### **Environoc Seed Treatment Update 2020**

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



#### 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

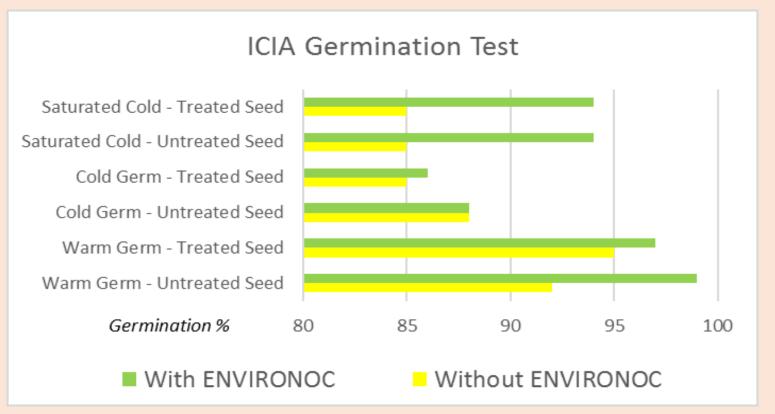
Microbes cycle soil organic carbon more efficiently





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	Diedune FNIVIDONIOC
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	4
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. I (I o bpa)
Treatment #28	Base + Exp. BC9	65.1	62.7	63.9	Untreated 59.2 (+10 bpa)
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	B orro
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 THEATWENT
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	E 7				<b>:</b>				•				Ξ.,			•	,						::				E11			T11.				E	-,			=:.				:	,			:				Renlic	1.1 Z
	·	•	•			•	•	•••		• •	•	•••	•		•	•	•	3 1	•••	•	•	•	•	•	•	•••	•	•	•	'	• •	•	•••		•	•	•••	•	•	•	•	•	•	•	•••	•	•	<b>3</b> 1	•••	Averag	
Base + Seed Treat #10		<u> </u>	<b>'</b>			113.6		14.3	"	71.3	72.4	74.8	11.	79.1 78.	1 74.1		••			••••	43.4	42.7	<u></u>			11.4	811.3	14.4	27.1 111	183.		1 187.4	184.		72.7	73.3		67.8	b3.8	**.*	68.3	83.3	••••	24.1	13.4	b3		43.3	••••	80.0	101.6×
Base + Seed Treat #8	811.3	84.3	***	1 87.	3 64.	3 61.8	87.4	61.3	"	73.6	71.8	72.7	, ,	1.7 78	.1 72.1	••.3	74.8	••••	13.4	*3.*		13.1	**	12.1	12.1	13.3	••.•	78.4	• •		• • • • • • • • • • • • • • • • • • • •	11.3	184.	64.3	1 11.7	67.8	<b>bb.</b>	**.3	11.4	71.4	**.*	77.3	*11.3		••••	b.7	11.7	183.1	183.8	79.6	III.IX
Base + Biodyne ST #17		b3.:	87.3	"	.2 87.	1 63.4	64.7	61.7		.1 73.3		77.3	Ш.	•	71.3	****	72.6	***	77.1	48.3	**.3			14.3	<b>"</b>	"."	*3.3		"	184.	""	183.3	""	1 67.	78.3	73.7	71.3	•••	b1.3		••••	**.*	78.8	21.4	78.3	2.7	***		17.3	79.6	181.13
Base+ Seed Treat #15	••••	84.3	1 14.1	•	•		17.1	14.3		.4 74.8		74.8	" '	*.* 71.	2 74.1	83.8	74.3	84.3	83.1	**.*	**.*	46.7	13.1	11.1	11.8	14.6		13.1	16.7 "	183.	3 181.3	181.6	181.	,	67.7	67.E	6-4.1	64.1	67.1	b7.1	67.8	•11.1	71.3	78.6	77.8 11	41.3	11.4		47.8	79.6	101.12
Base + Seed Treat #14	83.6	83.1	B3.1		.1 87.	3 61.8	11.1	84.4		.4 29.8		74.6	"" 7	b.8 24.	b 77.	••.1	••.•		13.3	47.6	16.1	*****	84.3	87.4	97.4	11.1		11.3		**.	3 188.1	1 183.4	183.	4 87.4	72.8	64.8	h7.	b4.4	10.1	78.8	b#.b	78.4	78.4	77.2	22.4 10	7.3	44.3	93.1	47.4	79.6	101.02
Base + Seed Treat #4	••.•	••.		4 83.	,7 bi.	7 68.4	67.4	h8.8	22.	.0 72.4		78.7	,,,,	19.1 22.	78.1	83.4	87.8	11.3	13.4	11.1	47.1	47.8	84.8	11.5	87.8	н.ч	••.1	16.4		III.	4 181.4	11.1	183.	h 10.4	74.3	73.8	h4.	<b></b>	bb.0	h1.1	b#.b	B3.4	78.3	78.3	29.6	7.3	48.1	183.1	16.8	79.5	100.4%
Base + Seed T reat #12	k3.8	b3.4	1 41.1	"	3 68.	11.4	b3.6	bB.7	83.	.3 73.8	24.0	22.4	П	11.2 72.	2 78.1	11.1	88.7	11.3	16.6	48.6	Bb.7		B.4	11.4	16.4	11.5	••••	11.3	13.7 '''	**	3 183.6	188.4	181.	h he.i	67.7	h8.7	64.3	b3.8	11.1	b4.4	b3.8	83.8	78.6	72.1	76.4 10	2.7	III.4	14.8	183.4	79.4	100.4%
Base + Seed Treat #22	**.*	49.1	b3.:	3 Bb.	B b3.	3 66.4	83.9	b1.3	71.	.9 78.8	74.2	72.7	" ,		3 83.	11.1	11.1	16.1		88.3	18.1	" 43.4	13.1	12.1	11.1	11.1	27.h	10.3	13.4 **	183.	• •••••	189.8	186	.i 64.i	1 11.1	73.8	67.1	b1.1	**.*	b#.2	h#.1	••••	11.3	76.8	78.4	4.4	13.3	16.1	41.0	79.4	188.9%
Base + Seed Treat #11	46.8	47.3	7 88.1		•	4 67.3	**.	b3.4	•3	.1 78.8	78.8	29.8	" '	11.7 78.	1 72.	83.3	79.6	16.4	13.3	41.3	101.4	46.4	11.3	12.0	13.3	41.4	13.1	22.1 1	16.4 111	47.	7 183.4	183.4	181.	3 83.4	1 14.7	b9.4	b3.0	62.7	b3.8	78.8	b0.4	11.3	74.8	78.8	78.3 18	7.0	184.7	188.4	184.3	79.4	188.8%
Base	86.3		h#.:	2 bil.	B 63.	19.3	64.7	b3.8	72.	.3 74.6	76.0	24.4	П.	3.3 73.	76.1	83.1	73.4	78.8	77.8	10.1	**.*	1 16.3	81.3	11.1	11.3	17.1	22.4	13.b	11.7	186.	3 181.3	183.3	183.	3 63.1	74.3	b4.8	b4.:	19.1	b7.3	78.4	b#.b	78.7	••.1	<b>81.</b> 1		1.3	11.1	188.4	94.1	79.2	188.8%
Base + Seed Trea #16	84.6	83.1	• •••	"	.1	1 61.4	b1.6	h3.4	•••	.0 73.3	73.6	78.6	П	3.8 69	1 73.3	81.4	77.8	83.1	18.3	11.3	43.7	** 42.7	13.1	12.1	87.4	87.4	84.1	14.4	BI.1	188.	7 183.4	181.3	181.	24.3	78.7	78.8	76.0	b3.4	17.1	66.4	b3.8	11.1	78.1	83.8	10.7		14.4	183.8	14.8	79.2	188.8%
Base + Seed Treat #23	87.7	bb.1	1 13.1	. "	.1 bb.	17.1	11.1	b8.3	72.	.0 21.0	b7.4	78.8	,	3.3 76.	74.1	83.3	83.8	13.8	13.4	48.7	****	1 13.1	11.1	14.6	17.6	41.8	83.3	13.3	18.3	188.	.1 188.8	188.4	188.	3 b8.3	1 14.7	b#.4	67.4	64.3	11.1	28.1	bb.#	11.1	22.4	22.1	78.8 9	4.8	101.4	77.6	18.3	79.0	188.4%
Base + Treatment #26	11.1	84.		•	3 66.	17.7		17.1	76	.1 72.7	73.3	24.8	··· ,	3.9 69	1 22.3	11.1	<b>11.1</b>	11.3	13.3	47.3	18.7	1 44.1	46.1	11.1	14.3	94.1	11.1	10.1		11.	7 186.7	188.7	184.	, P3''	b3.3	b8.4	b3.0	b8.3	11.1	b3.b	b3.8	11.1	74.8		11.3	8.1	183.1	18.3	10.7	79.0	188.3×
Base + Seed Treatment #6	83.8	87.	1	84.	• ••.	78.6	b2.7	bb.4	•••	.3 73.3	29.2	27.7	;	14.1 24.	28.3	78.8	11.4	11.1	78.8		13.8	1 18.4	12.2	97.3	91.3	93.b	73.8	11.2	18.3 11	183.	101.4	1 11.1	11.	• ••.:	17.0	71.1	h3.	b2.7	b4.8	bb.7	84.7	77.8	74.8	78.4	26.0 10	1.1	11.6	183.4	11.8	78.8	188.1%
Base + Seed Treatment #9	83.4	•11.1		1 12.	h h7.		19.3	b4.1	26.	.0 70.9	29.8	28.8	,	2.7 76	1 24.		*1.*	83.4	#1.b	11.1	10.7	84.3	83.4	97.4	43.b	11.1	87.2	13.1	13.8 ***	44.	3 183.6	17.7	11.	b 6.3	78.8	b9.8	21.3	b4.3	b0.3	67.E	64.8	11.3	78.8	76.3	28.4 18	b.0	188.7	11.1	99.1	78.8	188.8×
Base + Seed Treatment #25	11.3	87.3	a 67.1	b1.	<b>1</b> 19.	3 67.4	b3.4	bb.7	76.	.3 69.8	24.2	72.8	"" "	9.1 78.	7 78.	82.8	••.•	14.1	14.3	11.1	13.4	1 12.1	B.4	94.7	16.3	13.6	79.8	13.1	h.3 ***	11.	12.0	183.8	47.	1 bb.:	b1.8	64.7	h-1.	b3.8	k3.7	b0.4	b3.3	83.1	79.8	24.4	29.3	0.4	13.1	94.7	13.3	78.7	188.8%
Base + Seed Treatment #13	**.*	11.	3 b3.:	3 87.	8 87.	3 68.3	b3.3	b1.b	•11.	.6 28.4	26.3	76.1	" 7	18.1 22	1 28.1	18.1	76.1	13.3	78.1	48.7	46.6	** 46.7	10.7	11.3	11.6	11.1	Bb.1	12.4	12.2 '11	183.	1 183.6	91.7	**.	11.1		b8.3	b#.:	<b>68.</b> 1	k2.4		64.7	77.8	79.9	78.8	28.6 18	4.3	100.0	13.8		78.6	44.4X
Base + Seed Treatment #5	84.1	"	1 83.3	2 84.	3 84.	3 89.3	***	87.3	76.	.3 67.8	24.3	72.8	., ,	9.8 7b.	78.1		••.1	83.b	12.7	88.3	46.3	** 41.3	83.4	16.1	**.*	13.8	29.6	10.3	14.4	184.	3 181.4	11.1	181.	1 14.1	27.6	21.4	21.3	b3.4	19.0		b8.4	22.1	11.4	77.8	78.4	11.7	183.7		**.*	78.5	44.7X
Escalate	47.8	•11.2	9 83.3	2 81.	• ••.	4 64.8		b1.7	78	.1 26.1	21.6	24.3	Т.	2.9 78.	4 26.1	81.7	••.1	11.1	13.1	41.6	13.4	** 41.3	77.3	12.0	14.4	88.3	••••		••	188.	3 99.3	181.8	188.	2 72.3	1 11.1	78.7	73.0	**.*	ha.a	b#.3	b3.3	83.3	72.4	24.2	26.0 10	•.•	12.0	12.1	47.6	78.4	44.8%
Base + Seed Treatment #21	**.*	••.	• ••••	"	4 64.	1 11.3	83.8	89.7	78.	.2 78.2		72.8	" ?	2.7 88.	27.4	24.1	83.8	22.8	78.3	47.3	97.6	*****	11.1	11.1	***	12.1	27.1		11.1	47.	3 183.1	186.4	181.	<b>1</b> 11.1	h 8.3	h#.#	h-1.	b1.0	b3.8		64.8	29.1	b7.8	22.2	24.6		183.3	94.8	97.9	78.3	49.8X
Base + Seed Treatment #7	83.6	••.	1 17.1		4 66.	1	h11.4	bb.3	24.	.4 24.6	76.1	78.8	,	3.8 73.	2 22.1	83.6	84.3	73.b I	11.3	43.7	11.0	" 43.3	84.7	11.1	11.1	17.1	78.8	29.7	•••	184.	181.7	92.4	**.			71.8	b3.0	**.*	b3.4	21.4	67.1	77.3	27.1	76.3	26.0 11	11.7	100.0	46.3	181.3	78.3	44.8%
Base + Seed Treatment #18	83.1	••.:	1 83.1	83.	• ••.	3 63.3		h#.b	78.	.1 72.4		76.3	,	b.b 72.	28.1	88.3	7b.b	73.6	79.8	11.3	13.3	91.0	24.8	11.3	11.1	87.7	81.7	18.6	7.3 ***	183.	100.4	11.1	188.	1 67.1	1 27.1	b9.3	21.0	b3.8	84.7	68.1	89.3	11.1	77.4	78.8	26.6 11	11.3	11.3	13.1	14.3	77.7	48.7X
Base + Seed Treatment #20	11.1	83.3	9 89.1	•	3 b3.	1 66.8	b3.3	b3.b	76.	.0 70.0		22.2	" ;	11.6 22.	b 73.3	73.3	11.b	78.3	74.7	43.1	10.0	** 48.3	11.1	42.b	12.1	84.3	29.2	10.1	18.4 17	11.	19.7	184.7	181	1 68.1	67.0	88.7	b3.:	89.8	10.0	h1.1	b1.4	29.8	78.7	24.2	22.6	8.4	89.2	99.3	14.8	77.5	48.8X
Base + Seed Treatment #19	87.8	83.3	9 83.3	2 84.	1 11.	.1 60.0	11.1	10.7	24.	.0 21.0		72.8	" '	2.1 26.	22.1		83.8	13.3	13.3	43.3	18.7	** **.*	76.0	43.7	11.1	11.7	83.3	13.1	18.4	186.	3 46.8	184.4	183.	b 64.3	28.2	b8.7	66.4	86.7	11.1	h1.1	b1.7	83.4	•1.1	78.8	29.8	1.1	B3.6	10.1	14.4	77.3	48.1%
Untreated	83.7	т.:	1 11.:	3 84.	.7 78.	3 83.8	87.7	b	72.	.7 79.3	78.8	24.3	т.	11.8 18.	78.	71.3	B1.6	83.1	78.3	14.8	16.1	** 14.1	11.1	14.1	11.1	11.1	83.1	••.1	13.3 ''1	11.	1 186.6	183.4	183.	h h8.3	1 62.4	h#.1	6-4.1	87.6	89.1	h1.1	89.3	72.4	74.1	81.8	76.3	18.1	11.1	13.3	12.8	77.2	10.0%
Base + Seed Treatment #24	87.4	••.	• • • • •	83.	• ••.		12.1	16.1	78.	.4 68.1	78.8	21.3	"	21.1 24.	73.3	84.8	78.3	83.b I	11.1	44.8	14.8	1 42.7	18.7	16.1	18.3	13.8	78.8	11.0	14.7	184.	h 181.4	1 183.8	183.	4 M.4	1 11.1	b7.8	<b>68.</b> (	b4.4	k3.8	b3.8	b3.3	83.8	76.9	73.3	22.4	h.1	11.1	84.b	14.4	76.7	97.4%
	$\top$	Т	T	••.	•			h1.7		$\top$		78.1	П		78.				B1.4			14.1			П	18.3		$\top$	.11		Τ		181.	,			67.		П		64.4				78.4	T	$\neg$		97.1	78.7	
	$\top$	T	T	<b>8.</b> 1		T	T	h.b		$\top$		4.8	Ħ	$\top$	8.4			T	h.#			2.7		$\top$	П	8.3	$\exists$	$\top$			T		4.	1	T		1.1				8.3		$\neg$		4.8	T	$\neg$		8.3		
	$\top$	Т	T	8.1		$\top$	T	b.7		$\top$		6.3	П	$\top$	b.1			T	1.1			1.6		$\top$	П	7.7	$\neg$	$\top$			Т		7.	,			1.1				•.•				8.3	T	$\neg$		8.3		
				Т																					П																					T	$\neg$				
			T	T	T								П		T				T			T		$\top$				$\top$			T																$\exists$	$\forall$	$\top$		
			T	T	7	Sta	ite	S-	39	Re	plic	atio	ns					$\forall$	$\top$			T						$\top$			Ť				T											T	$\top$		$\top$		
					ť									_					-				_	_				_									_						_		_	#	_		_		

## 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

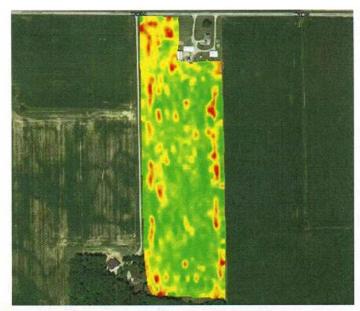


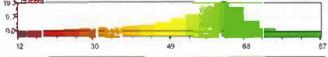


Grower: (AC) NE IN Farm: Grandma Field: West (Soybean)

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







Zone No.	Mgmt Zone Name	Range	Zone Name	Data	Avg Moisture%	Avg Yield	Total Yield	HarvestAcres	Arlea
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





Product Attributes Checklist	Environoc Seed Treatment
Improves Germination	X
Improves early growth and vigor	X
Application window of 90+ days	X
Compatable with other products	X
Contains strains that work in varying O2 conditions	X
Contains nodulating N-fixing inoculant	X
Contains other beneficial microbes	Х
Provides food sources for microbes in blend	X
Contains phosphate releasing technology	X
No special replant restrictions	X
Produces multiple enzymes around root	X
Contains food sources that chelate micronutrients	X
Contains dozens of strains of microbes	X
Contains iron releasing technologies	X
Built specifically to work in high pH calcareous soils	X
No special mixing or agitation required	X
No special bag tagging required	Х
Live entire season in conjunction with plant roots	X
Produces enzymes that fix atmospheric N to soil	X
Produce enzymes that degrade cellulose into food	X
Produce enzymes that degrade chemicals into food	X
Contains both bacterial and fungal strains	X
Contains multiple strains producing chitinase	X
Contains strains that work in a wide temp range	X



"Treat your seed with **Environoc Seed** Treatment and have confidence in knowing you have given it the power of life to maximize yield and productivity. Environoc Seed Treatment lives on well into the season with the roots and continues to provide health benefits to plants long after crop protection chemicals have been chemically or microbially degraded"