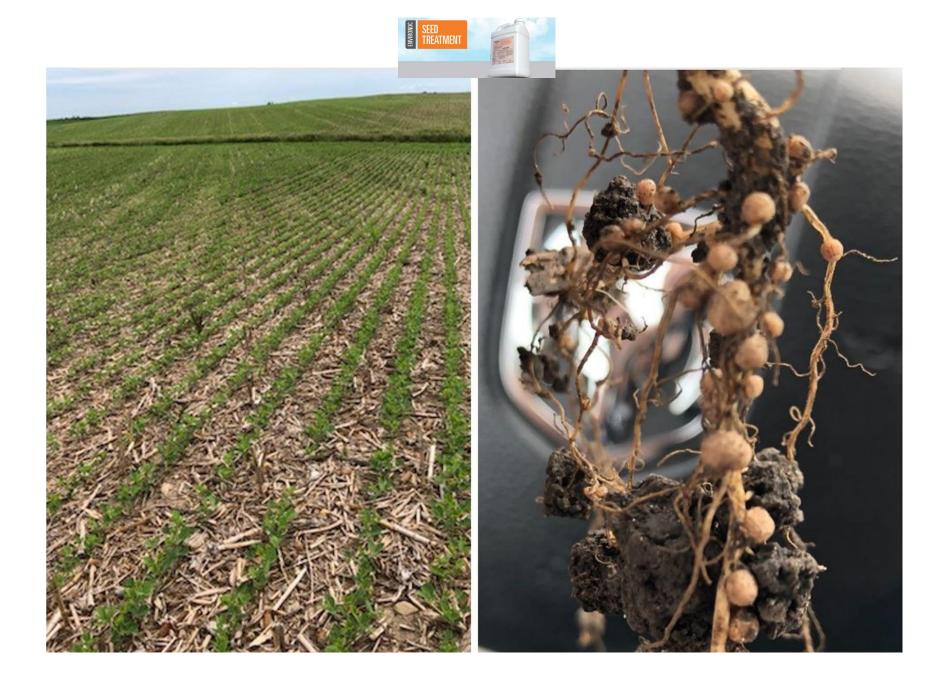
## **Environoc Seed Treatment Update 2020**

- Concentrated Microbial Formula
- Over 2 Dozen Strains of Versatile and Viable Microbes
- Nodulating Bacteria included









# **Microbial TEAM Technology**-Seed Treatment Microbial Capabilities

over 200 proprietary isolates, non-pathogenic, non gmo, and naturally occurring

- **Diazotrophic Microbes** *Nitrogen Fixation from free N in Air*
- Ammonifying Microbes- convert organic N to ammonia form
- Phosphate Solubilizing Microbes- makes unavailable P available
- Microbial Surfactant Production- free up more nutrients in soil / rhizosphere
- Vitamin / Hormone- vitamin production and facilitate hormone release
- **Nodulating-** *nitrogen fixing symbiotic relationship- nodules on soybeans*
- Siderophore Production- "Iron Magnets" more Iron availability in the soil
- Petroleum Hydrocarbon Bioremediation- oil, diesel, gas, Soil and Groundwater
- Fats, Oils, Grease, Common Organics Degradation- Wastewater, Pond Treatments
- **Sulfur Oxidizing Capabilities-** enhance sulfur oxidation in the soil and increase available sulfate

## Features/Benefits – Environoc 401/ST Microbes:

#### Occur naturally in the soil

Organisms not modified or engineered in any way

#### **Explode their populations in the soil**

Change plant growth dramatically when on/near roots

#### **Manufacture Root Growth Promoting Hormones**

Make more and bigger roots improving nutrient uptake

#### Manufacture multiple enzymes that release fertility

Release many P forms and micros especially iron

#### Manufacture enzymes that harvest nitrogen from the air

Fix nitrogen in root zone and make it soil and plant available

#### Improve plant health and speed crop development

Raises sugar levels in the plant providing stress relief

#### Interact with the plant to improve growth efficiency/productivity

Removing stress at key times improves yield/quality

Iron releasing technology- siderophore production

#### Improve soil tilth

Microbes release compounds that aggregate soil

Larger root masses deposit higher organic matter to soil

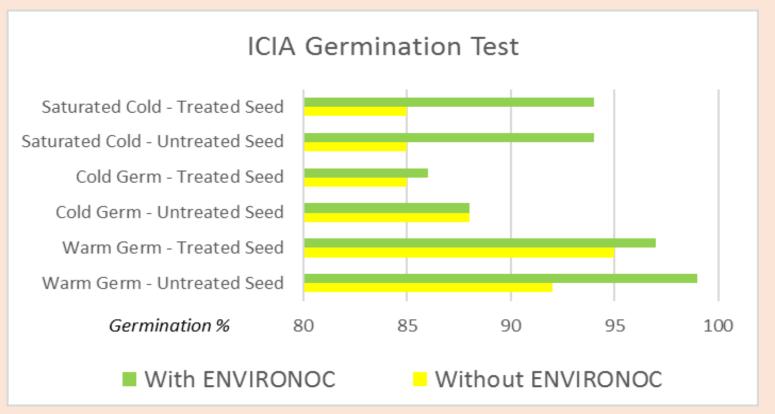
Microbes cycle soil organic carbon more efficiently





The Indiana Crop Improvement Association, ICIA, performed germination tests for ENVIRONOC Seed Treatment following their long-established protocols. For over 100 years the ICIA has been a leader in seed certification, seed quality testing, genetic testing and research. ICIA, a non-profit, self-supporting agency, exists to deliver unbiased, needed services to their member customers.

-The results from the tests show enhanced germination with the use of ENVIRONOC Seed Treatment (detailed below). Tests were performed on both Treated Soybean Seeds (fungicide and inoculant) and Untreated "naked" Soybean Seeds. Not only did seeds treated with ENVIRONOC show strong germination in ideal conditions (Warm Germination Test) but particularly seeds treated with ENVIRONOC Seed Treatment showed significantly better germination in cold/wet conditions (Cold Germination and Saturated Cold Test)



Base = Metalax	yl + Fludioxonil + Imidacloprid		Soybeans 2018		
CODE	TREATMENT	IL			
		Neoga 1	2	Ave	
Treatment #31	Base + Environoc 401	72.1	66.6	69.4	
Treatment #8	Base (1.6 IMD rate) + BIOST Nematicide + VPH	74.0	64.3	69.2	
Treatment #25	Base + Headsup + BIOST Nematicide	62.5	74.6	68.6	
Treatment #24	Base + T-methyl + BIOST Nematicide	68.6	67.6	68.1	Independent Research
Treatment #33	Base + BDX Seed Treatment	73.4	62.6	68.0	-
Treatment #14	Lumisena + FST Concept	73.0	62.5	67.8	Soybean Seed Treatment Trial:
Treatment #7	Base (1.6 IMD rate) + ILeVo + BIOST Nematide + VPH	68.9	66.4	67.7	38 various Seed Treatments- IL
Treatment #5	Base (-Imidacloprid) + PonchoVotivo + ILeVo	64.8	70.2	67.5	
Treatment #18	Base + OBT 2003	69.7	65.1	67.4	(2 reps)
Treatment #13	Base (-Midacloprid) + Lumisena	61.3	71.4	66.4	Diadona FNIVIDONOC
Treatment #30	Base + Agra-Rouse	66.4	66.2	66.3	Biodyne ENVIRONOC
Treatment #17	Base + Excalibre SA 18BE_04056WP	61.1	71.5	66.3	6 17 . 60 4 554
Treatment #9	Base (Duplicate)	58.7	71.6	65.2	Seed Treat= 69.4 BPA
Treatment #35	Base + AVEO	66.0	63.6	64.8	(1110)
Treatment #34	Base + UHC Innoculant	71.2	58.0	64.6	(#1 out of 38)
Treatment #27	Base + S 208	66.7	61.6	64.2	
Treatment #6	Base (low rate F) + Intego Solo	65.3	62.9	64.1	Base= 69.4 (+6 bpa)
Treatment #4	Base + ILeVO + VPH	61.2	66.7	64.0	base os. ( to bpa)
Treatment #28	Base + Exp. BC9	65.1	62.7	63.9	Untreated 59.2 <b>(+10 bpa)</b>
Treatment #32	Base + N1b-10L ST	64.0	63.1	63.6	Officiated 33.2 (110 bpa)
Treatment #2	Base	64.0	62.7	63.4	
Treatment #3	Base + VPH	64.1	62.2	63.2	
Treatment #12	Base + BASNem 1	62.0	64.1	63.1	
Treatment #21	B775+B798	59.6	65.8	62.7	8 orrn
Treatment #26	Base (1.6floz IMD rate) + BIOST Nematicide	64.4	60.7	62.6	SEED TREATMENT
Treatment #19	Base + OBT 2012	59.8	64.4	62.1	E INLAIMUNI
Treatment #16	Base + Commence	58.5	64.9	61.7	
Treatment #29	Base + Exp. GX3	61.0	62.3	61.7	
Treatment #15	Base + F4018	59.5	63.8	61.7	
Treatment #23	Base + BIOST Nematicide	58.7	62.3	60.5	
Treatment #10	Base + Vibrance	56.5	64.3	60.4	
Treatment #20	B775	61.2	58.0	59.6	
Treatment #22	Base + B798	57.4	60.9	59.2	
Treatment #1	UTC	62.5	55.8	59.2	
Treatment #38	Base + Root-Tek	57.1	60.9	59.0	
Treatment #36	Base + AgRho S Boost ELX	59.4	57.6	58.5	
Treatment #37	Base + Biovante XP	61.2	53.2	57.2	
MEAN				63.8	

### NC Iowa 2018 Soybeans- 170 acres

24 rows each (blue with ST, orange without)



By Variety Avg. Yield Acre

L2228 Bio 70 69.2 >

L2228 65 99.8 >

+5 BPA
Environoc Seed
Treatment

SEED TREATMENT

TREATMENT	Eq.			=							<b>:</b>									:				E111			TII-							=				ĭ:			-				٠,	Renlic	4.1 X
		3 3		•		3 8.				•••													•••		4.0   33	1			•	•••	•				1	*	•••	•	•		•••	•	*		_	Averag	
Base + Seed Treat #10	81.2							2.8 22.1	72.1	~	" "		/···					12.	<u> </u>										•/									• • • • • • • • • • • • • • • • • • • •		~		1		183.1 18		80.0	101.13
Base + Seed Treat #8		14.3 66	.1 87.	3 64.3	1	87.4 Bi			1	72.7	74.	.9 98.1	72.8	***		. 4	13.1		43	11	12.1	12.1	13.3	14.1			111.1	188.4	11.3	184.6	14.3	6.7 67.1	.,		3 66.4	71.4	**.*	77.3	11.3		••••	•	11.7	183.1		79.6	
Base + Biodyne ST #17		3.3 87.	"	87.4	13.1	14.5 bi		83.1 73.3		77.3			71.3	83.3 7		.1 24.1		""	<u> </u>	1 11.3	14.3		""	13.3			184.8	-	*3.3		67.1 7	8.3 73.3	,,,	.,	, 11.3	**.*		•	78.8	21.4	78.3	27	111.1		_	79.6	101.13
Base+ Seed Treat #15		14.3 14.		• ••••	1 61.6	17.1 14.		12.4 24.1		74.0	" "	71.3	74.4	13.1 7	1.3 84.	.3 83.	****	' '''		.7 43.4	**.*	11.0	14.6	11.4	3.8 Bb	.7 "	183.3	181.3	181.6	181.7		7.7 67.1			.1 67.1	67.1	67.8	•1.1	71.3	78.6	77.8 18	11.3	11.4		.7.8	79.6	101.13
Base + Seed Treat #14	13.6	13.6 83.	.8 82.	.1 87.3	b1.0	17.1	1	79.4 29.1		74.6	76.	79.6	27.1	••			47.1	"."	"	.0 04.3	87.4	17.4	11.1		1.3	•	18.3	188.1	83.4	183.4	12.4 2	3.8 64.1	•	).I b4.	1 11.1	78.8		78.4	78.4	77.2	77.4 18	2.3	14.3	93.1 9	7.4	79.6	181.8%
Base + Seed Treat #4	••.•	18.8 Bb.	.4 83.	2 61.7	ha.4	67.4 bil.		77.8 72.4		78.7	*** 74	72.8	78.8	83.4 83		.3 83.4	10.1	17.1	47	. 14.1		87.8	н.ч		b.4 III.	. 1	186.4	101.4	11.1	183.6	hB.4 7	4.3 73.1	•	l.I bil.		68.8	h	83.4	78.2	78.3	79.6	7.3	10.1	183.1 4	ib.#	79.5	188.4%
Base + Seed T reat #12	63.8 E	12.4 44.	.1	3 10.0	1 11.4	63.6 6E.	.7	13.3 73.1	79.0	22.4	" "	.3 73.3	78.4	11.1		.3 86.1	78.1	16.7			111.4	16.4	11.1		1.3	.7 ''1	11.3	183.6		181.6		7.7 68.7		.7 63.		b4.4	b3.8	83.8	78.6	72.1	76.4 18	2.7 1	III.4	14.1	13.4	79.4	188.4%
Base + Seed Treat #22	10.1	19.8 b3.	.3 Bb.	b 2.3	1 11.4	83.4 bi	.3	21.9 28.1	74.3	72.7	** 78.	.4 11.3	83.1	11.1			••.:	1 11.1	*** 43	.1 83.8	92.9	14.8	11.1	77.b B	8.3 83.	.1 **	183.8		**.*	186.1	14.E	1.1 72.1	67	in hi	.1 68.8	h8.2	b#.1	••••	11.3	76.0	78.9	4.4	13.3	10.1	11.0	79.4	188.4×
Base + Seed Treat #11	46.1 4	17.7 88.		111.4	67.3	bb.0 b3.		83.1 78.1	78.8	79.8	*** 21.	.7 78.4	72.1	83.3 21		.9 83.3	1 11.3	3 181	***	.4 88.3	93.8	43.3	11.4	83.8 2	7.1 Bb.	.4 ""	47.7	183.4	83.4	181.3	13.4 b	1.7 64.4	b3	. B b3.	7 63.8	78.8	h8.4	88.3	74.8	78.8	78.3 18	7.0 1	184.2	100.4	14.3	79.4	188.8×
Base	Bb.3	١	.7 M.	b3.6	11.3	64.7 B3.	•	73.3 74.1	76.0	24.4	*** 83.	.3 73.8	76.0	83.1 73	.4 78.	.8 22.1	10.1	1 16.1	***	.3 81.3	11.1	91.3	17.1	22.4	3.b BI.	.7 ''	186.3	181.3	83.3	183.3	b3.8 7	4.3 64.1	-	.3 84.	.1 67.3	28.4	h	78.7	11.1	B1.1	11.1	.3	B.1	JBB.4 4	14.1	79.2	188.8%
Base + Seed Trea #16	14.6	12.8 84.	.1 Bb.	1 10.1	11.1	b1.b b2.		18.8 72.3	72.6	78.6	. 83	.8 69.1	72.7	81.4 23	13		11.3	1 12.7	*** 13	.7 83.8	12.1	87.4	87.4	84.1 B	1.1 11		188.7	183.4	181.3	181.8	24.3 2	8.7 78.1	76	. B b3.	1 11.6	bb.4	h3.8	81.1	78.1	83.8	18.7	.0.7	14.4	183.8 4	14.8	79.2	188.8X
Base + Seed Treat #23	87.7 k	h.0 03.	.b 17.	1 66.1	87.8	11.1 LE	.3 :	72.8 71.1	1 67.4	78.8	*** 73.	.3 76.4	74.6	83.3 83	83.	.0 03	48.3	7 10.0	43		44.6	97.6	11.1	13.3	3.3 11.	.3 '''	188.1	188.8	11.4	188.3	10.3 h	1.7 68.4	67	.4 64.	3 66.8	78.1	h	81.1	22.4	22.1	78.8 1	4.0	101.4	11.6	18.3	79.0	188.4%
Base + Treatment #26	19.1	14.1 11.	• ••	2 66.0	17.7		•	76.1 72.1	72.2	24.8	*** 73.	.9 69.1	72.2		.1	.3 83.:	1 17.3	1 10.7	111 44	46.1	11.1	14.3	94.1	11.1	1.1		10.7	186.7	11.7	184.7	13.3 k	3.3 b8.4	b3		2 68.8	b2.6	b3.8	11.1	74.8		18.3	40.4	183.1	18.3 1	18.7	79.0	188.3×
Base + Seed Treatment #6	83.8	17.1	84.		78.6	63.7 bb.	.1	18.3 73.3	29.2	22.2	*** 74	29.8	78.2	78.8 81	.4 11	28.1	100.1	1 12.1	-11- 41	.4 43.3	97.2	91.3	13.6	72.8 8	1.3	.3 11	183.8	181.4	11.1	77.8	11.3	7.8 71.1	<b>a</b> :	1.1 b3.	7 b4.8	bb.7	84.7	77.8	74.8	78.4	76.8 18	(B.)	11.6	(83.4 1	19.8	78.8	100.1%
Base + Seed Treatment #9	83.4	11.6 16.	.0 03.	b 67.6	11.1	11.3 14	.1 :	76.8 78.º	79.0	78.8	*** 73.	.2 26.1	24.1		.0 03.	.4 81.1	89.0	111.7		.3 83.4	97.4	93.6	11.1	87.3 8	3.8 83.	. • • • •	94.3	183.8	17.7	11.1	10.7 2	1.1 19.1	21	.3 b4.	3 68.3	67.0	h4.8	88.3	78.8	76.2	78.4 18	(b.0 )	188.2	11.1	99.1	78.8	188.8%
Base + Seed Treatment #25	10.3	17.3 67.	. B b1.	b 1.3	1 12.4	62.4 bb.	.7 :	96.3 69.I	24.7	72.8	111 78	1.1 78.9	28.1	13.1 11	84.	.0 84.:	11.1	1 13.4	*** 43	.1 16.1	94.7	16.3	13.6	29.8	2.1 76.	.3 '''	11.1	13.8	83.8	17.1	bb.3 b	1.8 64.2	•	i.i b3.	B 62.7	b8.4	b3.3	83.1	79.8	24.4	29.3	0.4	93.1	94.7 9	(3.3	78.7	188.8%
Base + Seed Treatment #13	11.1	lb.3 b3.	.3 84.	87.3	1 10.3	63.3 bi	•	81.6 78.4	76.3	26.1	*** 78	1.1 27.1	78.8	bB.4 21	.1 83.	.3 78.	1 18.3	7 96.6	***	.7 88.7	88.3	11.6	11.1	Bb.1 B	2.4 72.	.3 111	183.4	183.8	11.7	11.0	17.6	1.0 b1.2	••	.3 be.	1 62.4	11.1	84.7	27.8	29.9	78.8	28.6 18	(4.3   1	111.1	12.8 18	41.1	78.6	44.4X
Base + Seed Treatment #5	84.1	18.1 83.	.7 84.	3 84.3	19.3	11.1 12.	.3 :	96.3 67.I	24.3	72.8	11 24.	.8 76.6	78.8		.1 83.	.6 83.:	9 88.3	3 46.3	41	.3 83.4	46.6	11.1	12.8	29.6	8.3 24.	. 1	184.3	181.4	11.1	181.8	14.8 2	7.6 21.4	21	.3 b3.	1 11.0	11.1	h0.9	27.1	11.1	77.8	78.4	11.7	183.7	(88.8 3)	(B.b	78.5	11.7%
Escalate	47.8	11.7 83.	.7 81.	1 10.4	14.8	11.1 bi	.7	78.1 76.	71.6	24.3	111 83.	.9 78.4	76.0	81.7 81	86.	.9 83.4	11.1	13.4	11	.2 77.3	12.0	11.1	11.3	••••			188.3	11.3	181.8	188.3	72.2 b	b.4 78.2	73		• ••••	h8.3	b3.3	83.3	72.4	74.7	76.8 18	4.1	12.1	12.1 1	(7.6	78.4	11.0%
Base + Seed Treatment #21	17.1	11.6	.1	1 64.1	18.3	83.8 89.	.9 :	98.3 78.3	•	72.8	11 22.	.7 11.1	22.4	24.1 83	27.	.0 70.:	1 17.3	97.6	***	.1 16.1	11.1	11.1	12.1	22.1 B	1.1 11.	. 11	17.2	183.1	B.4	181.4	61.9 E	1.3 bil.i	•	i.i bi.	B 62.8	11.1	h4.8	29.1	h7.8	22.2	24.6 1	da. 0	183.3	14.8 1	(7.4	78.3	11.8X
Base + Seed Treatment #7	83.b B	18.8 87		4 66.9	П	68.4 bb.	.3	94.4 24.1	76.1	78.8	*** 73.	.8 73.7	72.0	83.b B	.3 73.	.b ##.:	43.7	91.0	*** 43	.2 84.7	11.0	10.4	17.1	28.8 2	1.7 71.	"	184.8	181.7	12.1	11.1	٦.	1.1 21.0	b3		B 63.4	21.4	67.1	27.3	27.1	76.3	26.0 10	41.7 f	115.1	16.3 11	81.3	78.3	11.8X
Base + Seed Treatment #18	83.1	18.3 83.	.1 83.	1 10.3	b3.3	11.1		98.4 72.4	1	76.3	··· 76.	.6 73.6	78.8	88.3 71	.b 73.	.6 29.1	11.2	1 13.3	. 41	.0 24.0	11.3	11.1	87.7	81.7	B.b 27.	.3 '''	183.8	100.4	11.1	188.1	67.1 Z	7.1 69.2	21	.3 b3.	84.7	<b>68.</b> 1	89.3	81.8	22.4	78.8	76.6 H	0.3	11.3	13.1 1	(4.2	77.7	18.7%
Base + Seed Treatment #20	10.1	12.7 84.		3 63.1	11.0	b3.3 b3.	•	76.8 78.I	1	22.2	*** 21.	.6 77.6	72.2	73.3 81	.b 78.	.3 74.3	93.	1 10.0	***	.2 81.8	43.b	13.1	89.3	29.2	B.1 BB.	.4 111	11.1	19.2	84.7	181.1	10.0 h	7.8 88.2	b3	.3 89.	• ••.•	11.1	61.9	29.8	78.7	24.2	27.b 1	(B.4)	19.7	11.3 1	(4.8	77.5	18.8X
Base + Seed Treatment #19	87.8	13.3 83.	.7 84.	1 11.1	1.0.0	13.1	.,	24.8 21.1	•	73.8	" 72	1.1 76.6	72.6	11.1	83.	.3 83.3	1 13.3	1 10.7		.0 76.0	12.7	10.0	11.7	83.3	2.1 78.	.4 111	186.3	16.0	14.4	183.6	14.3 2	8.7 b8.2		. 1 11.	7 ba.a	10.0	61.7	83.4	B1.1	78.8	79.8 1	18.4	13.1	10.1	14.4	77.3	48.1%
Untreated	83.7	h.3 88.	.3 84.	7 78.3	13.1	87.7 bB	.1 :	2.7 74.3	78.8	74.3			78.1	71.3 81	. 13	.1 78.3	14.1		44		14.1	11.4	11.1	83.1	8.1 83.	.3 111	11.4	186.6	13.1	183.6	10.7 h	2.4 68.1	b-1	.b 87.	• ••.	11.1	89.3	22.4	24.1	11.1	76.3	10.1	11.1	12.2	13.8	77.2	11.12
Base + Seed Treatment #24	87.4	18.8 81.	1 12.	1 10.0	$\Box$	83.8 Bb	•	98.4 bB.	78.8	71.3	** 71	1.1 24.8	72.2	84.8 21	.3 83.		1 11.1	1 11.1	43	1.7 88.7	16.1	18.2	12.8	78.8 8	1.0 29.	.7 ***	184.6	181.4	83.8	183.4	61.4 B	1.1 67.1	•	. B 64.	1 63.8	b3.8	b3.3	83.8	26.4	73.3	22.4	16.4	11.1	84.b B	19.4	76.7	97.4X
		+	**.	1	H	61.0	,			78.1	$\vdash$	+	28.1	$\top$	$\top$	81	•	+	11	•	+	Н	11.3	$\top$	+	"		$\forall$		181.7	$\top$	+	h:	7.1	+		64.4		$\dashv$		78.4	+	$\dashv$	٠,	97.1	78.7	
	++	+	1.1	1	$\Box$	h.b				4.8	$\vdash$	+	8.4		+	h.1	'		3.	.7	+	Н	8.3	$\top$	+	11				1.1	$\top$	+	•		+		8.3	Н			1.8	+	$\dashv$	-	8.3		
	++	+			$\vdash$	b.7				b.3	$\vdash$	+	b.b	$\overline{}$	+		•			-	+	Н	2.2	$\top$	+	-		$\dashv$		7.3	+	+	•		+		1.1	Н	$\overline{}$		8.3	+	+	-	8.3		
		+									+	+			+					+	+	Н		+	+			_			+	+										+	+	+	+		
		+					+							+	+					+				+		+		$\dashv$		$\dashv$									$\dashv$		+	+	$\dashv$	+	+		
		+		7	Stat	tes-	30	) Ra	nlic	ation	ne			+	+					+	+			+	+	+		$\dashv$		$\dashv$				+			+		$\dashv$		+	+	+	+	+		
	+++	+		/	الماد	163-	33	, IXE	рцс	auo	113	+		_	+	+		+	Н	_	_			_	+	-		_	+	-	-		-	+							-	+	_	$\pm$	_		$\rightarrow$

## Independent Research

26 different Biostimulants- Comparison WHEAT Seed Treatment Trial-7 States, 39 Replications

**Biodyne ENVIRONOC Seed Treat= 79.6 BPA +3bpa** (3/26)

Mean= 76.7, Untreated 77.2

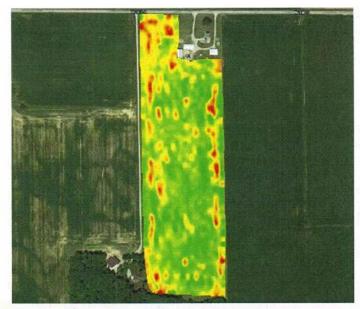




Grower: (AC) NE IN Farm: Grandma Field: West (Soybean)

## Yield by Management Zones Field Level Management Zone Detail Crop: Soybeans 2019





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0				
12	30	49	63	87

Zone No.	Mgmt Zone Name	Range	Zone Name	Data	Avg Moisture%	Avg Yield	Total Yield	HarvestAcres	Area
Zone BioDyne	Seed Treatment Test	Min - Max	BioDyne	None	13.12	60.28 bu/ac	683 bu	11.33	11.37
Zone Normal	Seed Treatment Test	Min - Max	Normal	None	12.09	56.07 bu/ac	1138 bu	20.30	20.30



ForeFront Ag Solutions 812 West Tipton Street Huntington, IN 46750 260-504-6149





