



# TECH Tips

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## Research and Technology Field Results- Soybean R2 Dry and Liquid Fertilizer

### Objectives:

- 1) Document to gain in yield possible with added nitrogen to soybeans at planting and/or at R2
- 2) Compare nitrogen applications with other additional nutrients, such as added sulfur
- 3) Continue to investigate using Y-Drops to apply UAN to soybeans at R2 stages of growth
- 4) Evaluate foliar feeding soybeans at R2 growth stage with low salt starters and CoRoN + B

### Treatments Tested – Soybean R2 Dry and Liquid Fertilizer:

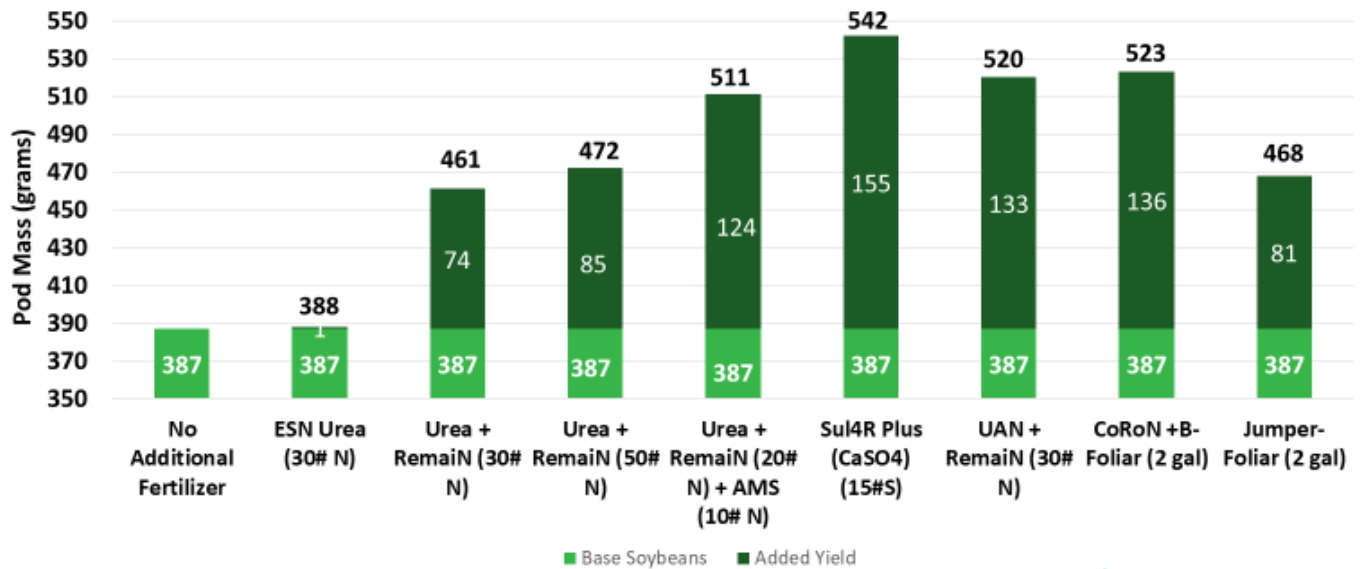
- Untreated (no additional fertilizer)
- ESN urea
- RemaiN treated urea- low rate
- RemaiN treated urea- high rate
- RemaiN treated urea + AMS
- Sul4RPlus calcium sulfate
- Sul4R Plus B+Z calcium sulfate with boron and zinc
- UAN (Y-Drop)
- CoRoN + B (foliar)
- Jumper + K-Leaf (foliar)

### Treatments and Rates Tested:

Trt No.	Treatment Type Name	Form Conc	Form Unit	Form Type	Rate Rate	Unit	Growth Stage	Appl Code	Comment 1
1	FERT Urea, Untreated	46 %	N	GR	65	lb/a	PREPRE	A	20 ft Plot, 30 lb N/acre
2	FERT ESN Urea	44 %	N	GR	68	lb/a	PREPRE	A	20 ft Plot, 30 lb N/acre
3	FERT Urea	46 %	N	GR	65	lb/a	MIPOCR	B	20 ft Plot, 30 lb N/acre
	FERT RemaiN	100 %		SL	64	fl oz/2000 lb material	MIPOCR	B	
4	FERT Urea	46 %	N	GR	109	lb/a	MIPOCR	B	20 ft Plot, 50 lb N/acre
	FERT RemaiN	100 %		SL	64	fl oz/2000 lb material	MIPOCR	B	
5	FERT Urea	46 %	N	GR	43.5	lb/a	MIPOCR	B	20 ft Plot, 20 lb N/acre urea
	FERT RemaiN	100 %		SL	64	fl oz/2000 lb material	MIPOCR	B	
	FERT Ammonium sulfate	21 %	N	GR	47.6	lb/a	MIPOCR	B	20 ft Plot, 10 lb N/acre AMS
6	FERT Untreated- No N				0	qt/ton	MIPOCR	B	20 ft Plot
7	FERT Urea	46 %	N	GR	65	lb/a	MIPOCR	B	20 ft Plot, 30 lb N/acre
	FERT RemaiN	100 %		SL	64	fl oz/2000 lb material	MIPOCR	B	
	FERT SUL4R Plus	17 %	S	GR	88.2	lb/a	MIPOCR	B	15 lb S/acre, 18.52 lb Ca/acre
8	FERT Urea	46 %	N	GR	65	lb/a	MIPOCR	B	20 ft Plot, 30 lb N/acre
	FERT RemaiN	100 %		SL	64	fl oz/2000 lb material	MIPOCR	B	
	FERT SUL4R Plus B+Z	15 %	S	GR	93.75	lb/a	MIPOCR	B	15 lb S/acre, 16.88 lb Ca/acre, 1.5 lb/a Boron
9	FERT UAN	28	N	SL	10	gal/a	MIPOCR	B	20 ft plot, 30 lb N/acre
	FERT RemaiN	100 %		SL	33.92	fl oz/100 gal	MIPOCR	B	
10	FERT Coron 10-0-10 + 0.5%B	10 %	N	SL	2	gal/a	MIPOCR	B	10 ft plot
11	FERT Jumper	23 %	P2O5	SN	2	gal/a	MIPOCR	B	10 ft plot
	FERT K- Leaf	30 %	K	SL	64	fl oz/a	MIPOCR	B	

## Results – Soybean R2 Dry and Liquid Fertilizer:

### 2018 Research and Technology Plot Results- Soybean R-Stage Fertilizers- Pod Mass-18" of Row- September 5, 2018



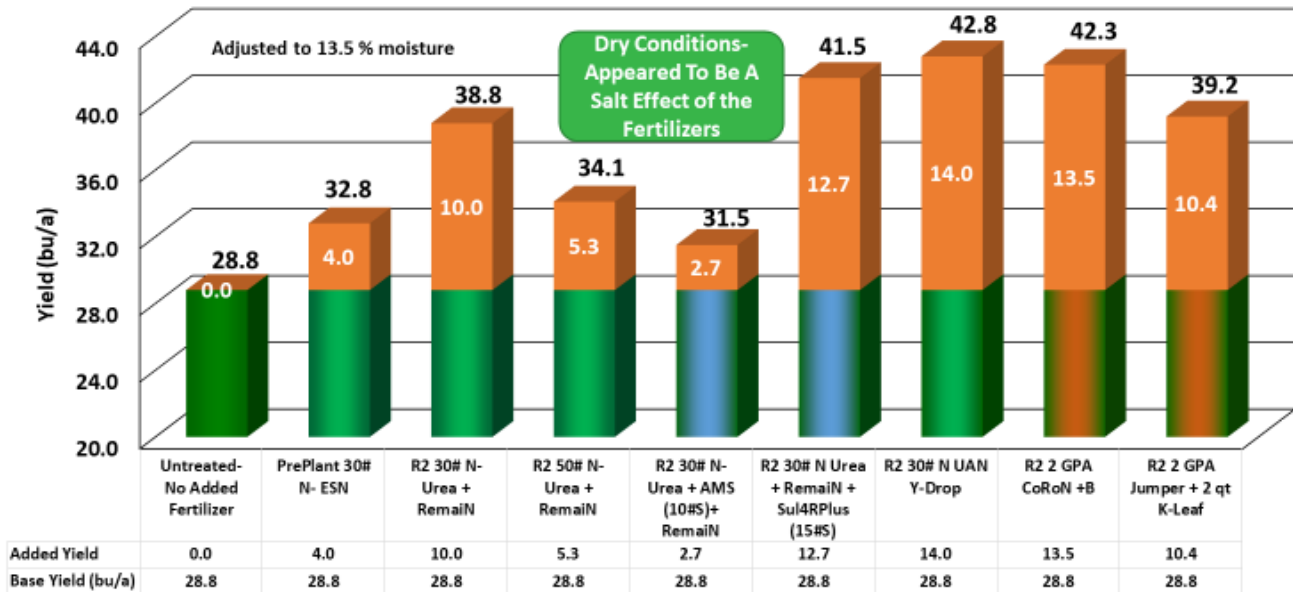
\* Urea and AMS applied as broadcast treatments. UAN applied with Y-Drop units.

\* RemainN Nitrogen Stabilizer from Agtegra added at 2 qt/ton dry fertilizer source or 2 qt/100 gallon liquid UAN

\* AG 11X8 soybeans planted in 30" rows at 150,000 plants per acre.



### Research and Technology Plots- Soybean Dry and R2 Fertilizers- Grain Yield



\* Urea and AMS applied as broadcast treatments. UAN applied with Y-Drop units.

\* RemainN Nitrogen Stabilizer from Agtegra added at 2 qt/ton dry fertilizer source or 2 qt/100 gallon liquid UAN

• AG 11X8 soybeans planted in 30" rows at 150,000 plants per acre 5-12-18

• Fertilizers spread or sprayed 5-8-18 (preplant) or 7-16-18 (R2)



## Yield Results – Soybean R2 Dry and Liquid Fertilizer:

11-6-18 (AGTEG\_BATH\_18\_SOY\_DRY\_FERT)

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### Agtegra Cooperative

Trial ID: AGTEG_BATH_18_SOY_DRY_FERT		Agtegra Soybean Dry and Foliar Fertilizer Pre or at R2	
Protocol ID: AGTEG18SOY		Location: Agtegra- Bath Trial Year: 2018	
Project ID:		Investigator: Brad Ruden	
		Study Director: Brad Ruden	
		Sponsor Contact:	

Crop Name	Rating Type	Rating Unit	Sample Size, Unit	Soybean YIELD		Soybean MOICON		Soybean WEITES	
				1	A	1	BU	1	LB
Trt No.	Treatment Name	Rate	Unit						
1	Urea, Untreated	65 lb/a		29.0		12.2		56.4	
2	ESN Urea	68 lb/a		32.8		12.2		56.8	
3	Urea Remain	65 lb/a 64 fl oz/2000 lb material		38.8		12.5		56.7	
4	Urea Remain	109 lb/a 64 fl oz/2000 lb material		34.1		12.3		57.3	
5	Urea Remain Ammonium sulfate	43.5 lb/a 64 fl oz/2000 lb material 47.6 lb/a		31.5		12.3		57.0	
6	Untreated- No N	0 qt/ton		28.8		12.1		57.4	
7	Urea Remain SUL4R Plus	65 lb/a 64 fl oz/2000 lb material 88.2 lb/a		41.5		12.2		56.7	
8	Urea Remain SUL4R Plus B+Z	65 lb/a 64 fl oz/2000 lb material 93.75 lb/a				12.2		56.7	
9	UAN Remain	10 gal/a 33.92 fl oz/100 gal		42.8		12.1		57.2	
10	Coron 10-0-10 + 0.5%B	2 gal/a		42.3		12.1		56.4	
11	Jumper K- Leaf	2 gal/a 64 fl oz/a		39.2		12.1		57.4	

## **Key Observations – Soybean R2 Dry and Liquid Fertilizer**

- **Adding additional crop nutrition- Nitrogen or Sulfur-** increased yield compared to untreated
- **Even with extremely dry conditions at Bath, untreated urea was lost to volatility.** The value of RemaiN nitrogen stabilizer is easy to see
- **Dry conditions limited the effectiveness of ESN urea**
- **Applying 30# N with RemaiN treated urea at R2** significantly improved yield
- **50 # added N did not outperform 30# added N in the plots.** Dry conditions have limited top end yield potential.
- **Soybeans are high sulfur users. The addition of sulfur fertilizers to the mix added significant yield,** provided the fertilizer applied was not high salt.
- **Calcium sulfate (gypsum) fertilizers appeared to perform extremely well** and are worth studying more.
- **Calcium sulfate, as Sul4R Plus fertilizer, along with 30# N (treated urea)** provided a 2.7 bu increase in yield vs 30# N alone
- **UAN appeared more efficient than urea this year (+4 bu).** I suspect Y-Drop with UAN both limited volatility and increased uptake
- **Foliar N with CoRoN +B performed very well,** with a 13.5 bu gain vs untreated, and has been consistent for several years in the plots.

## **2018 Plot Setup Information:**

- Plot located at the Agtegra Bath location in the Research and Technology demonstration plots
- Variety: Asgrow 11X8 planted at 150000 plants per acre in 30" rows
- Plots planted May 12, 2018
- Preplant fertilizer applied 5-8-18, R2 Fertilizer spread or sprayed 7-16-18