



Permit[®] Plus on Sulfonyl-Urea Tolerant Soybean (STS[®])

Craig Sandoski

Gowan Southern Region

Development

Representative



Permit® Plus on Sulfonyl-Urea Tolerant Soybean (STS®)

- Why is there a benefit to choosing a STS® variety?
 - The technology is free!
 - STS varieties allow tank-mix options for difficult-to-control weeds
 - “Crop insurance” for soybean grown near rice fields
 - Rotational option for soybean where Finesse® or Peak® herbicides were used on the wheat crop



- Available herbicide traits in soybean:
 - Roundup Ready[®], Roundup Ready 2 Yield[®]
 - Roundup Ready[®]/STS[®]
 - Roundup Ready 2 Yield[®]/STS[®]
 - LibertyLink[®]
 - No LibertyLink[®]/STS[®]



Permit® Plus on Sulfonyl-Urea Tolerant Soybean (STS®)

- Use of STS for “Crop Insurance” near Rice Fields:
ALS Herbicides for rice which are phytotoxic to non-STs varieties:

Duet®

Halomax™

Permit®

Strada®

Grasp®

League®

Permit® Plus

Strada® Pro

Grasp® Xtra

Londax®

Regiment®



- Permit Plus for Difficult-to-Control Weeds
 - Nutsedge
 - Dayflower
 - Groundcherry
 - Smartweed
 - Hemp sesbania
 - Morningglory (suppression)



Permit[®] Plus on Sulfonyl-Urea Tolerant Soybean (STS[®])

- How to use Permit Plus with STS varieties:
 - Pre-plant application with burndown herbicide for improved control of weeds such as nutsedge
 - Pre-emergence to soybean
 - Post-emergence to soybean from V1 – R2 (up to 88 days before harvest)
 - Applied alone or tank-mixed with glyphosate and other herbicides



Permit[®] Plus on Sulfonyl-Urea Tolerant Soybean STS[®])



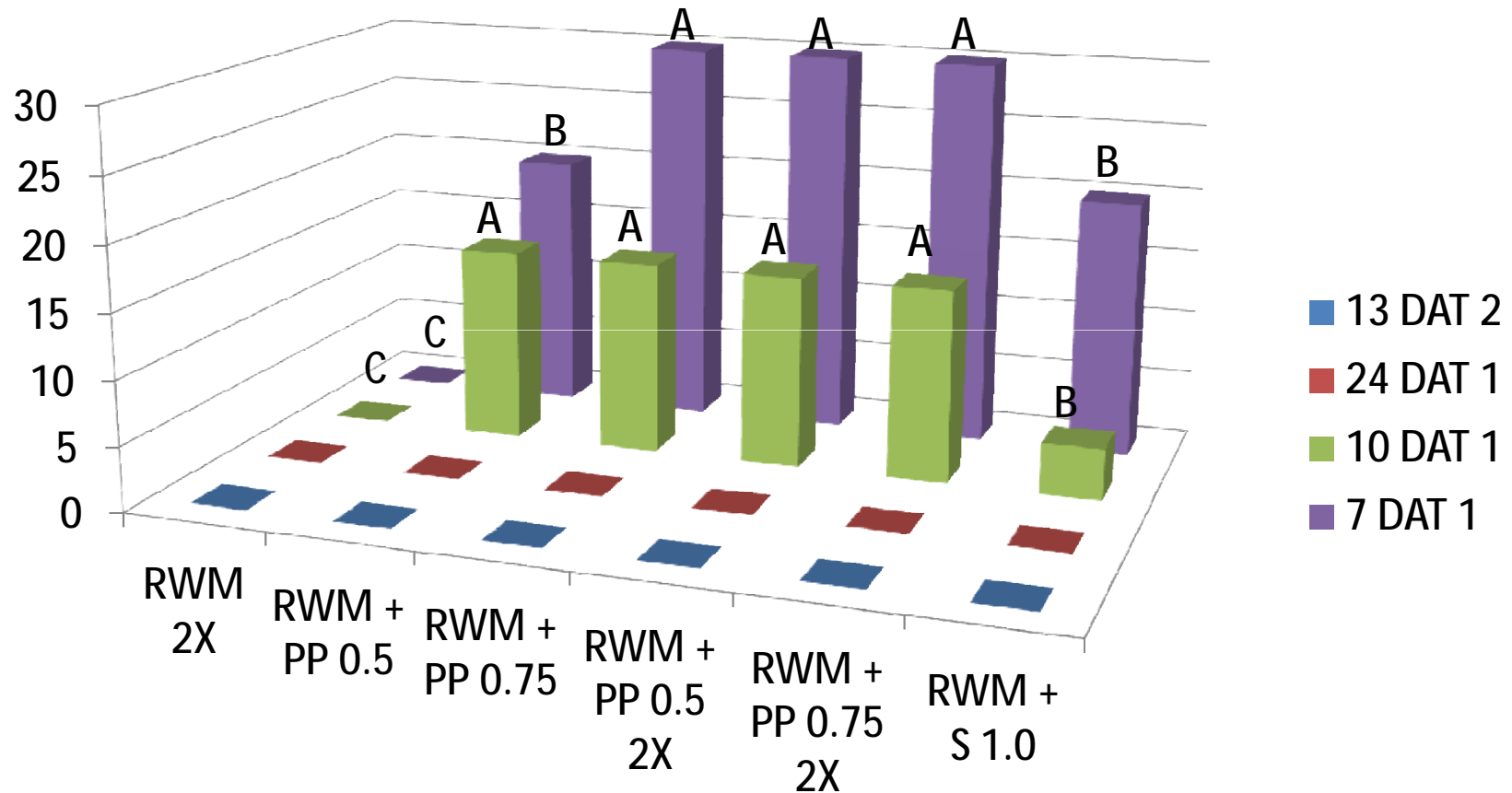


Dr. Bob Scott: Efficacy of Permit Plus on STS When Applied with Glyphosate

- Treatments
 - Roundup WM (1 pt./A.) f/b Roundup WM (1 pt./A.)
 - RWM + Permit Plus (0.5 oz./A.) f/b RWM
 - RWM + Permit Plus (0.75 oz./A.) f/b RWM
 - RWM + PP (0.5 oz./A.) f/b RWM + PP (0.5 oz./A.)
 - RWM + PP (0.75 oz./A.) f/b RWM + PP (0.75 oz./A.)
 - RWM + Synchrony (1 oz./A.) f/b RWM
- First application at V-2, sequential application made 4 weeks later (R2 – R3)

Dr. Bob Scott: STS Phytotoxicity from Postemergence Applications

(Schillinger 478 RCS)



Means with the same letter are not significantly different (LSD, P = 0.05)

Dr. Bob Scott: Efficacy of Permit Plus on STS When Applied with Glyphosate



Roundup WeatherMax 1 pt./A.

10 DAT 1



Roundup WeatherMax 1 pt./A. +
Permit Plus 0.5 oz./A. +

Dr. Bob Scott: Efficacy of Permit Plus on STS When Applied with Glyphosate



Roundup WeatherMax 1 pt./A.

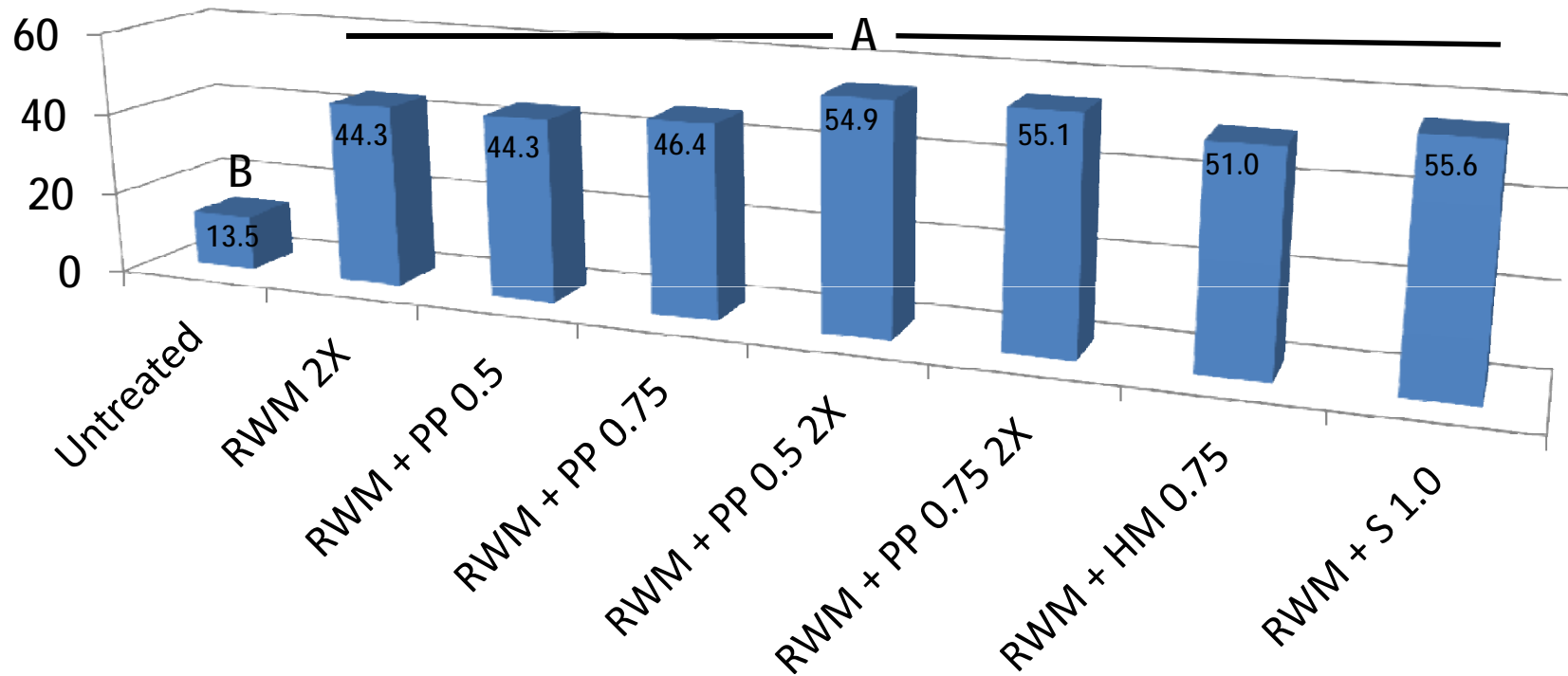
10 DAT 1



Roundup WeatherMax 1 pt./A. +
Permit Plus 0.75 oz./A. +

Dr. Bob Scott: Yield of STS (bu./A.) Following Postemergence Applications

(Schillinger 478 RCS)



Means with the same letter are not significantly different (LSD = 0.05)

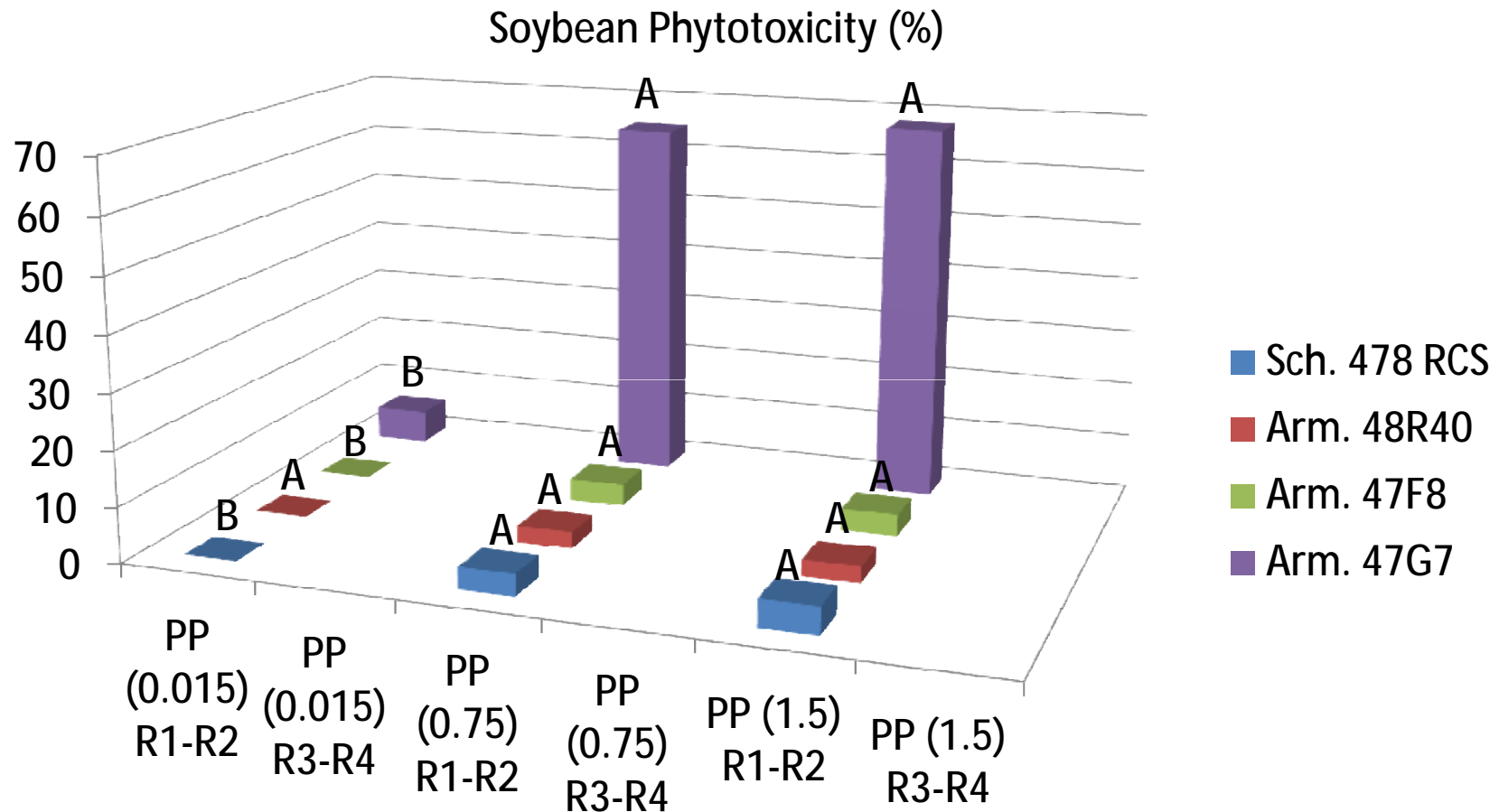
Dr. Bob Scott: Efficacy of Permit Plus on STS When Applied with Glyphosate (Conclusions)

- No significant difference in control of SEBEX, AESVI, ECHCG, BRAPP or DIGSA was noted in the trial
- Sequential applications of Permit Plus at 0.5 or 0.75 oz./A. and single applications of 0.75 oz./A. had equivalent phytotoxicity to soybean
- Synchrony (1 oz./A.) exhibited faster recovery when compared with Permit Plus at 10 DAT 1
- No phytotoxicity was noted with sequential applications made to R2 – R3 soybean at 13 DAT 2

Dr. Bob Scott: STS[®] Variety Tolerance to Permit[®] Plus

- Treatments
 - Permit Plus (0.015 oz./A.) with COC (1% v/v) at R1 – R2
 - Permit Plus (0.015 oz./A.) with COC (1% v/v) at R3 – R4
 - Permit Plus (0.75 oz./A.) with COC (1% v/v) at R1 – R2
 - Permit Plus (0.75 oz./A.) with COC (1% v/v) at R3 – R4
 - Permit Plus (1.5 oz./A.) with COC (1% v/v) at R1 – R2
 - Permit Plus (1.5 oz./A.) with COC (1% v/v) at R3 – R4
- Varieties
 - STS: Schillinger 478 RCS, Armor 48R40, Armor 47F8
 - Non-STS: Armor 47G7

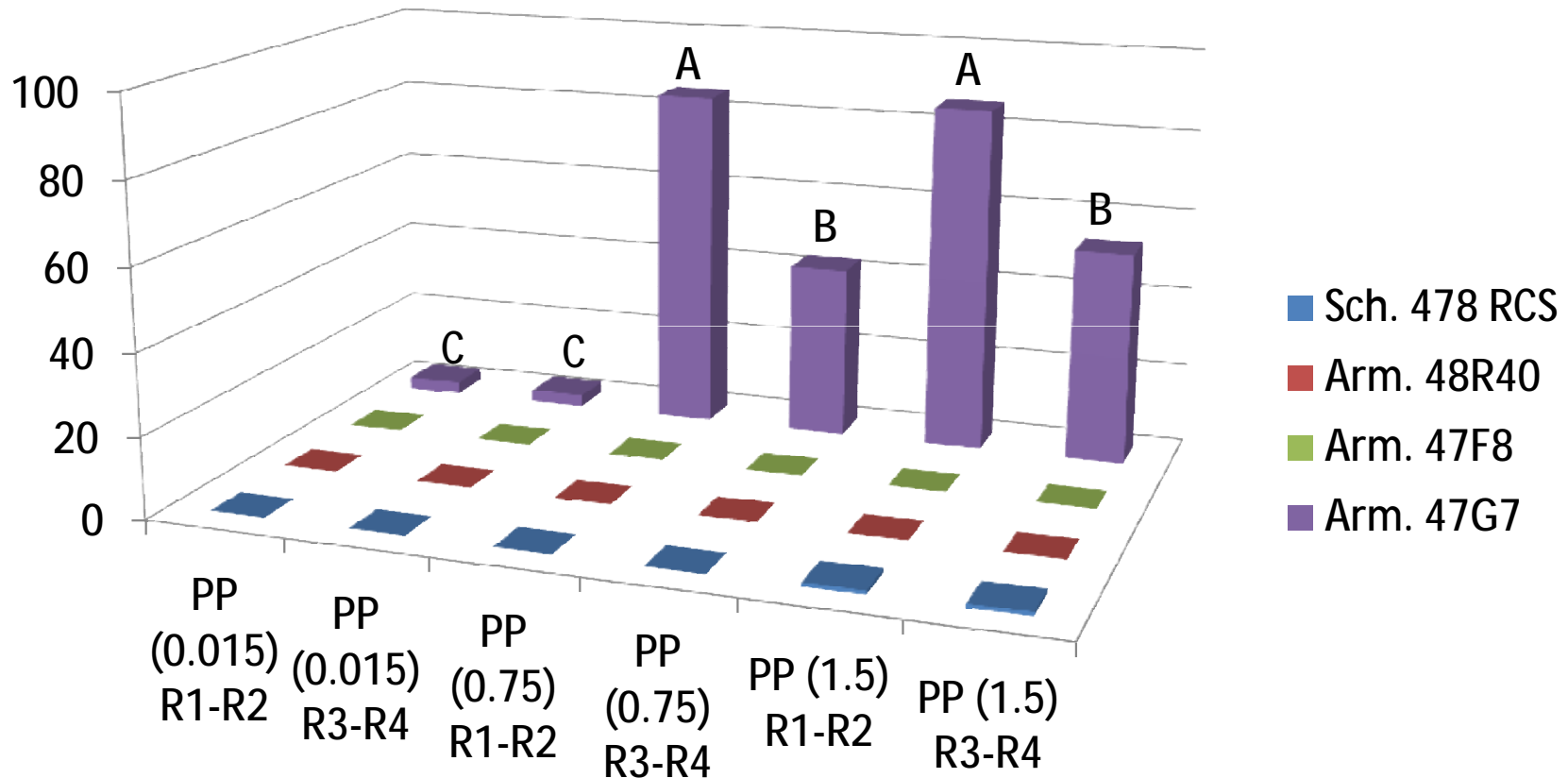
Dr. Bob Scott: STS[®] Variety Tolerance to Permit[®] Plus at 8 DAT 2



Means for variety with the same letter are not significantly different (LSD, P = 0.05)

Dr. Bob Scott: STS[®] Variety Tolerance to Permit[®] Plus at 14 DAT 2

Soybean Phytotoxicity (%)



Means for variety with the same letter are not significantly different (LSD, P = 0.05)

Dr. Bob Scott: STS[®] Variety Tolerance to Permit[®] Plus at 41 DAT A



Untreated Check



Permit Plus 0.75 oz./A. R1-R2

Dr. Bob Scott: STS[®] Variety Tolerance to Permit[®] Plus at 33 DAT B



Untreated Check



Permit Plus 0.75 oz./A. R3-R4

Dr. Bob Scott: STS[®] Variety Tolerance to Permit[®] Plus at 41 DAT A



Untreated Check



Permit Plus 1.5 oz./A. R1-R2

Dr. Bob Scott: STS[®] Variety Tolerance to Permit[®] Plus at 33 DAT B



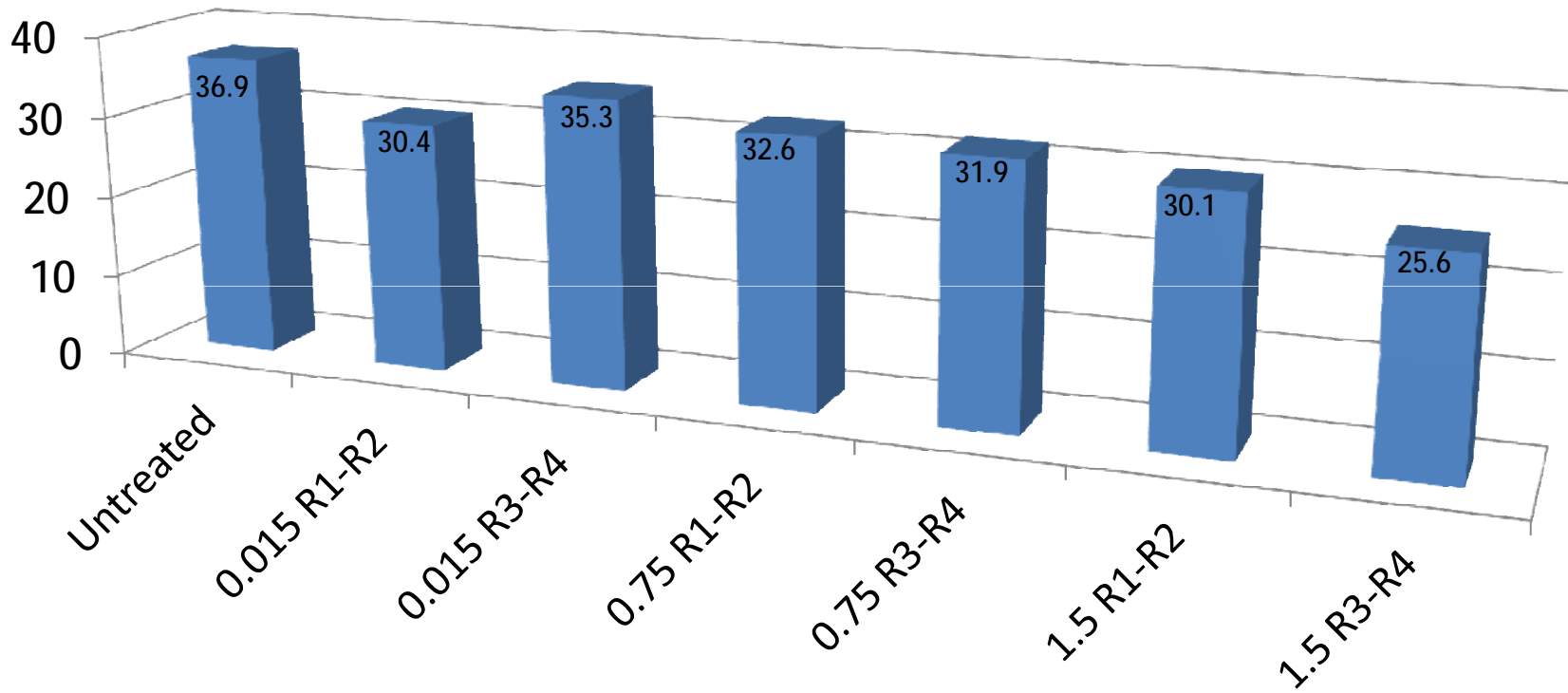
Untreated Check



Permit Plus 1.5 oz./A. R3-R4

Dr. Bob Scott: Yield of STS[®] Varieties (bu./A.) Following Permit[®] Plus Applications

Soybean Yield Across all Varieties



Dr. Bob Scott: STS[®] Tolerance to Permit[®] Plus (Conclusions)

- No significant difference in phytotoxicity was noted among STS varieties in the trial
- Recovery from phytotoxicity with STS varieties was complete at 14 DAT 2
- No significant difference in yield was noted but there was a trend for reduced yield with rate increase and later application timing in this weed-free trial

Dr. Ronnie Helms: STS[®] Variety Tolerance to Permit[®] Plus

- Treatments:
 1. Roundup PowerMax (22 oz./A.) at R4–R5
 2. Permit Plus (0.75 oz./A.) PPB f/b Permit Plus* (0.5 oz./A.) V2-V3 f/b Permit Plus* (0.5 oz./A.) R4-R5
 3. Permit Plus (1.5 oz./A.) PPB f/b Permit Plus (0.75 oz./A.) + MSO (1 pt./A.) V2-V3
 4. Permit Plus* (0.75 oz./A.) PRE f/b Permit Plus* (0.75 oz./A.) + Roundup (22 oz./A.) R4-R5
 5. Permit Plus* (1.5 oz./A.) PRE f/b Permit Plus* (1.5 oz./A.) + Roundup (22 oz./A.) R4-R5
 6. Permit Plus* (0.75 oz./A.) V2-V3
 7. Permit Plus* (1.5 oz./A.) V2-V3

* Treatment was applied with COC at 1% v/v

Dr. Ronnie Helms: STS® Variety Tolerance to Permit® Plus

- Varieties:

Armor 47-F8	Armor 48-R40	Armor X1217
Armor X1305	Armor 46X29	Armor 48R91
Asgrow 5405	Asgrow 5605	Asgrow 4903
Asgrow 4866	Asgrow 4605	DP4888RR/S
DP5335RR/S	Dyna-Grow 36C44	Dyna-Grow 33RY47
Genuity X1307	MorSoy 48X00	Pioneer 95Y31
Schillinger 478.RCS		Stine 4782-4
Syngenta S54-V4		

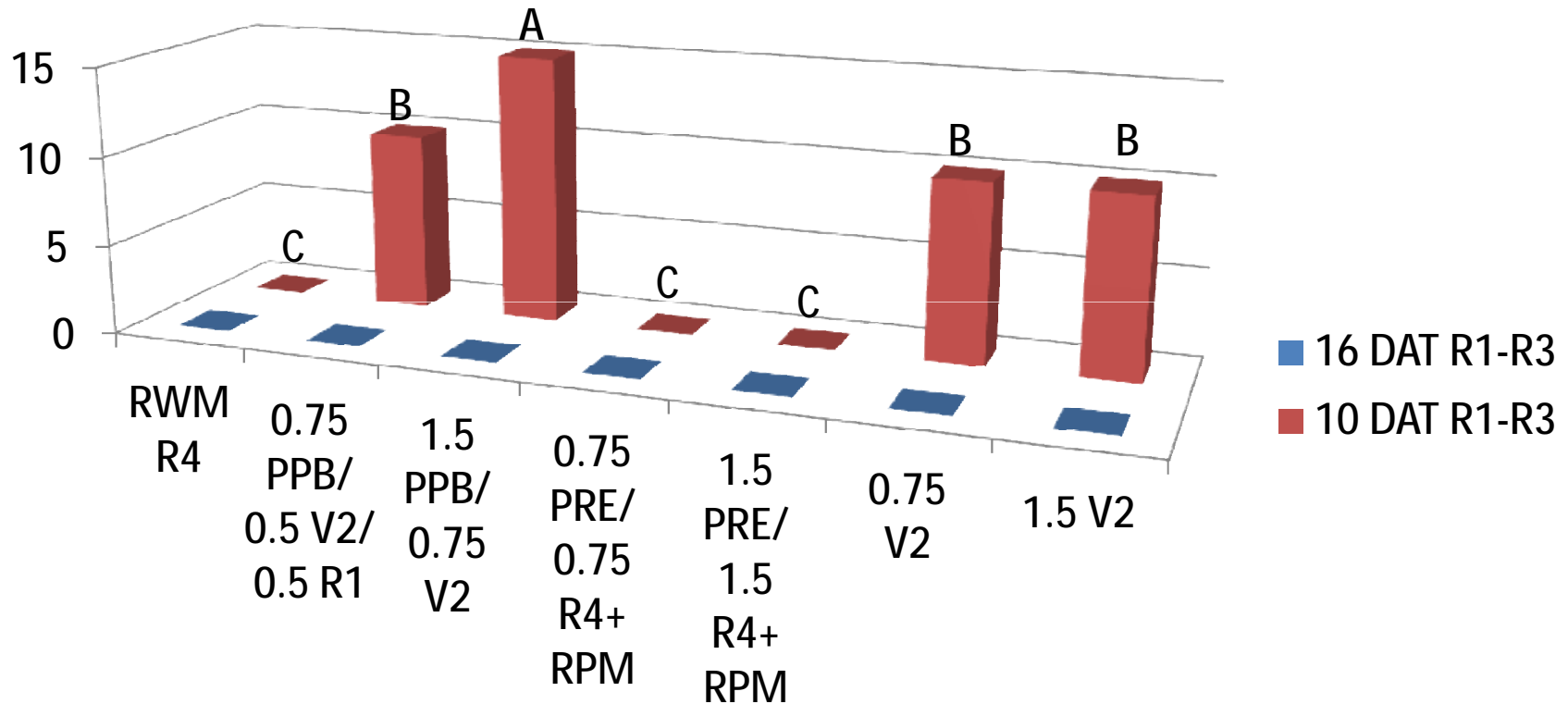
Dr. Ronnie Helms: Phytotoxicity of Permit[®] Plus to Twenty-Two STS[®] Varieties



3 DAT V2

Dr. Ronnie Helms: Phytotoxicity of Permit[®] Plus to Twenty-Two STS[®] Varieties

Soybean injury (%) across all varieties



Means for evaluation with the same letter are not significantly different (LSD, P = 0.10)

Dr. Ronnie Helms: STS[®] Variety Tolerance to Permit[®] Plus (Conclusions)

- Seven evaluations of phytotoxicity were conducted. The only phyto noted in the trial was at 10 days after the R1-R2 application.
- No differences were noted among the 22 STS varieties in the trial.
- Observed phyto associated with V2-V4 applications, not observed at 16 days after V2-V4 application but noted at 30 days after application.
- Observed phyto not rate dependent (0.5 – 1.5 oz./A.).

Dr. Ronnie Helms: STS[®] Variety Tolerance to Permit[®] Plus (Trial 2)

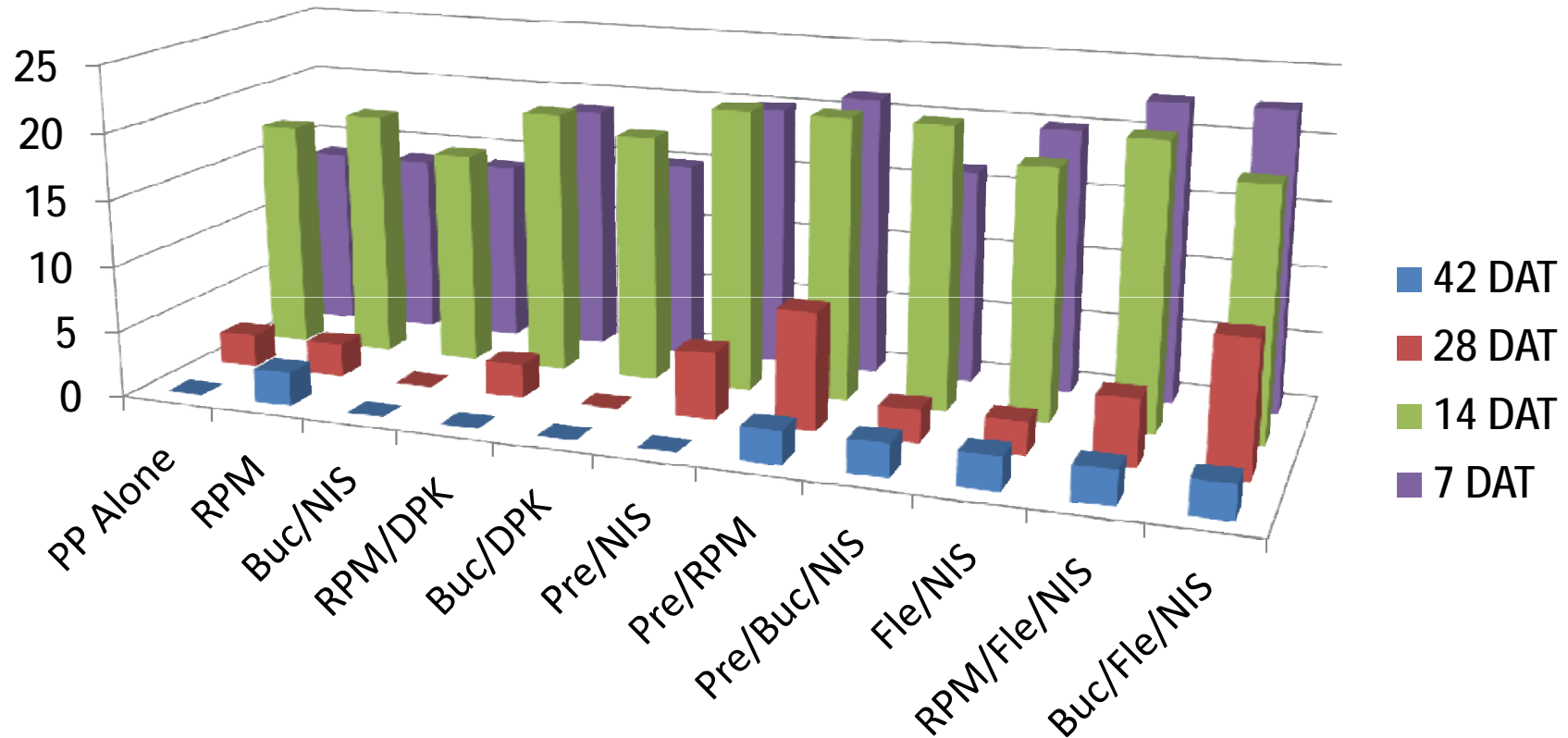
- Treatments:
 - Permit Plus at 0.75 and 1.5 oz./A. alone and with:
 - Roundup PowerMax (22 and 44 oz./A.) alone and with Dyne-A-Pak (1 and 2% v/v)
 - Buccaneer (33 and 66 oz./A.) + NIS (0.25 and 0.5% v/v) or Dyne-A-Pak (1 and 2% v/v)
 - Prefix (2.25 and 4.5 pt./A.) + NIS (0.25 and 0.5% v/v) alone and with Roundup PowerMax (22 and 44 oz./A.) or Buccaneer (33 and 66 oz./A.) + NIS (0.25 and 0.5% v/v)
 - Flexstar (1.25 and 2.5 pt./A.) + NIS (0.25 and 0.5% v/v) alone and with Roundup PowerMax (22 and 44 oz./A.) or Buccaneer (33 and 66 oz./A.) + NIS (0.25 and 0.5% v/v)
 - All treatments applied at V2-V3
 - Same 22 varieties of STS plus non-STS standard (HBK 4924)

Dr. Ronnie Helms: Phytotoxicity of Permit[®] Plus to Twenty-Two STS[®] Varieties (Trial 2)



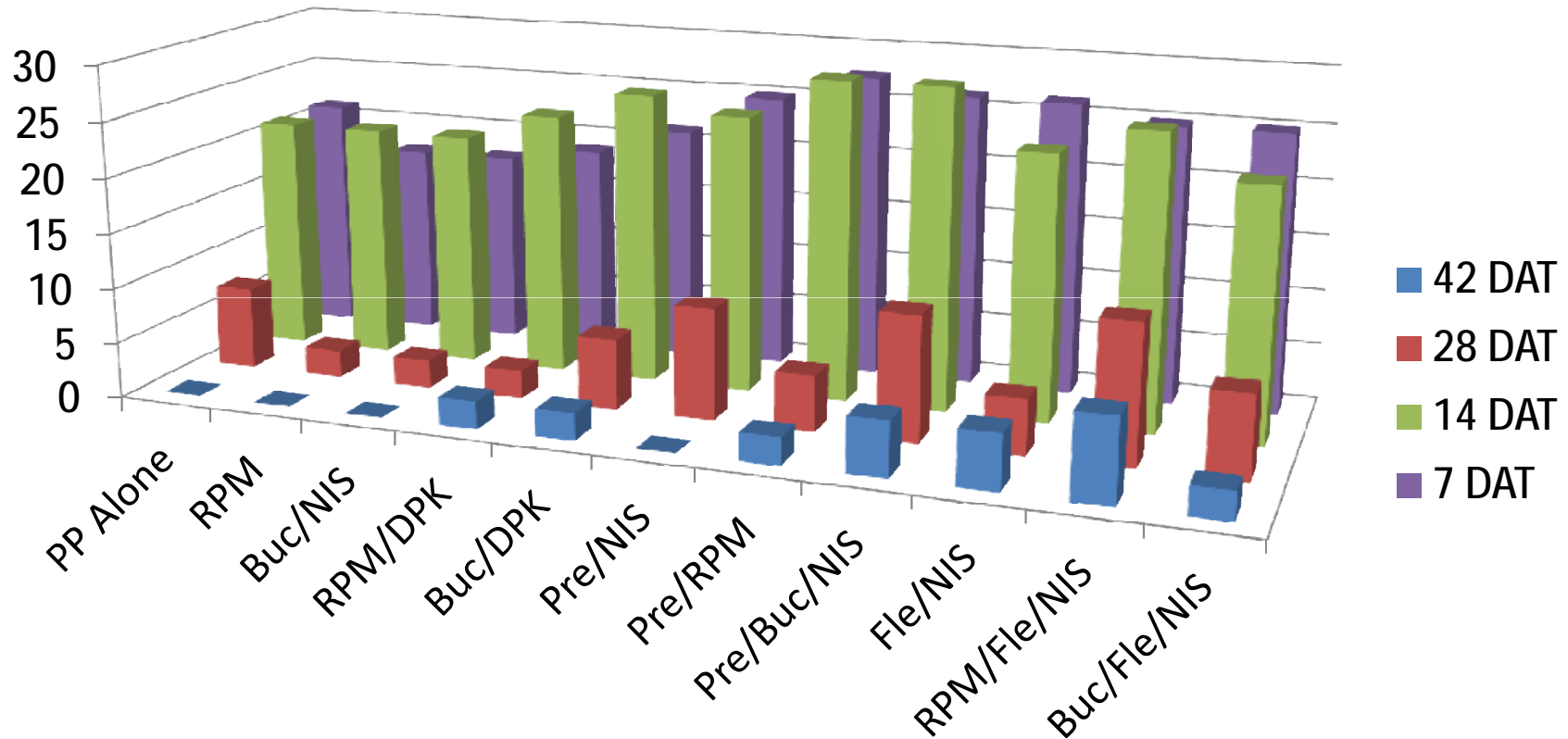
Dr. Ronnie Helms: Phytotoxicity of Permit[®] Plus (0.75 oz./A.) to STS[®] Varieties with Label Rate Tank-Mixes

Soybean injury (%) across 22 varieties at 7, 14, 28 and 42 DAT



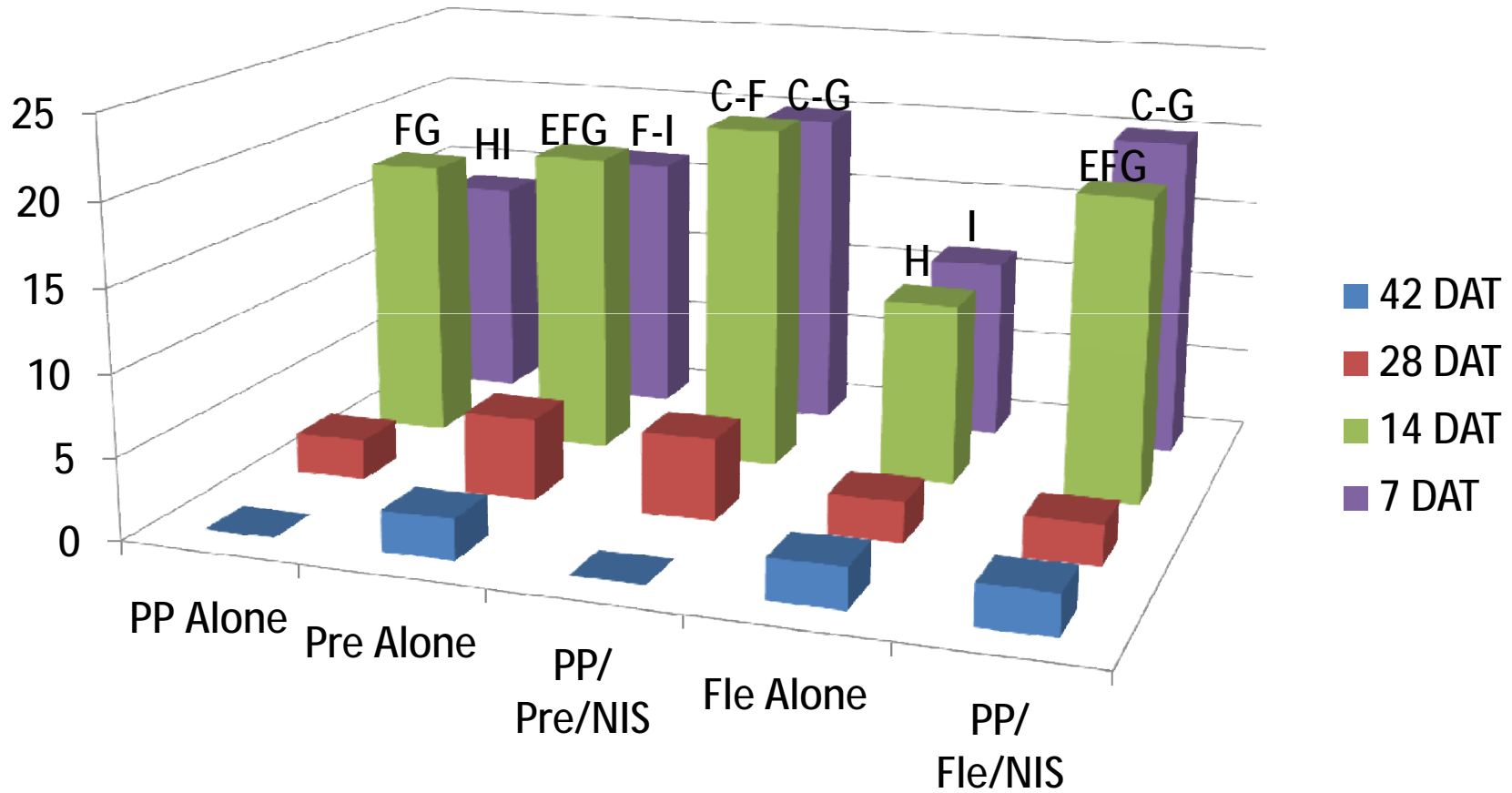
Dr. Ronnie Helms: Phytotoxicity of Permit[®] Plus (1.5 oz./A.) to STS[®] Varieties with 2X Label Rate Tank-Mixes

Soybean injury (%) across 22 varieties at 7, 14, 28 and 42 DAT



Dr. Ronnie Helms: Phytotoxicity of Permit[®] Plus (0.75 oz./A.) to STS[®] Varieties with Label Rate Tank-Mixes

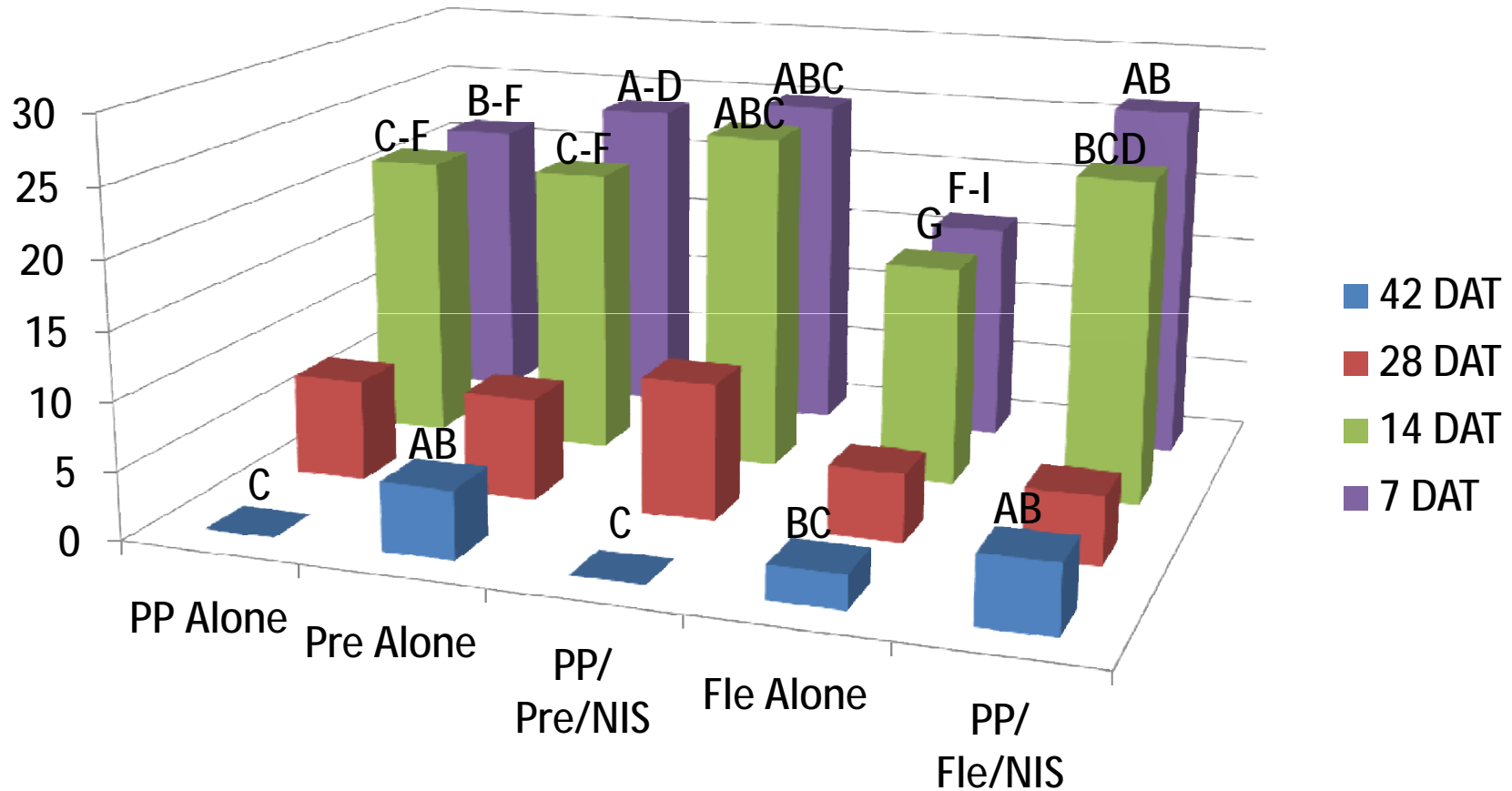
Soybean injury (%) across 22 varieties at 7, 14, 28 and 42 DAT



Means for evaluation with the same letter are not significantly different (LSD, P = 0.10)

Dr. Ronnie Helms: Phytotoxicity of Permit[®] Plus (1.5 oz./A.) to STS[®] Varieties with 2X Label Rate Tank-Mixes

Soybean injury (%) across 22 varieties at 7, 14, 28 and 42 DAT



Means for evaluation with the same letter are not significantly different (LSD, P = 0.10)

STS[®] Variety Tolerance to Permit[®] Plus (Conclusions on Trial 2)

- No differences in phytotoxicity were noted among the STS varieties. Stunting was the phytotoxic effect that persisted.
- Up to 28 days was required for recovery from phyto to occur with label rate applications.
- Tank-mixes with multiple partners increased phyto. Prefix[®] and Flexstar[®] should be avoided if phyto is a concern. The more components, the more likely the phyto!



Permit® Plus on Sulfonyl-Urea Tolerant Soybean (STS®)

- Plant a STS variety for the following reasons:
 - Soybeans following wheat where Peak or Finesse were applied
 - Insurance against ALS-drift from nearby rice fields
 - A free technology that offers additional options for weed control in Roundup Ready soybean
 - Nutsedge and dayflower



Thank you!