - Difference: \$162/A @ \$0.73 cotton

- Median to Lowest: 121 lbs
- Difference: \$88/A @ \$0.73 cotton

Dryland Locations

- Highest Yielding Variety: 1321 lbs
- Median Yielding Variety: 1188 lbs
 - Difference: 133 lbs/A
 - \$97/A @ \$0.73 cotton

- Lowest Yielding Variety: 1062 lbs
 - Highest to Lowest: 259 lbs/A
 - Difference: \$189/A @ \$0.73 cotton

- Median to Lowest: 126 lbs
- Difference: \$92/A @ \$0.73 cotton

Variety Performance

- **Irrigated Trial Rank:**

- DP 1646 B2XF – 1
- PHY 330 W3FE – 2
- ST 4949GLT – 3
- DG 3385 B2XF – 4
- DP 1518 B2XF – 5
- DP 1725 B2XF – 6
- ST 5517GLTP – 7
- NG 4601 B2XF – 8
- ST 5020GLT – 9
- PHY 450 W3FE – 10

- **Dryland Trial Rank:**

- DP 1646 B2XF – 1
- DP 1725 B2XF – 2
- DP 1518 B2XF – 3
- ST 5517GLTP – 4
- PHY 330 W3FE – 5
- DG 3385 B2XF – 6
- NG 4601 B2XF – 7
- ST 4949GLT – 8
- ST 5020GLT – 9
- PHY 450 W3FE – 10

What To Look For in Variety Trial Data

- **Do not look solely at performance**
- **Every variety can win or lose a trial**
 - **No variety wins all trials**
 - **Look at how frequently a variety performs near the top or bottom of a given trial**
- **Stability is key**
 - **Soil types**
 - **Rainfall**
 - **Planting date**
 - **Management style**

Leaf Grade from Commercial Ginned Study and Pubescence and Trichome Ratings

Variety	Leaf 1 & 2 %	Leaf 3 %	Leaf 4 %	Leaf 5 %	Leaf Pubescence Rating ^a	Stem Pubescence Rating ^a	Bract Trichomes #/cm ^b
NG3522 B2XF	100	0	0	0	1	6.7	21.3
DP 1725 B2XF	47	53	0	0	1.7	7	24.6
NG 4601 B2XF	13	87	0	0	1.6	6.8	28.4
PHY 300 W3FE	0	63	37	0	1.9	6.8	28.5
DG 3385 B2XF	0	93	7	0	1.3	6.8	31.1
ST 5020GLT	0	59	41	0	4.3	6.6	32.8
PHY 340 W3FE	0	7	86	7	2.8	6.3	35.9
ST 4949GLT	82	18	0	0	4.7	6.6	37.9
DP 1518 B2XF	0	81	19	0	5.3	5.8	38.8

^a Leaf and stem pubescence rating using scale of 1 (smooth leaf) to 9 (pilose, very hairy).

^b Marginal trichome density of bracts determined on 6 bracts/plot.

Yield and Economic Evaluation of Cotton Varieties from Large-block On-farm Tests in Northeast Arkansas

Allison Howell, Bill Robertson, Andy Vangilder, David Cagle, Graves Gin, and Barbi Anderson
University of Arkansas System, Division of Agriculture, Little Rock, AR

Variety	Date Harvested	Lint Yield (lb/Acre)	Turnout %	Grade	Leaf	Staple	Strength g/tex	Mic	Uniformity	Loan Rate Cent's/Lb.	Per Acre Income
DP 1725 B2XF	10/17/2017	1644	43.17	31-1	2.5	37.1	31.7	3.9	80.8	54.3	\$893.39
DG 3385 B2XF	10/12/2017	1644	42.53	31-1	2.2	37	30.7	4.8	82.4	54.3	\$892.06
ST 5020 GLT	10/17/2017	1670	38.97	41-1	3.4	38.9	32.5	4.4	82	52.6	\$878.92
PHY 300 W3FE	10/18/2017	1574	37.26	41-1	3.4	37	31.9	4.4	82.8	54.1	\$851.58
NG 3522 B2XF	10/12/2017	1533	38.81	31-1	1.9	36	29.4	4.5	81.7	53.9	\$826.85
NG 4601 B2XF	10/13/2017	1493	41.4	21-2	2.1	37.9	32.6	4.6	82.2	54.8	\$818.35
DP 1518 B2XF	10/12/2017	1522	38.82	31-2	3.2	38	30.9	4.2	81.1	53.6	\$816.71
PHY 340 W3FE	10/12/2017	1535	40.99	31-2	4	38	32.3	4.6	82.7	52.5	\$806.82
DG 3445 B2XF	10/17/2017	1415	40.6	31-1	2.7	37.9	33.4	4	82.8	54.6	\$772.47



2017 TN Cotton Variety Testing Program

- 6 Official Variety Trials
- 14 County Standard Trials
- 3 Replicated Large Plot Trials
- Numerous company evaluations

Those you “know”

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• Enlist

- PHY 330 W3FE
- PHY 340 W3FE
 - Both in CST ‘A’ Group
 - BB resistant, 3 Bt genes
 - Good yield potential, FQ

• Glytol/Liberty Link

- ST 4949 GLT
 - Good yield potential, high turnout

• RoundupFlex

- PHY 444 WRF
 - Excellent fiber quality, #2/42 lint yield in OVT

• XtendFlex

- DP 1646 B2XF
 - #1/14 CST, Excellent FQ
- DG 3385 B2XF
 - #2/14 CST, Widely-adaptable, early-mid maturity
- DP 1614 B2XF
 - #3/14 CST, watch mic & seed size
- DP 1518 B2XF
 - #4/14 CST, Good FQ, but watch leaf
 - Bacterial blight resistant
- NG 3522 B2XF
 - #5/14 CST, Good yield potential, early-mid maturity



Those you may not

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- Enlist

- PHY 430 W3FE

- Bacterial blight resistant
 - 3 Bt genes
 - Listed twice in OVT results-commercial will be a blend of two experimentals tested in our 17 OVTs
 - #5&7/42 lint yield in OVT

- Glytol/Liberty Link

- ST 5517 GLTP

- Mid-late maturity
 - Bacterial blight resistant
 - 3 Bt genes
 - #1/42 lint yield in OVT

- XtendFlex

- DP 1820 B3XF

- Good Yield Potential & FQ
 - Bacterial blight resistant
 - 3 Bt genes
 - #3/42 lint yield in 17 OVT

- CP 9608 B3XF

- Mid? Maturity
 - 3 Bt genes
 - #6/42 lint yield in 17 OVT

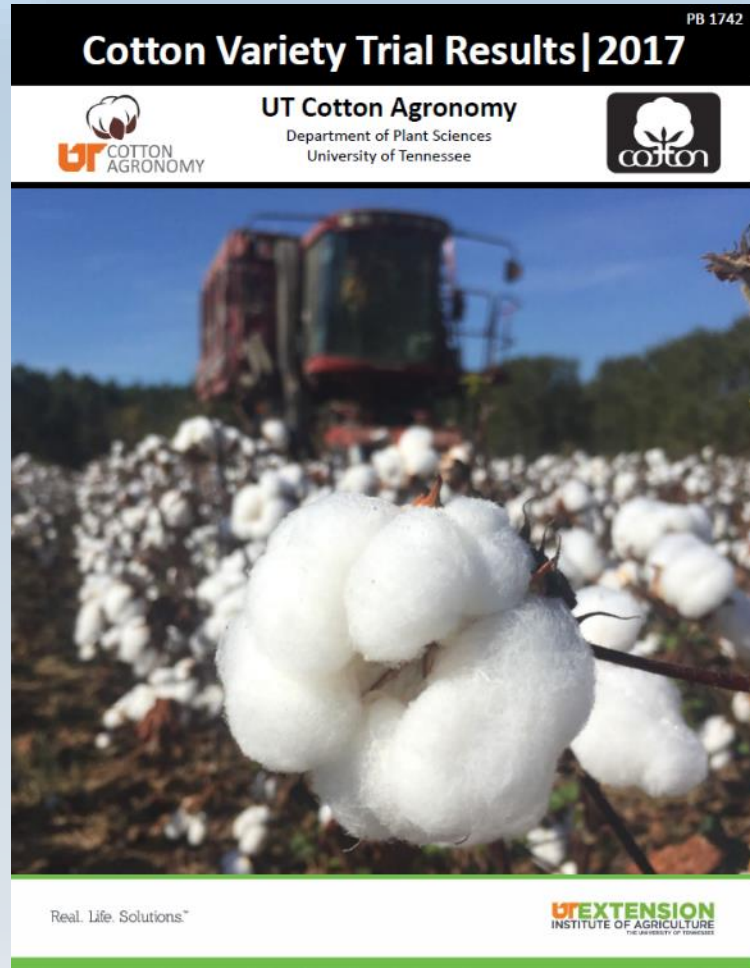


TN Variety Trial Data

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Printed copies at
registration

Digital copy at
news.utcrops.com



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Herbicide Tolerance



Varietal Response of Glufosinate Tolerant Cotton to Glufosinate and Other Tank Mixes



Factors Affecting Crop Response to Herbicides

- Temperature
- Humidity
- Soil Moisture
- Cuticle Thickness
- Leaf Pubescence?

Varieties Tested

Stoneville 4848 GLT

Stoneville 4949 GLB2

Phytogen 330 W3FE

Phytogen 340 W3FE

Deltapine 1612 B2XF

Deltapine 1614 B2XF

Deltapine 1725 B2XF

Deltapine 1646 B2XF

Deltapine 1820 B3XF

Treatments Applied

- Liberty 29oz/A
- Liberty 29oz/A + Dual Magnum 16oz/A
- Liberty 29oz/A + Dual Magnum 16oz/A + Orthene 0.5lb/A

7 Day Rating Results

Brand	Liberty average % leaf burn	Liberty + Dual Magnum average % leaf burn	Liberty + Dual Magnum + Orthene average % leaf burn
Stoneville	3.7%	19.8%	23%
Phytogen	4.1%	11.8%	12.4%
Deltapine	8.2%	24.4%	24%

7 Day Rating Results

Variety	Liberty % leaf burn	Liberty + Dual Magnum % leaf burn	Liberty + Dual Magnum + Orthene % leaf burn
Stoneville 4848 GLT	4.2	21.2	22.3
Stoneville 4949 GLB2	3.2	18.3	23.6
Phytogen 330 W3FE	5	12.4	12.4
Phytogen 340 W3FE	3.2	11.2	12.4
Deltapine 1612 B2XF	6.1	20	18.5
Deltapine 1614 B2XF	6.1	22.4	24.9
Deltapine 1725 B2XF	11.2	31.1	31.2
Deltapine 1646 B2XF	12.4	36.1	34.6
Deltapine 1820 B3XF	5	12.4	11.2



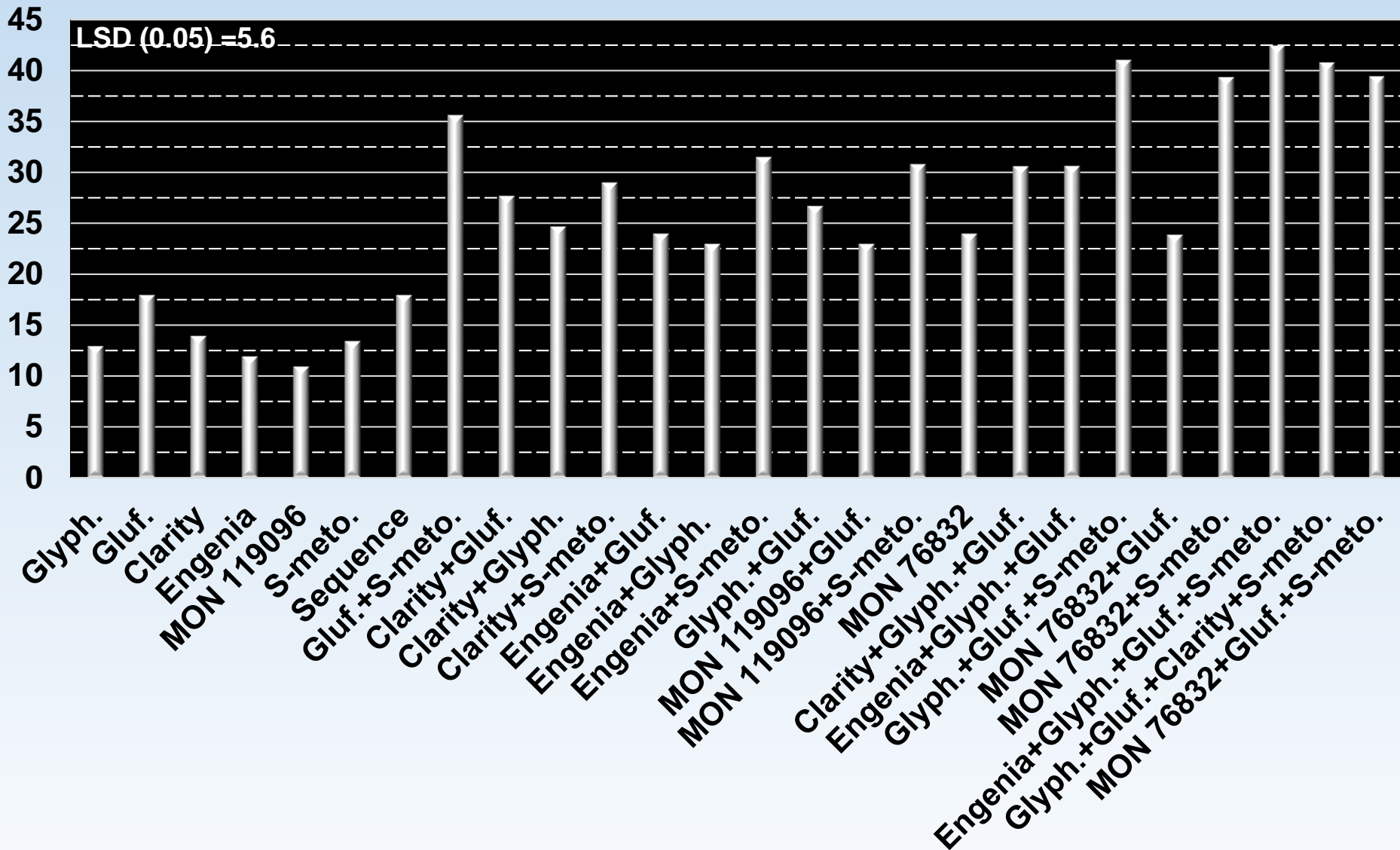


Yield

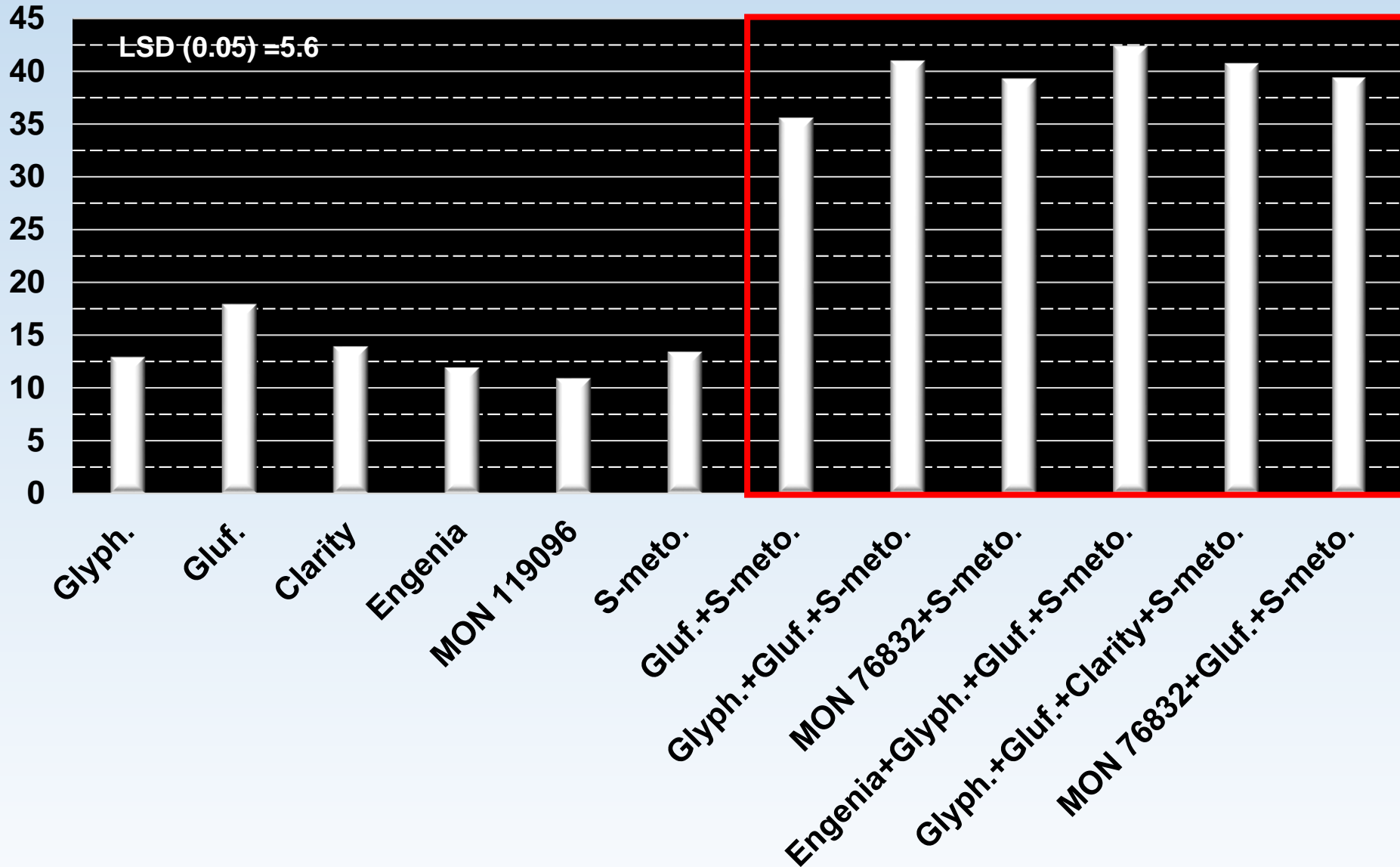
Variety	Liberty Seedcotton yield lbs/acre	Liberty + Dual Magnum Seedcotton yield lbs/acre	Liberty + Dual Magnum + Orthene Seedcotton yield lbs/acre
Stoneville 4848 GLT	3191.2	3067.1	3114.4
Stoneville 4949 GLB2	2776.9	2992.6	2797.9
Phytogen 330 W3FE	3659.6	4055	4038
Phytogen 340 W3FE	3764.9	3904.7	3618.5
Deltapine 1612 B2XF	3917.8	3738.7	3847.2
Deltapine 1614 B2XF	3674.7	3712.6	3400.3
Deltapine 1725 B2XF	3263.1	3452.6	3144.2
Deltapine 1646 B2XF	4070.7	3695.6	3712.6
Deltapine 1820 B3XF	3464.3	3358.5	3243.5



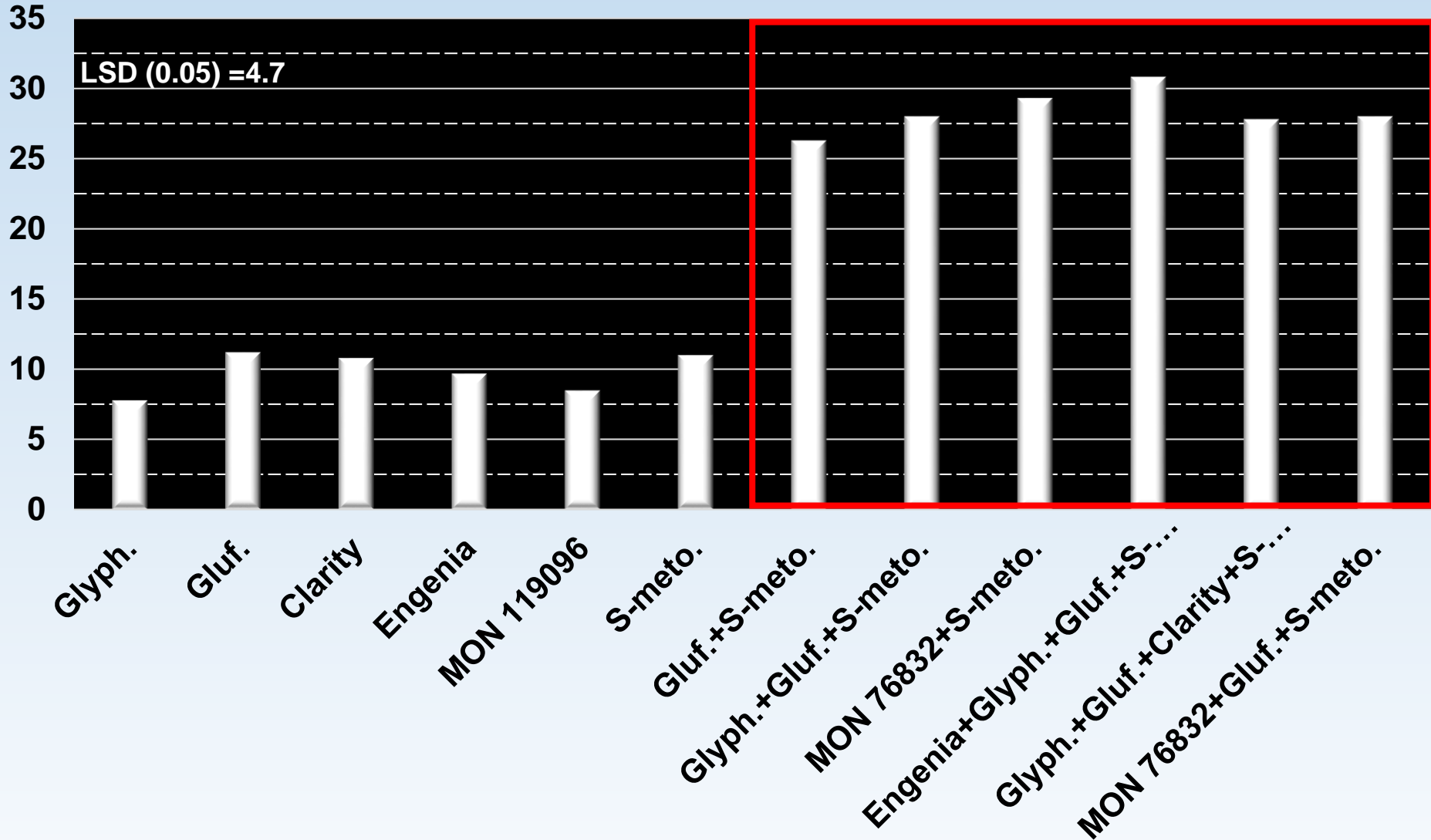
B2XF Crop Injury 3 DAA



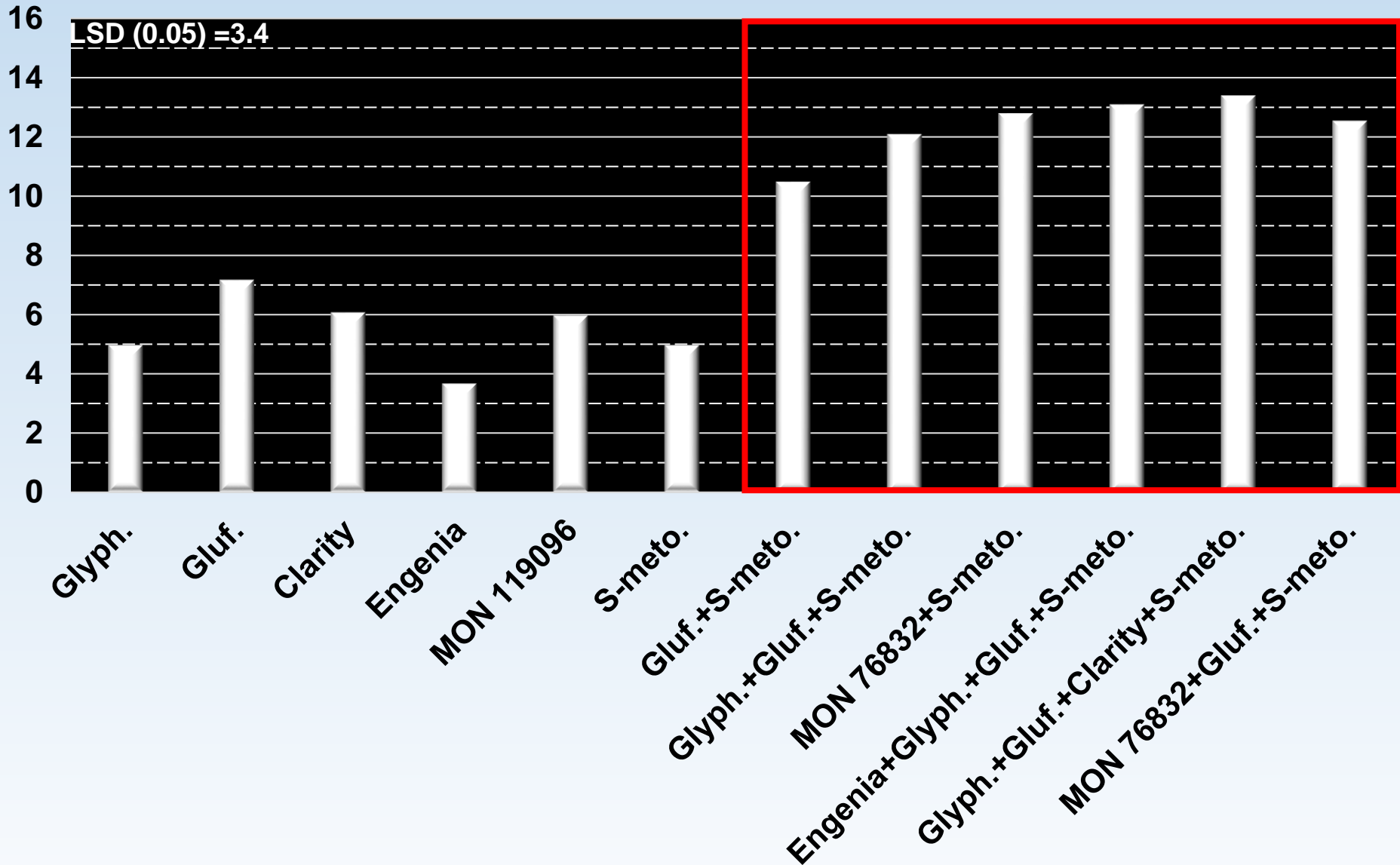
B2XF Crop Injury 3 DAA



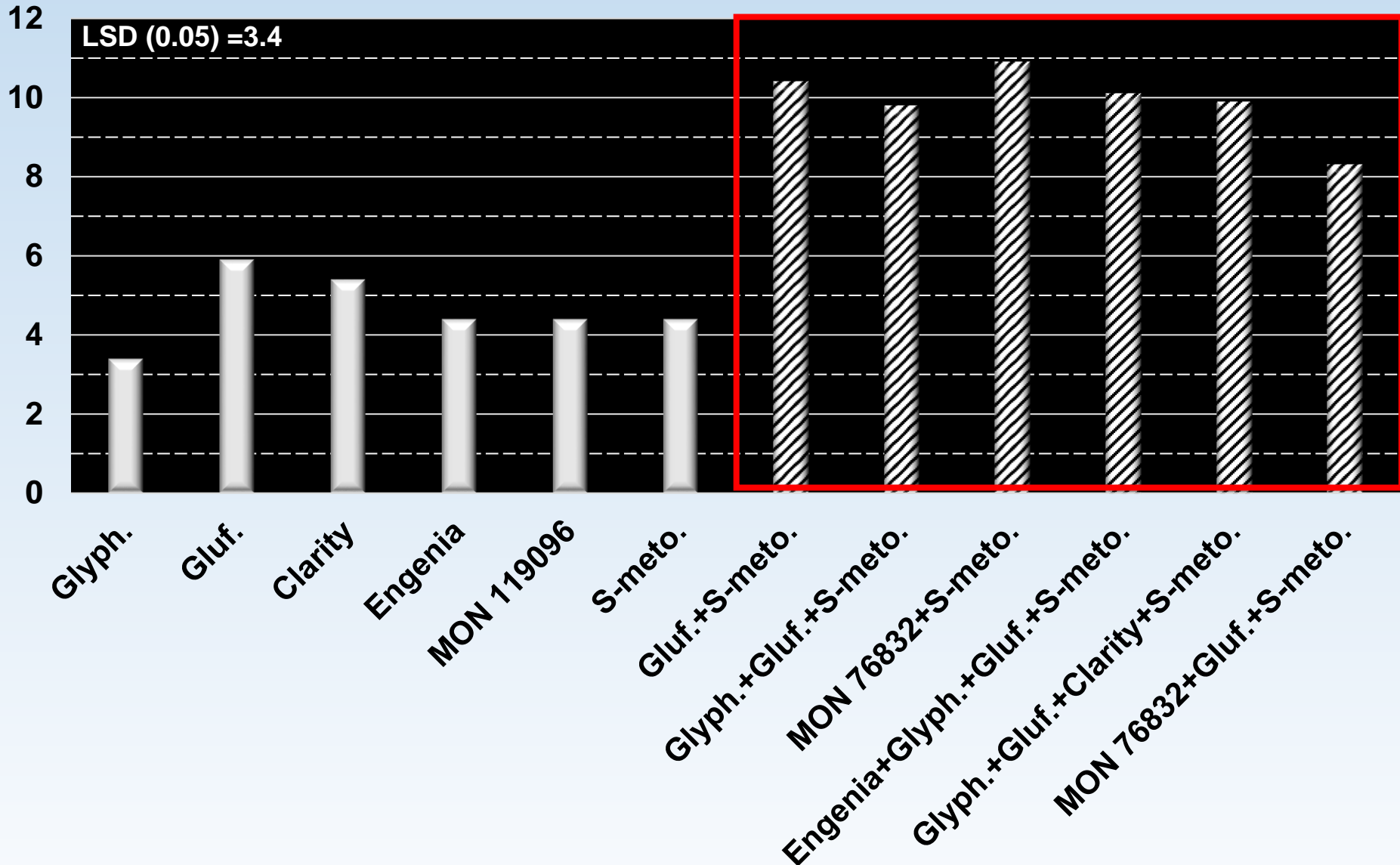
B2XF Crop Injury 7 DAA



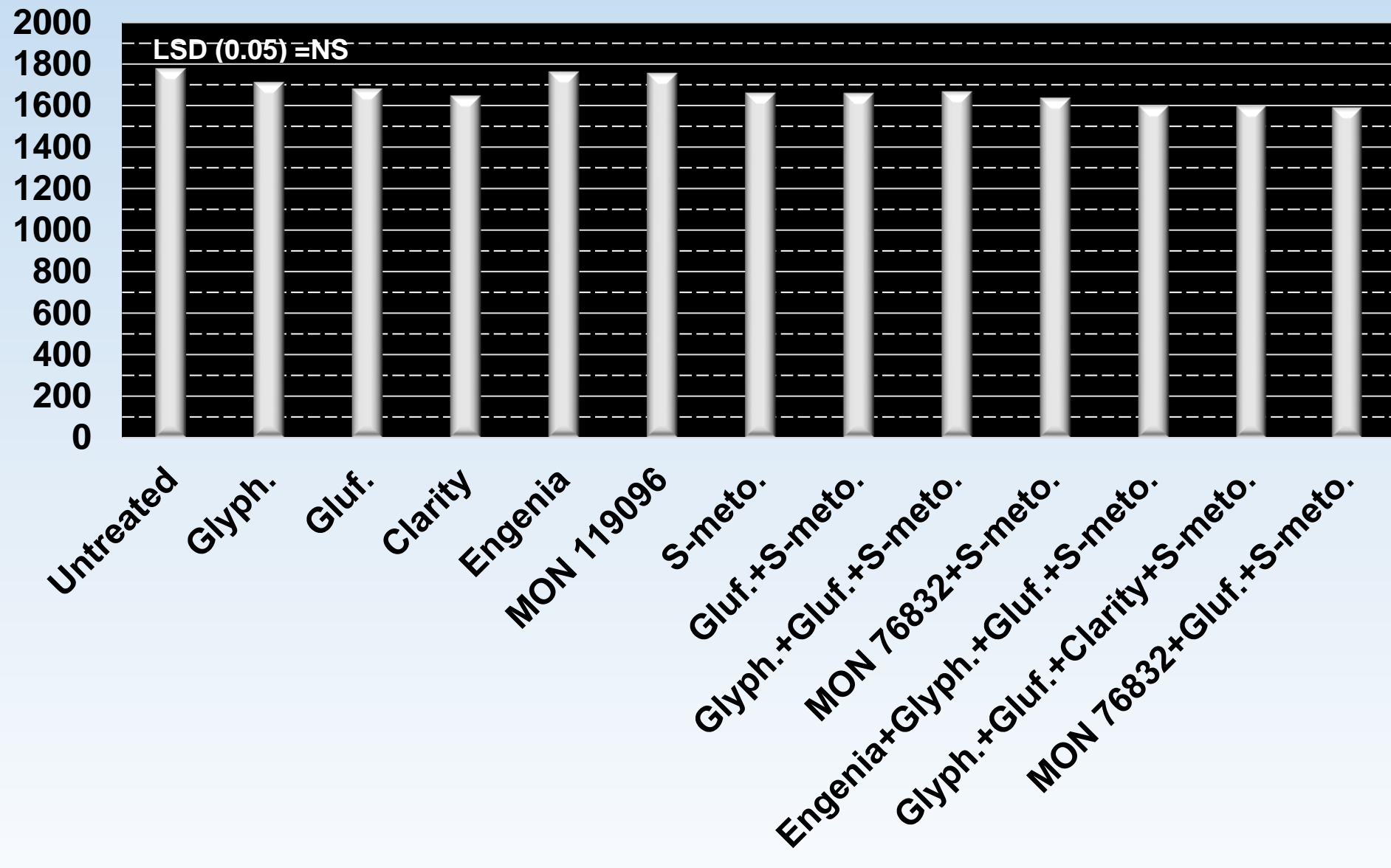
B2XF Crop Injury 14 DAA



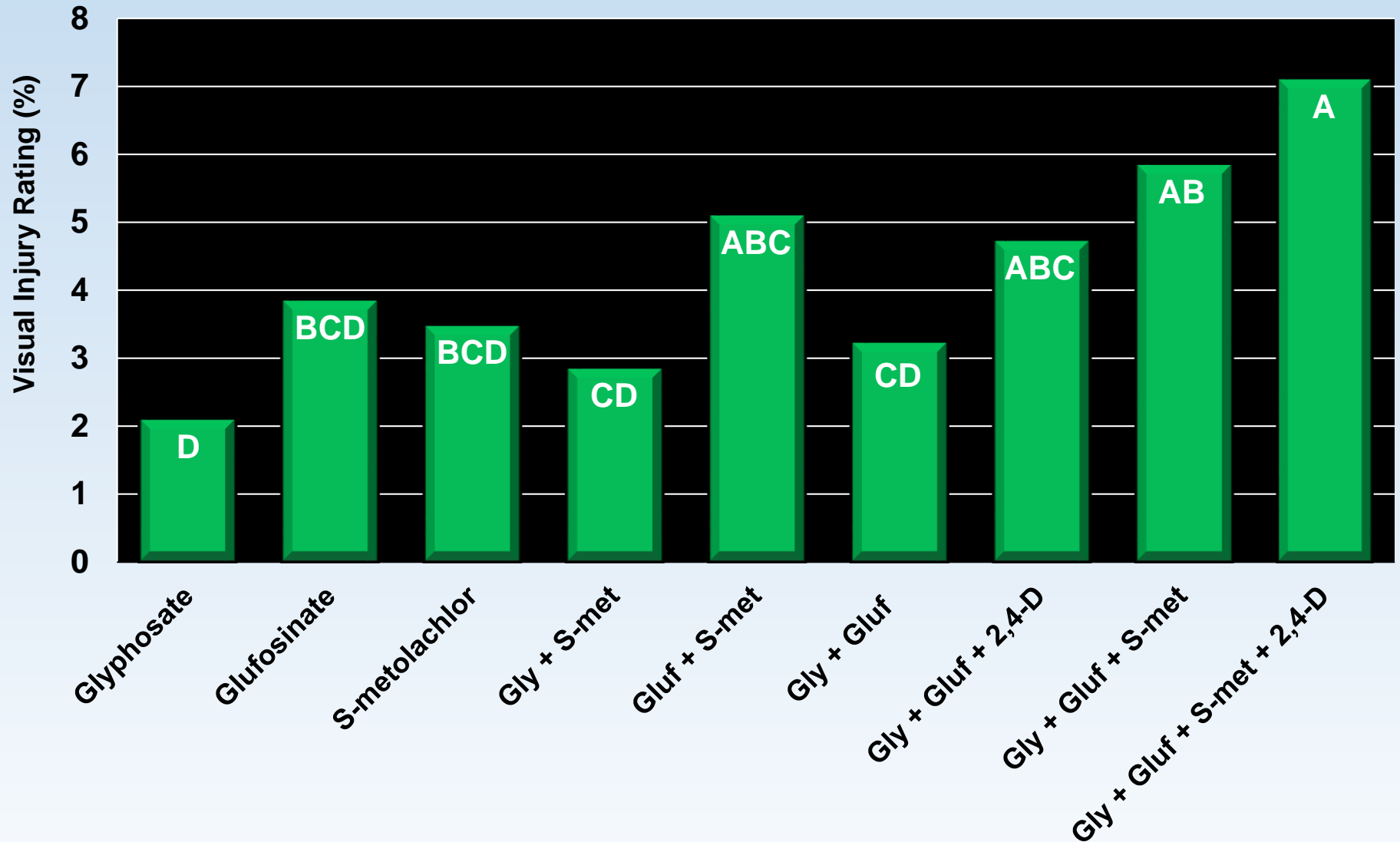
B2XF Crop Injury 21 DAA



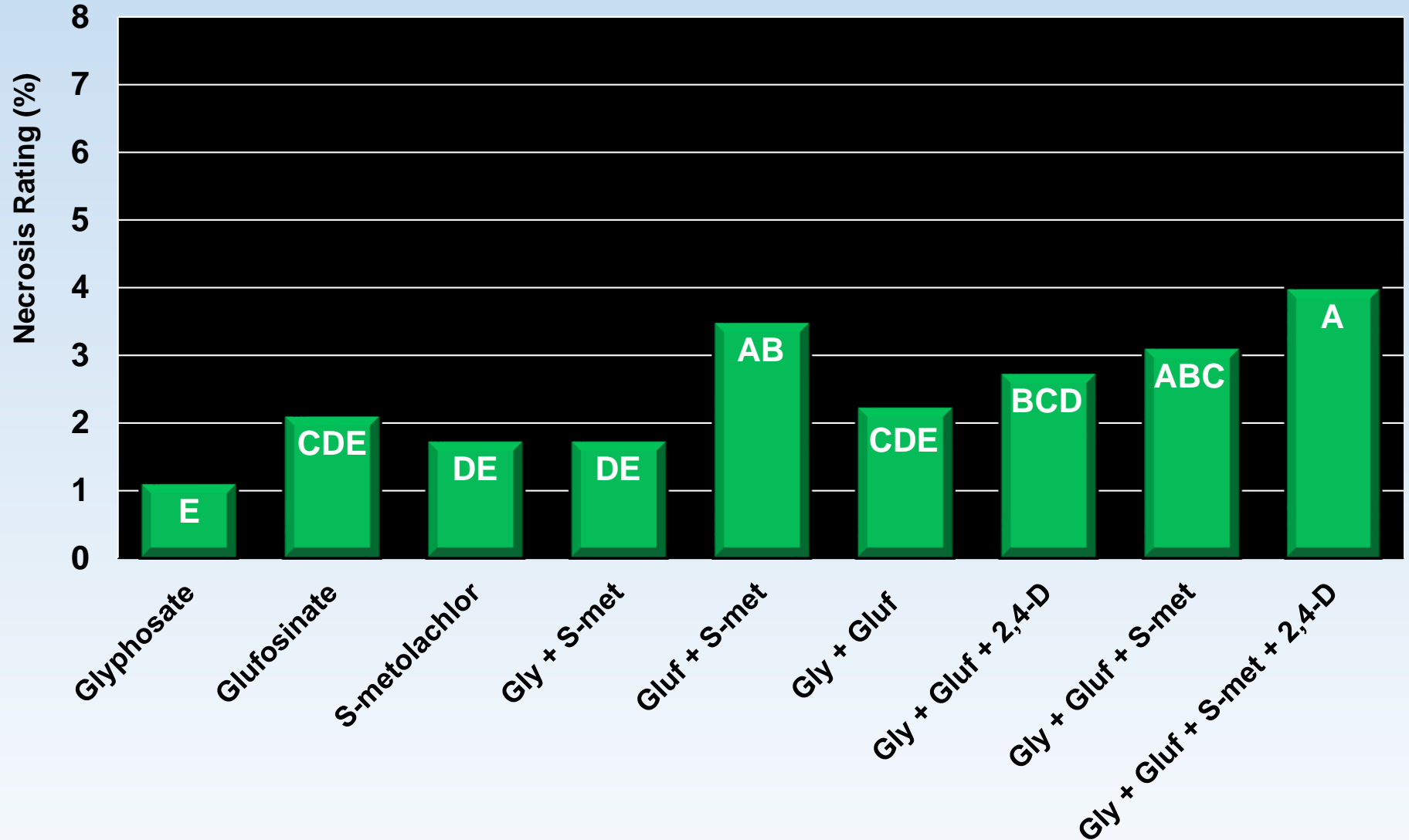
Lint Yield



Enlist Cotton Visual Injury at 7 DAA



Enlist Cotton Necrosis at 7 DAA



Enlist Cotton Injury at 7 DAA

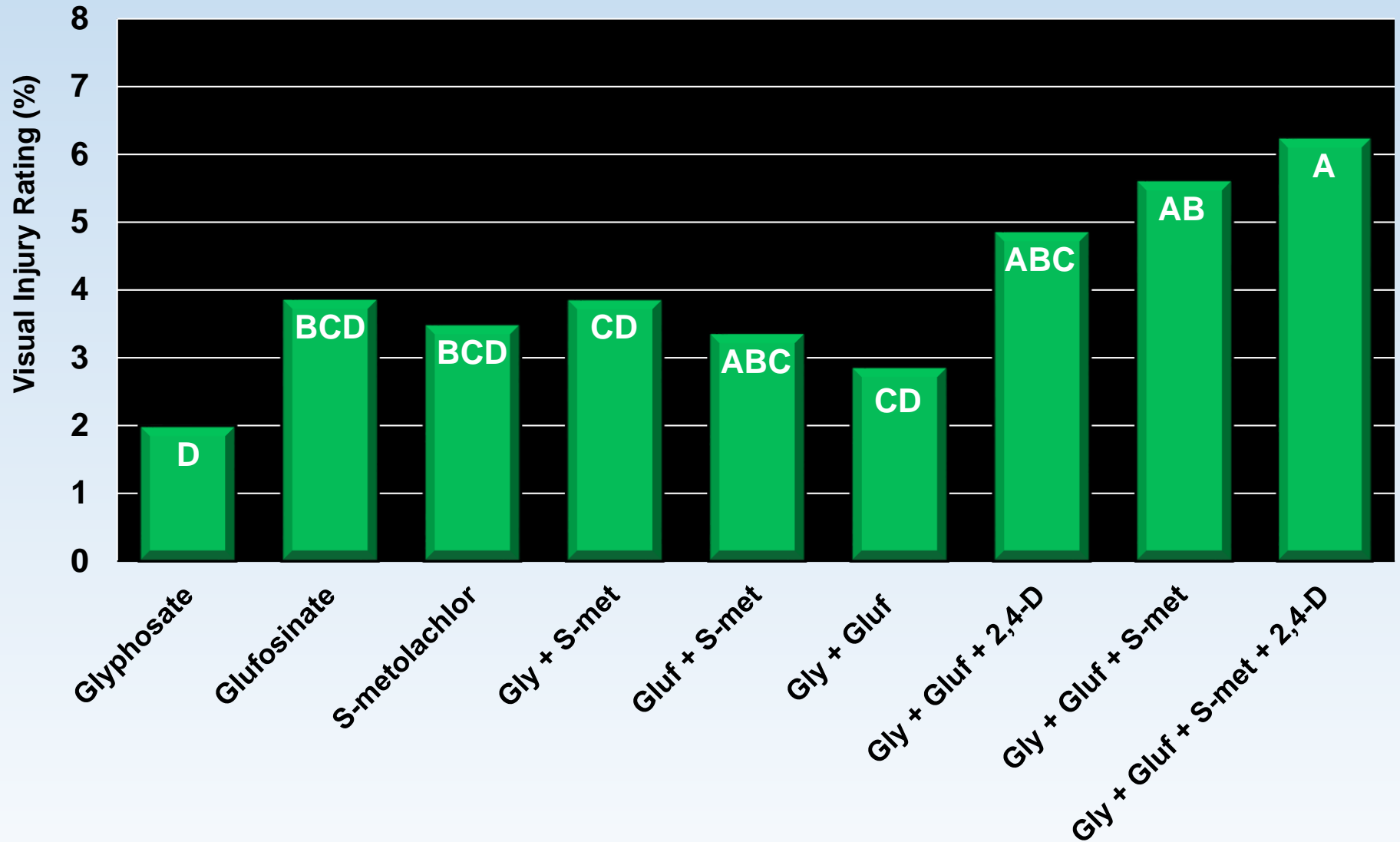


Untreated

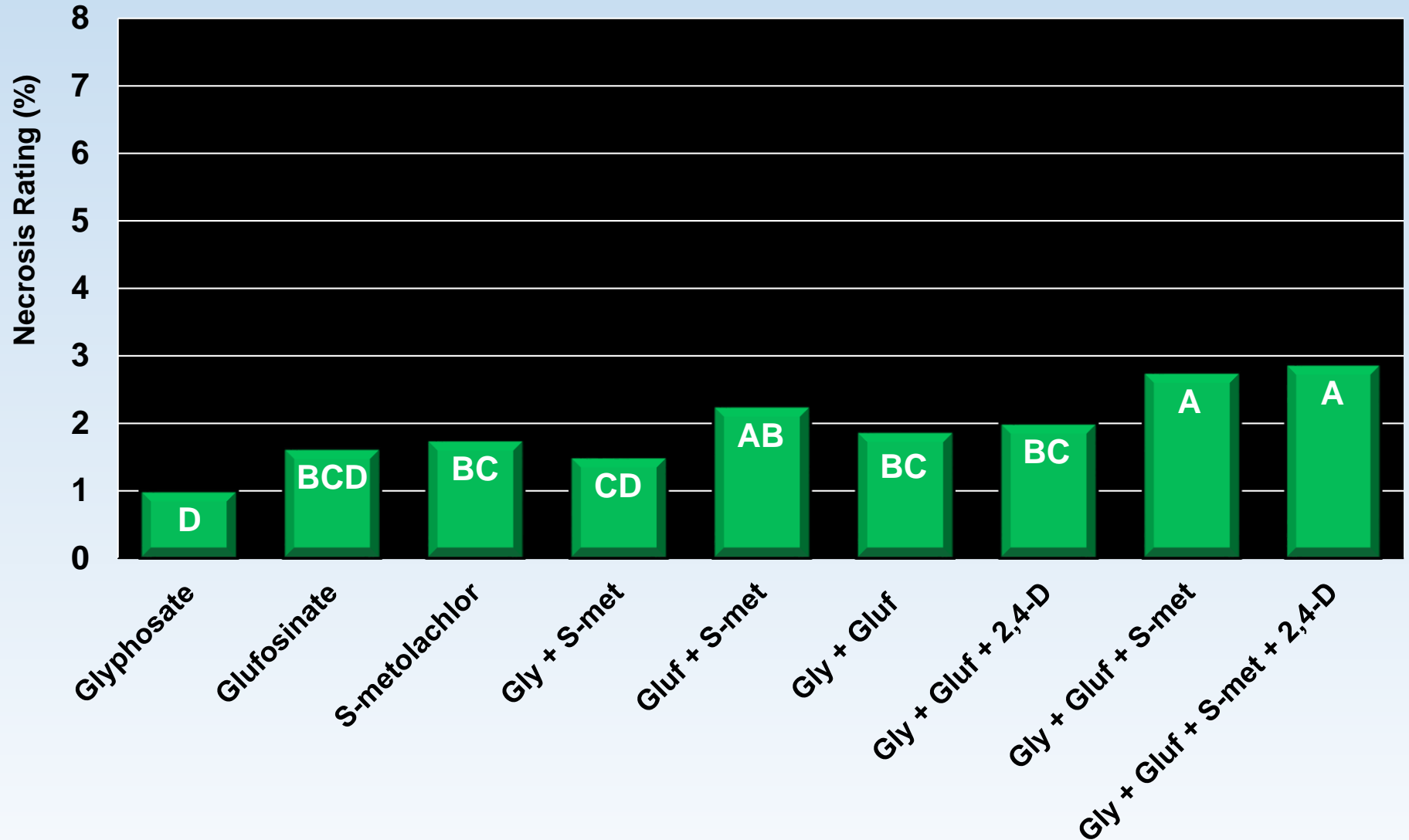


Glyphosate + Glufosinate + S-metolachlor + 2,4-D

Enlist Cotton Visual Injury at 14 DAA



Enlist Cotton Necrosis at 14 DAA



Enlist Cotton Injury at 14 DAA

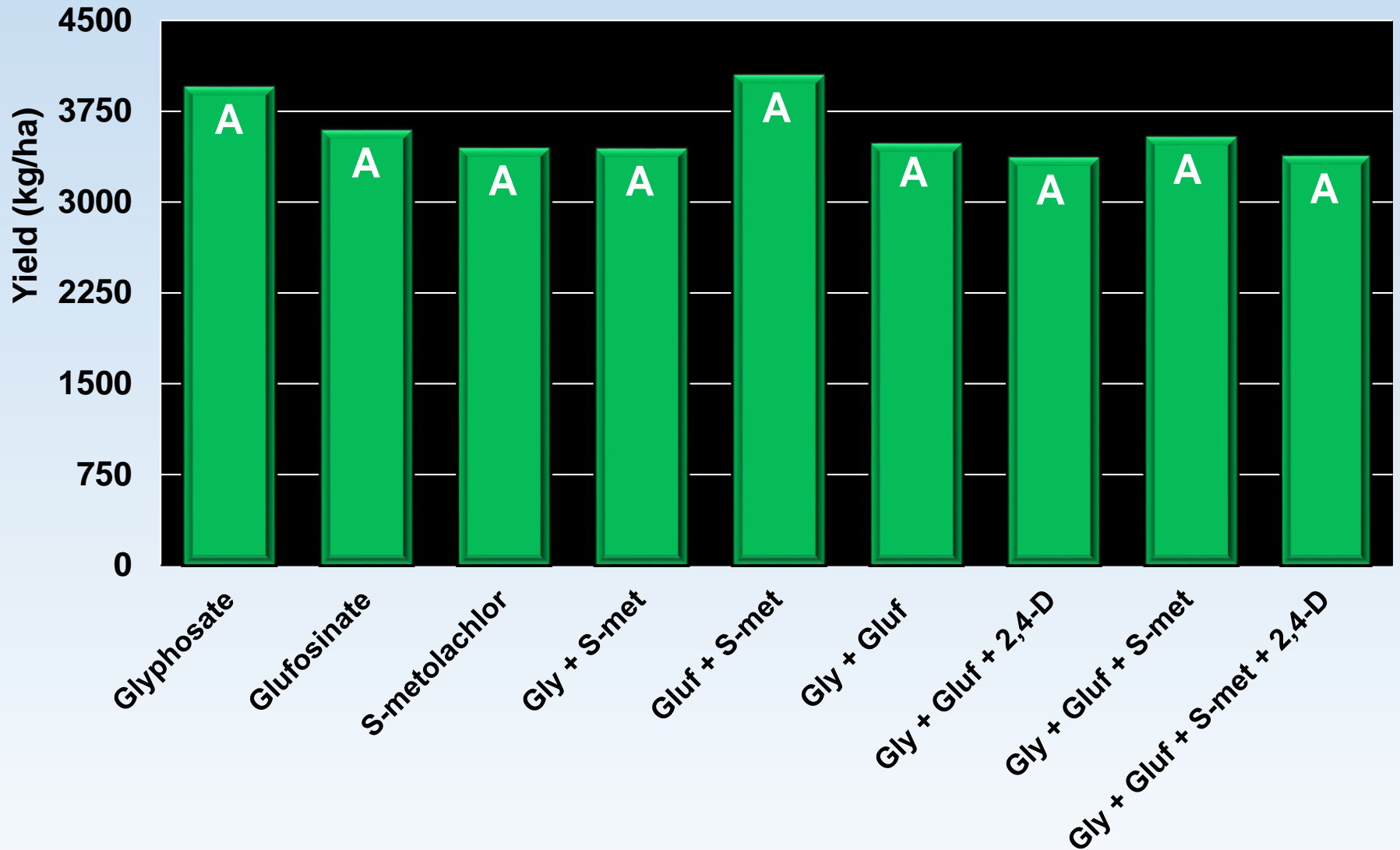


Untreated

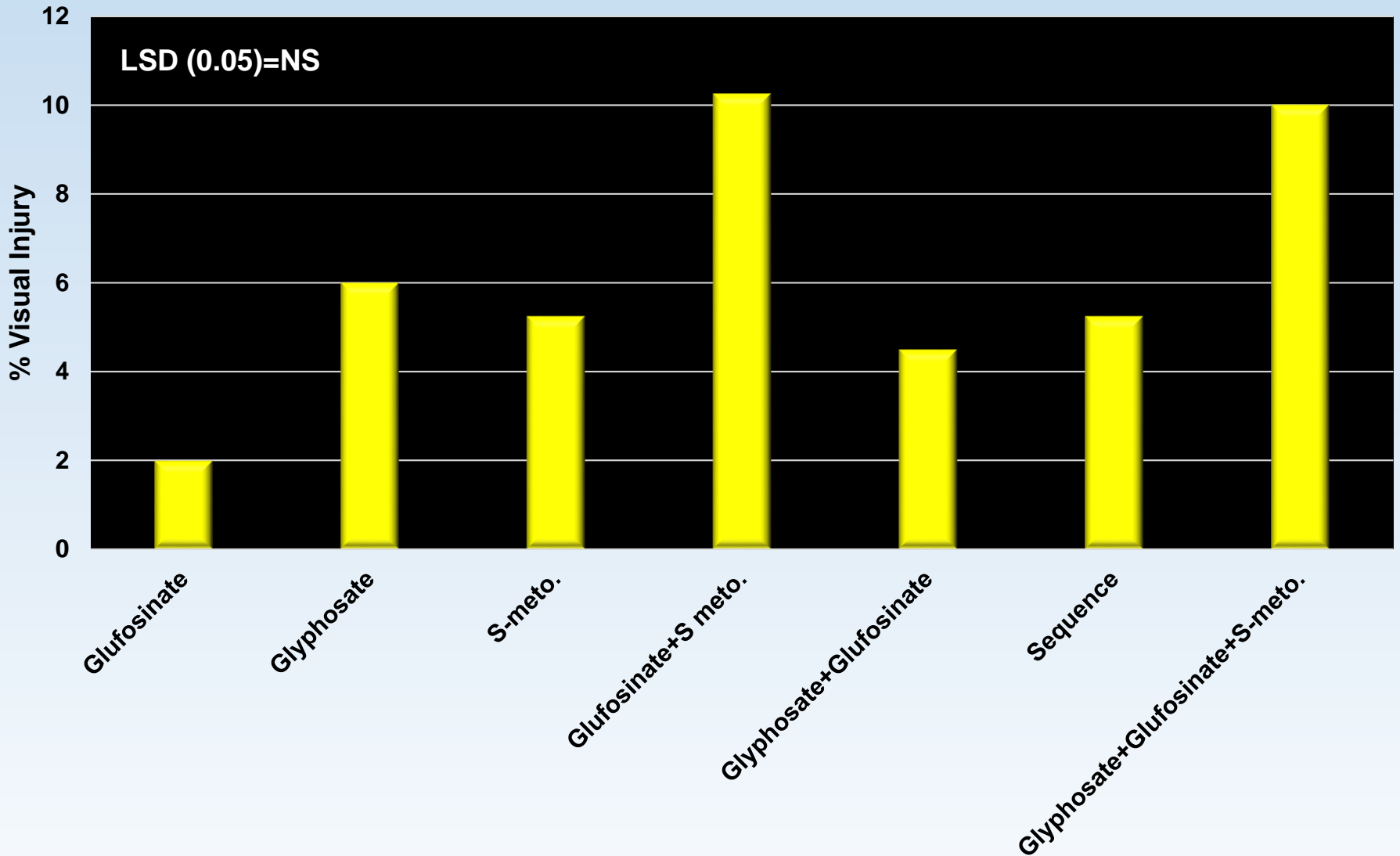


**Glyphosate + Glufosinate +
S-metolachlor + 2, 4-D**

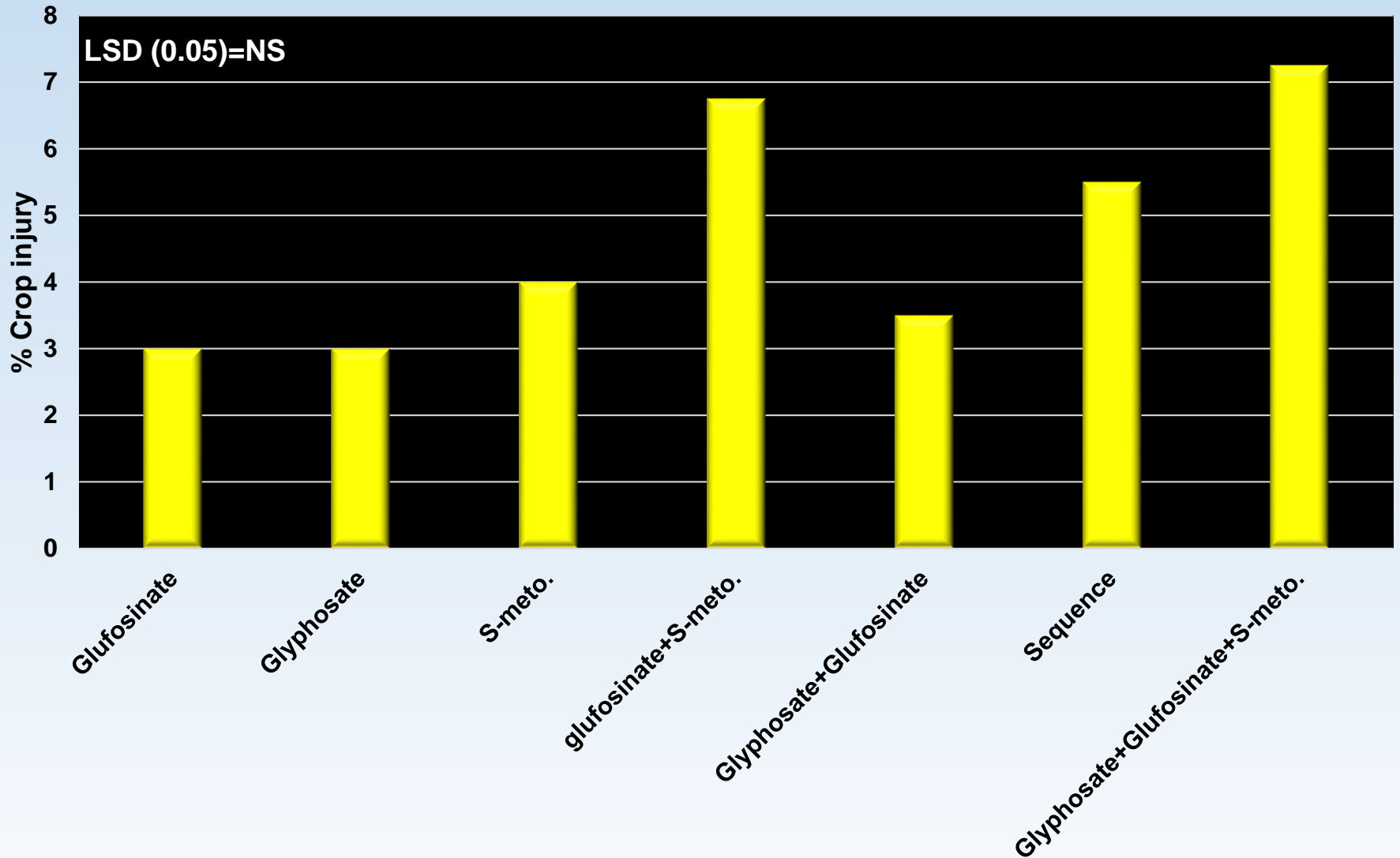
Enlist Cotton Yield



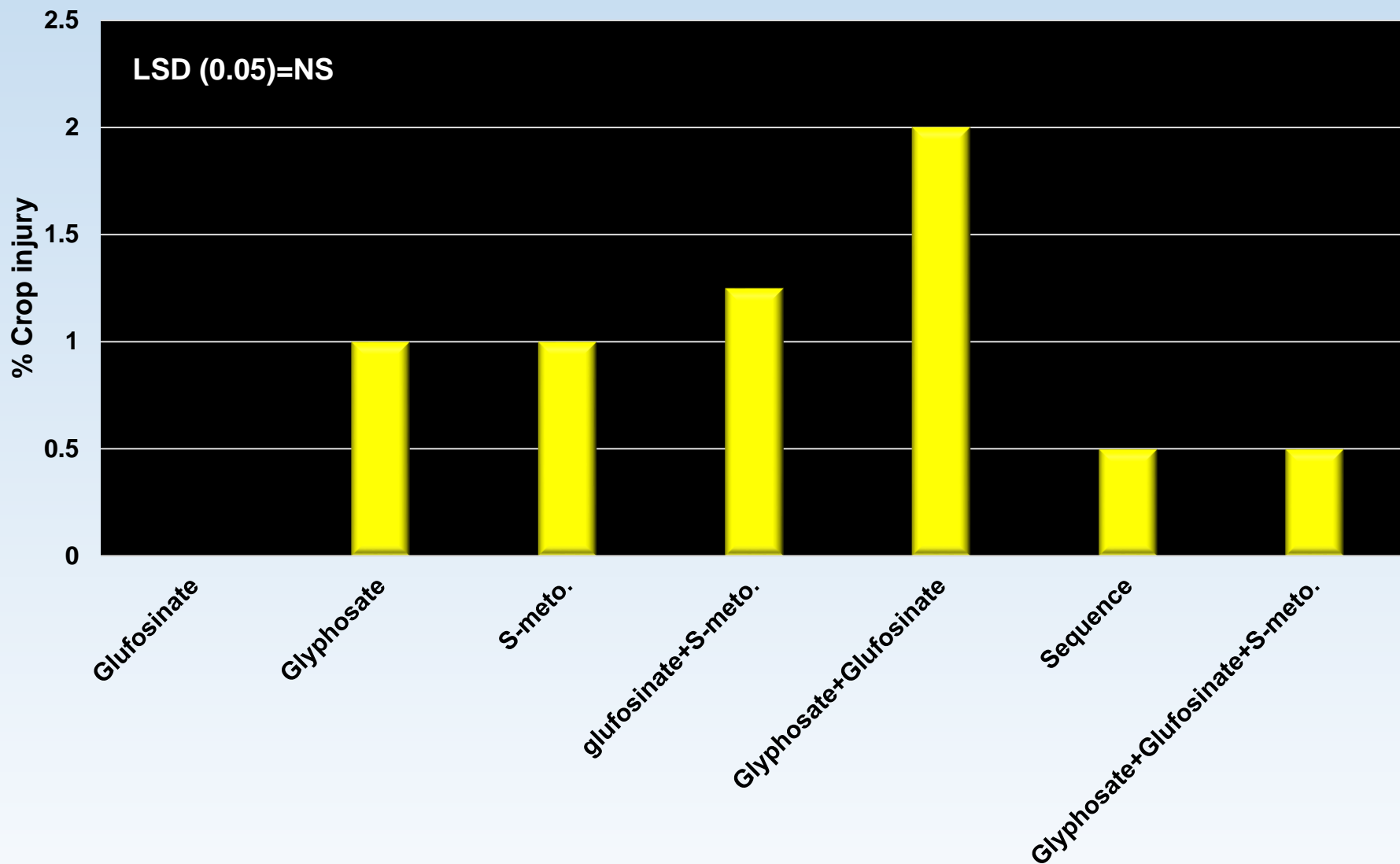
GLB2 Crop Injury 3 DAA



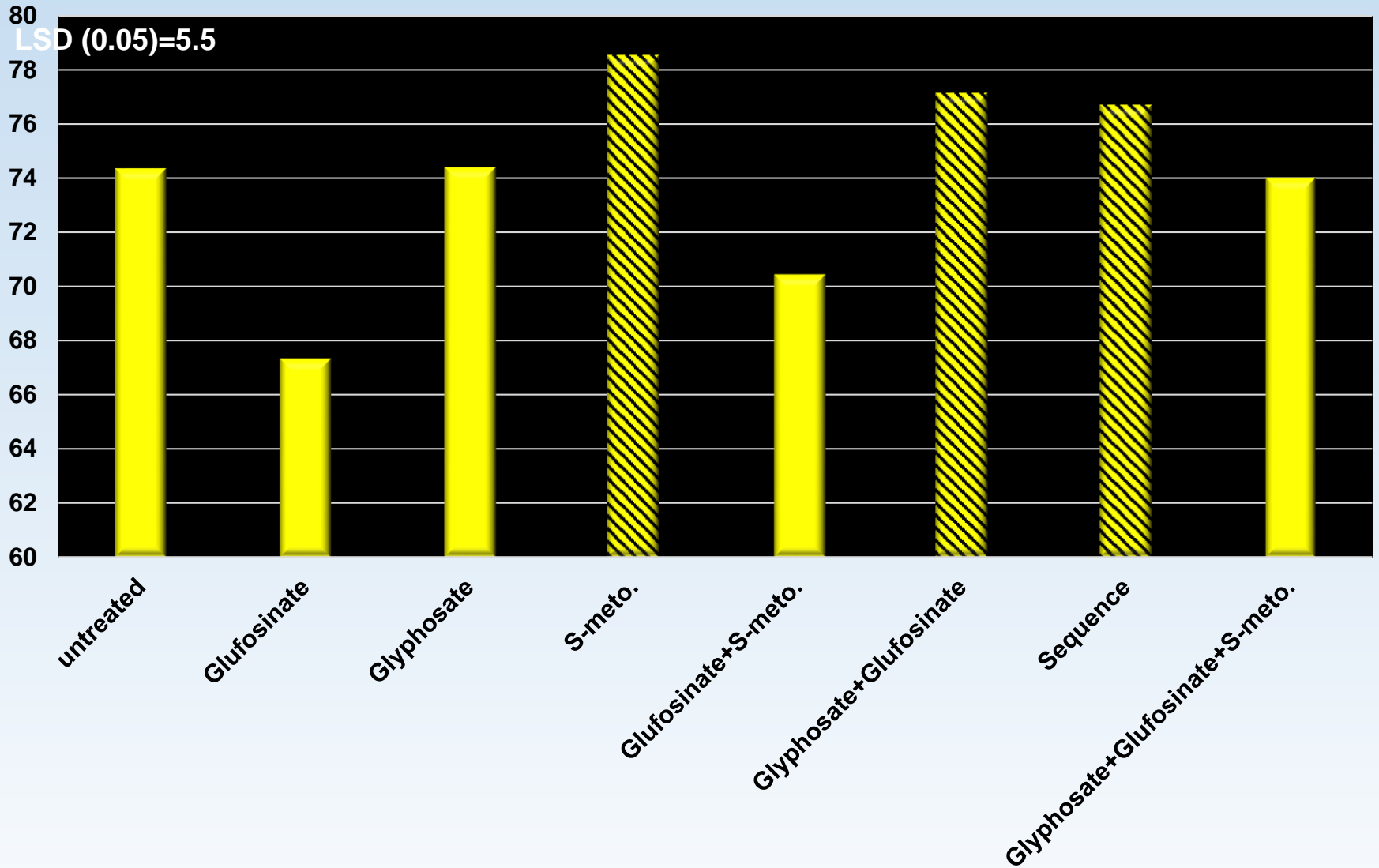
GLB2 Injury 7 DAA



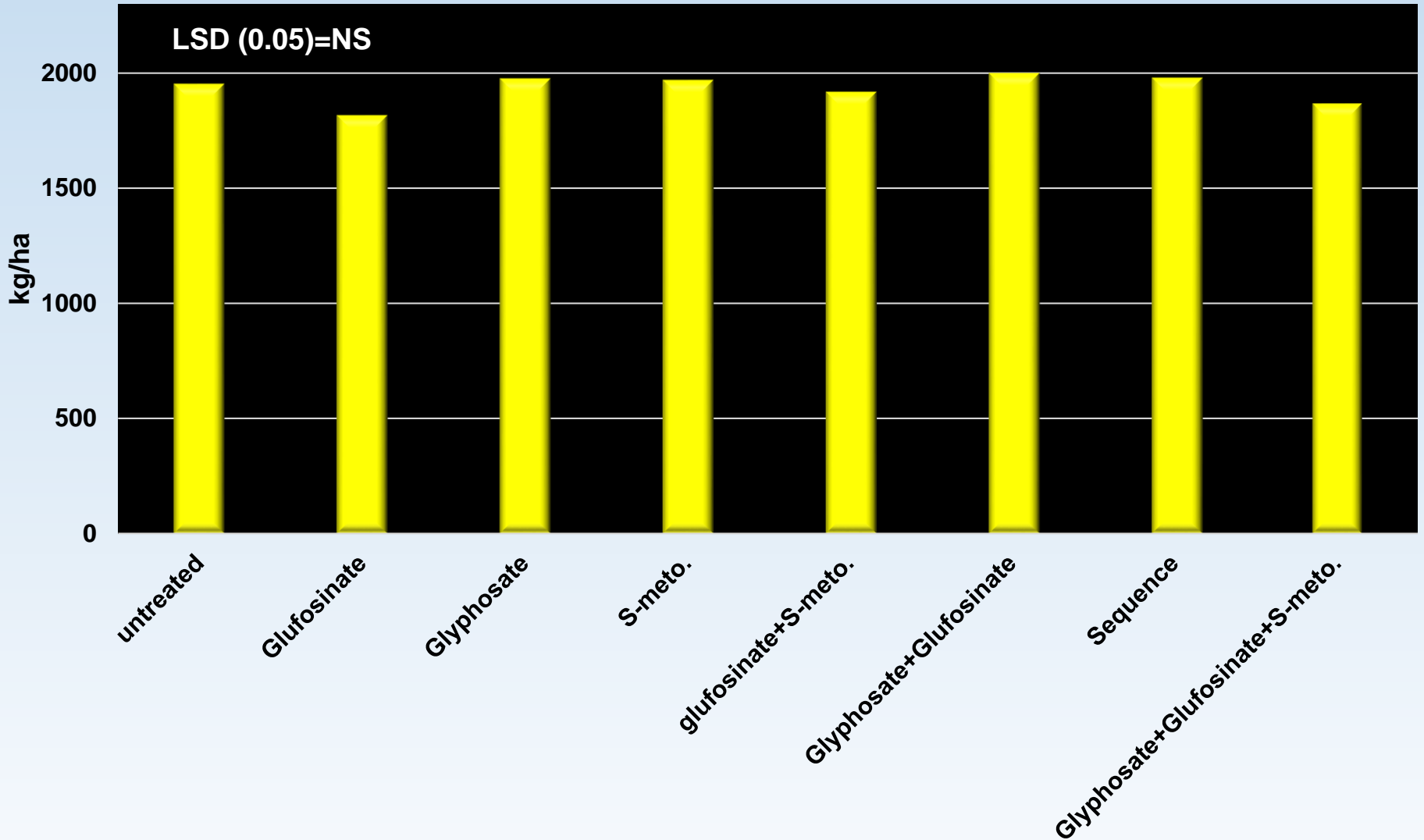
GLB2 Injury 14 DAA



GLB2 Height at 1st Bloom



GLB2 Lint Yield



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Cover Crops



Soil Health, Sustainability and Profitability

Bill Robertson, Amanda Free, Archie Flanders, Mike Daniels,
Chris G. Henry and Steve Stevens



Cotton
Incorporated



Cooperative Extension Service





Brand Engagement in Sustainability

- Walmart
 - Soil health
 - Water sensor
 - Traceability
 - Fieldprint Calculator use
- Wrangler
 - Soil health project in Texas
- Louisiana Fieldprint Calculator Project





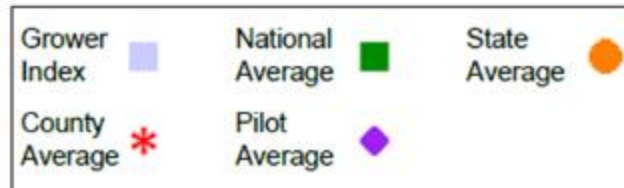
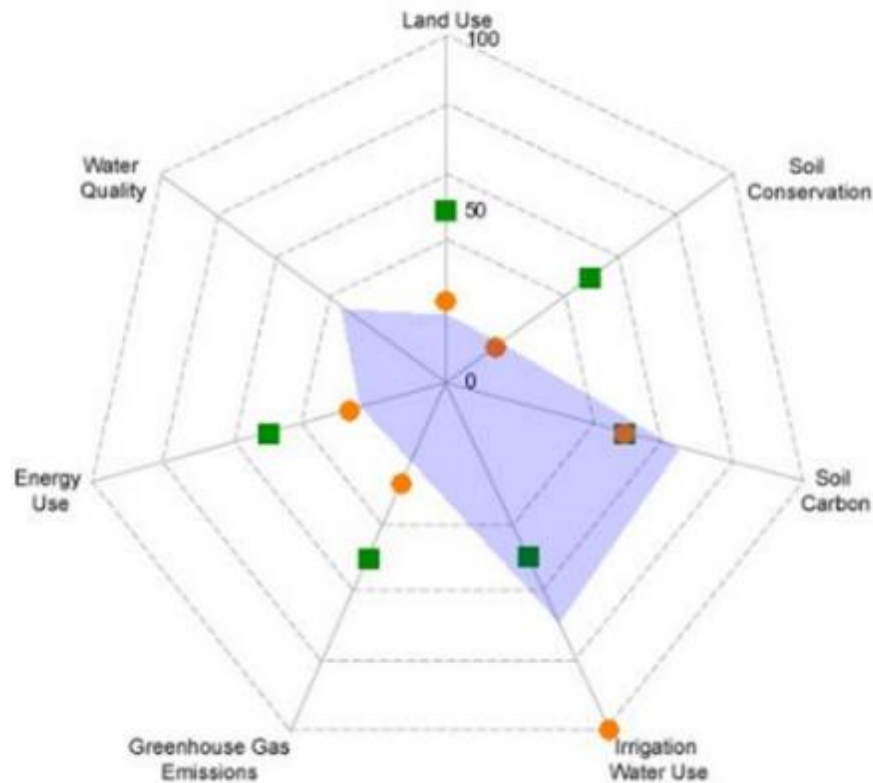
Field to Market

The Keystone Alliance for Sustainable Agriculture



Fieldprint Calculator

Fieldprint Summary



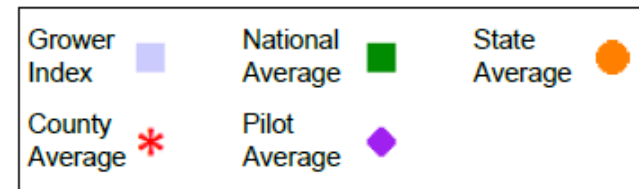
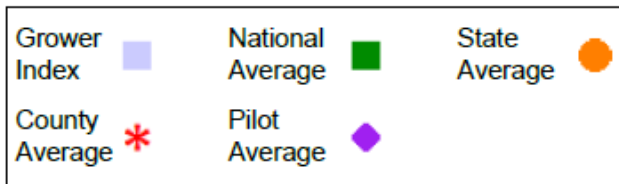
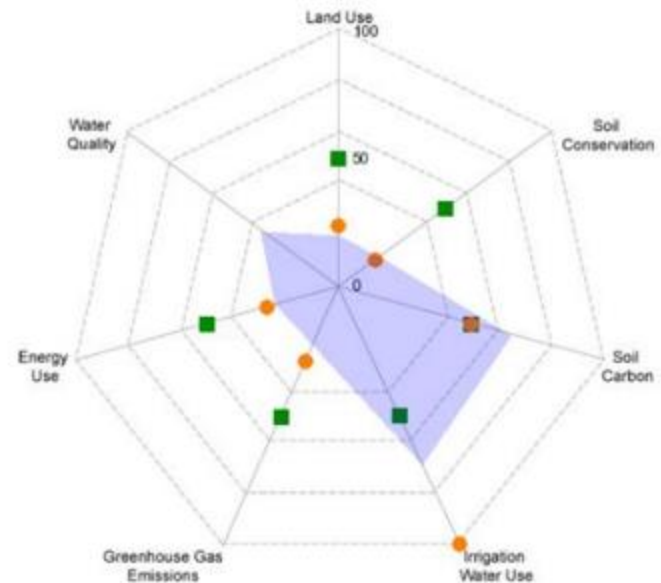
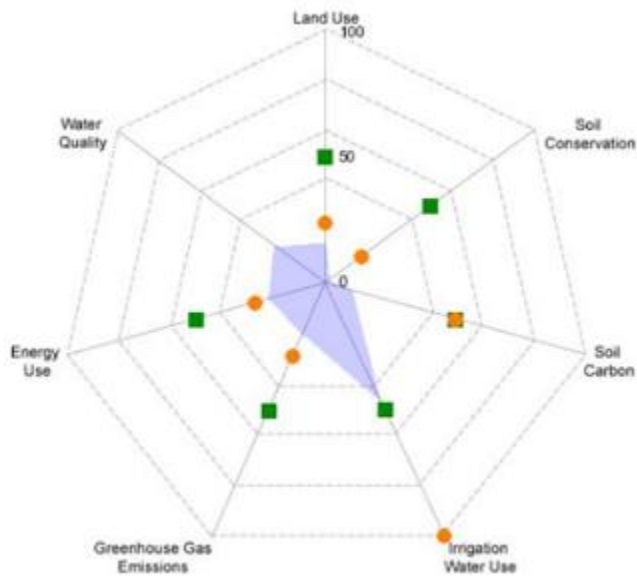


Fieldprint Calculator

Fieldprint Summary

No-till / Cover Crop

Till / No Cover Crop

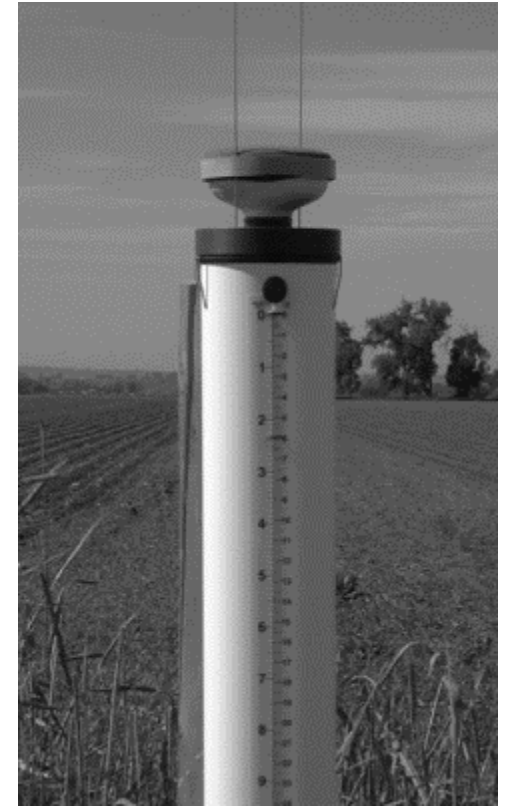




unlock the
SECRETS
IN THE
SOIL

SOIL HEALTH

Irrigation Scheduling







Almost No-till Cotton



Almost No-till

Slight water furrows
Residue exposed



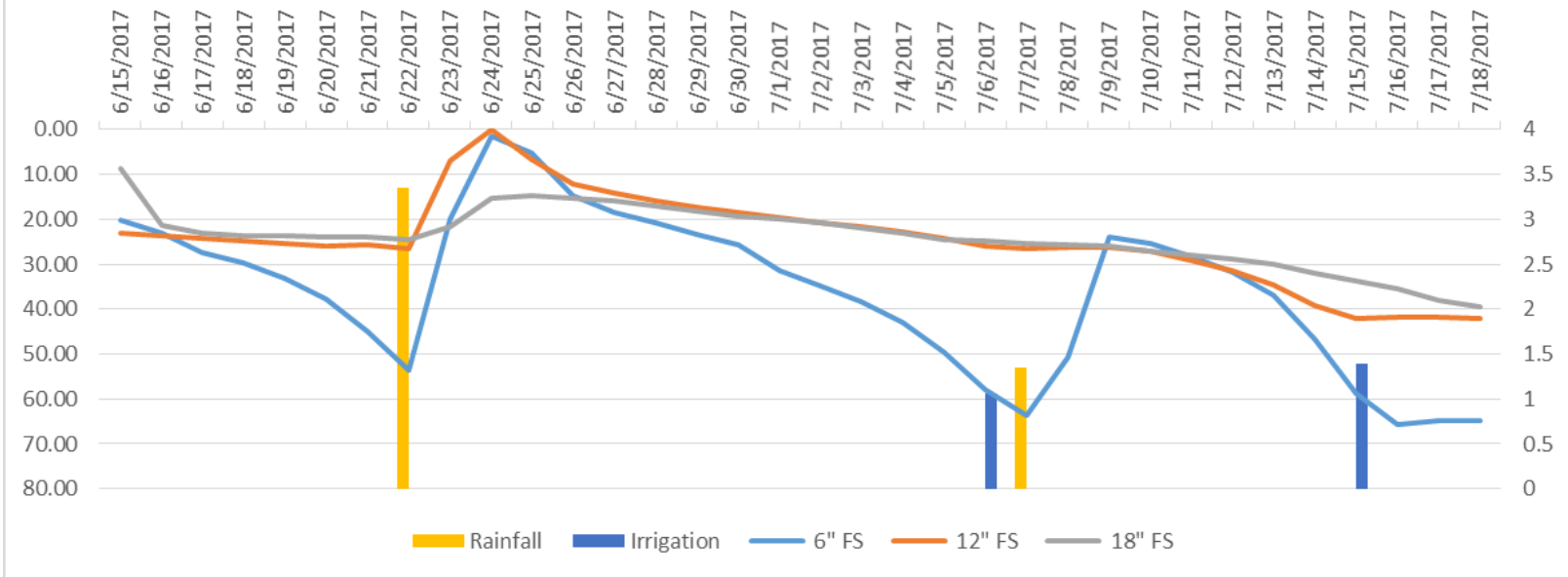
Stale Seedbed

Water furrows for irrigation

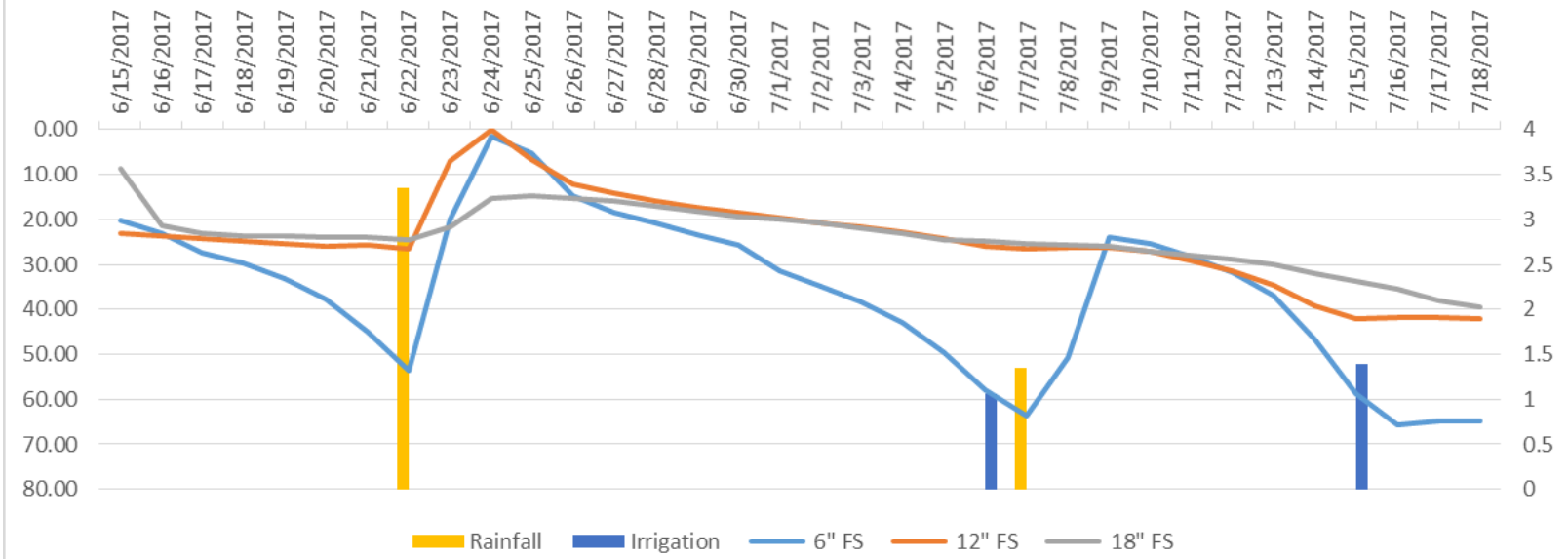
Harvested lint yield, lint yield equivalent, operating expenses and sustainability metrics as affected by tillage and cover crops

Parameters	No-till Cover	Till No-cover	% Change No-till vs. Till
Yield (lb. lint har./A)	1180	1068	9.49%
Operating Expenses (\$/A)	537.31	531.47	1.09%
Operating Expenses (\$/lb. lint har.)	0.455	0.505	-10.99%
Land Use (A/lb. lint eq.)	0.00071	0.00079	-11.27%
Soil Conservation (Tons/lb. lint eq./yr.)	0.00075	0.00235	-67.53%
Irrigation Water Use (A-in/lb. lint eq. above dryland lint eq.)	0.017	0.021	-23.53%
Energy Use (BTU/lb. lint eq.)	5328	5967	-11.99%
Greenhouse Gas Emissions (lb. CO ₂ eq/lb. lint eq.)	1.26	1.4	-11.11%

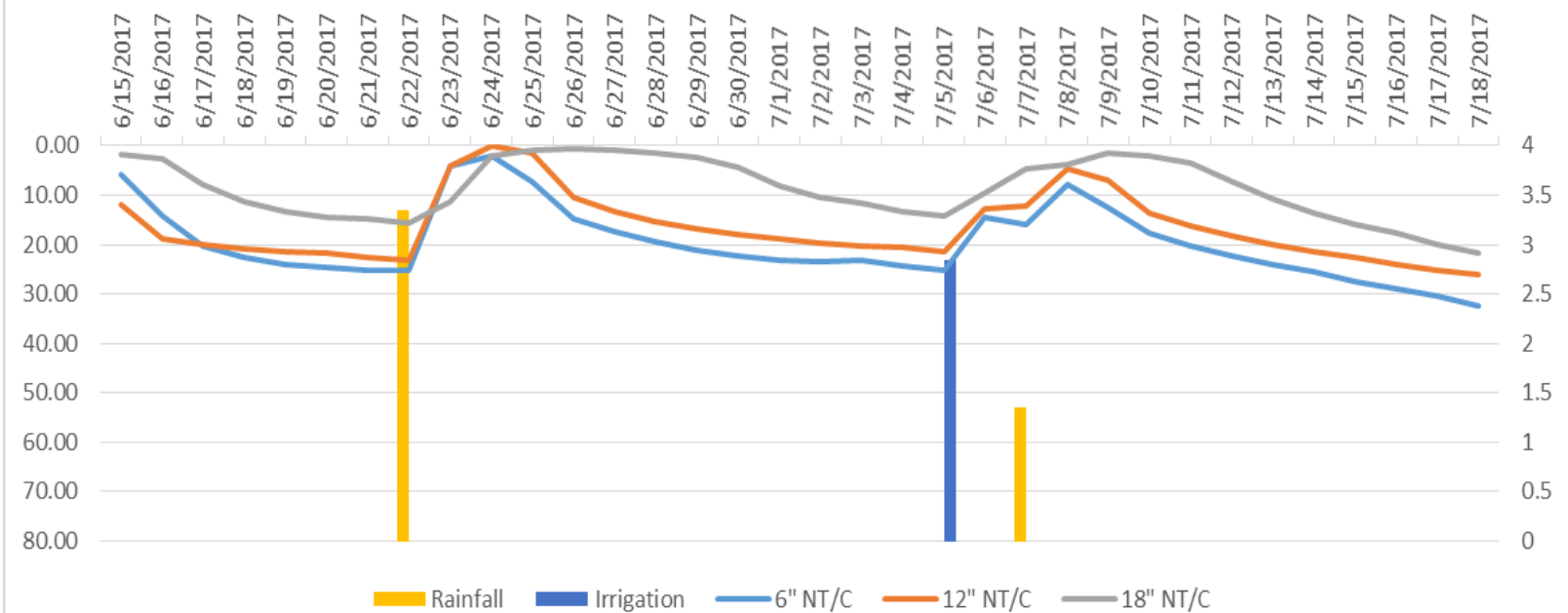
2017 Shop FS Soil Moisture Sensors



2017 Shop FS Soil Moisture Sensors



2017 Shop No-till Soil Moisture Sensors



CO₂ttton™

Capture it Wear it Love it

Cover Crops for Compaction Remediation on Tennessee Valley Soils

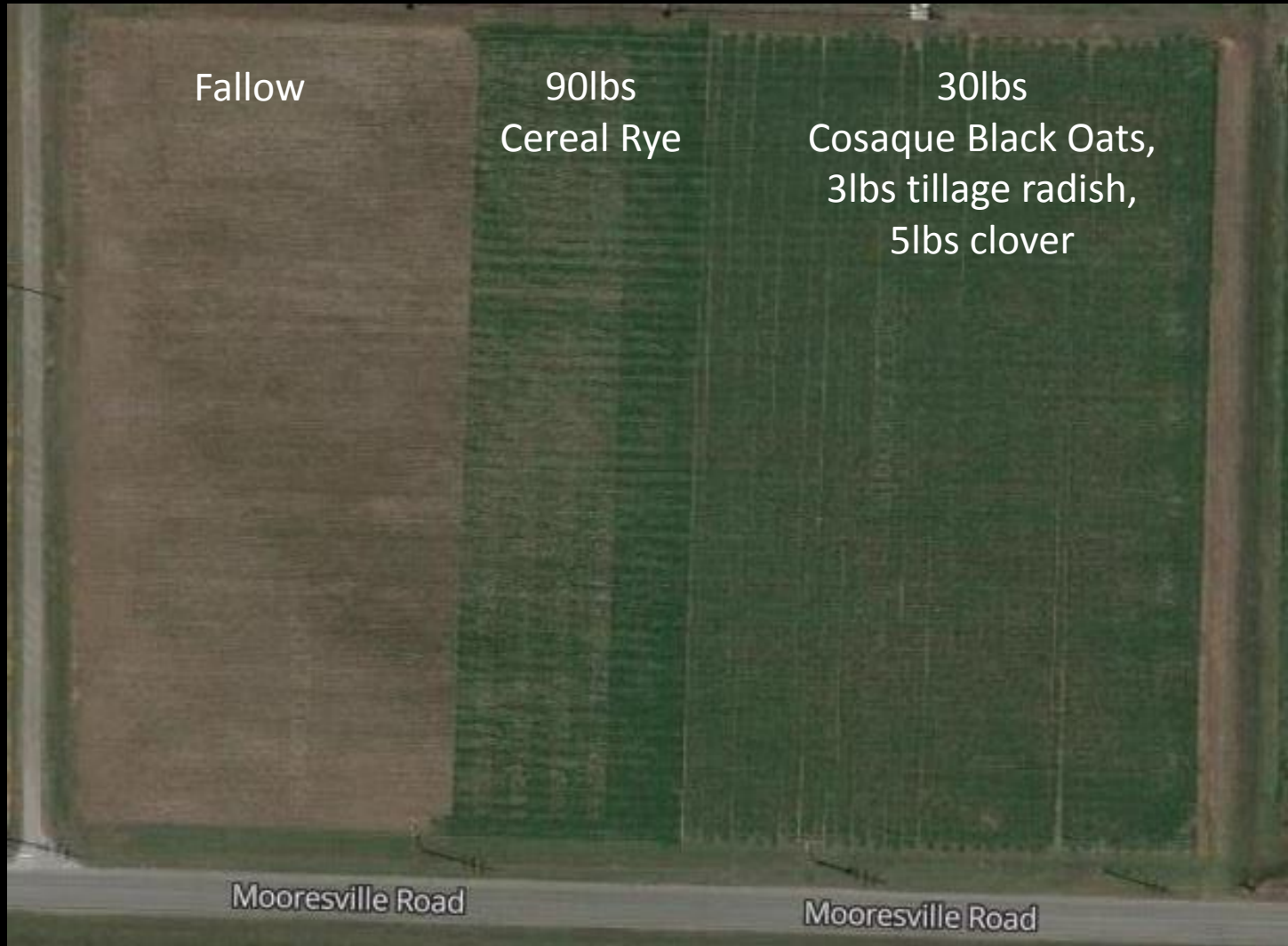
Tyler Sandlin¹, Brad Meyer², Taylor Dill³

¹Extension Agronomist, Auburn University. ² Director of Agronomic Services, Agri-AFC LLC, Decatur, AL.

³ Agronomist, Agri-AFC LLC, Decatur, AL



Planting Scenario





10/25/16



11/14/16





Cotton Establishment





Mapping and Harvest Data

	Fallow	90lbs Rye	Oats, Radish, Clover
Plant Height	43	45	48.5
Total Nodes	17.75	18.5	18.65
Lint Yield (lbs/Acre)	1,124	1,157	1,115

Penetrometer Readings

Average Depth to Severe Compaction 10/27/17

